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## **Mortality and causes of death in South Africa, 2006: Findings from death notification**

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## Preface

This statistical release presents data on mortality and causes of death based on all death notification forms received from the Department of Home Affairs for deaths that occurred in 2006. Reference is also made to the 1997–2005 data to provide information on trends in mortality, based on updated information that includes late registrations processed in 2007/8.

As with previous releases, this release employed strict ICD-10 coding procedures, based on a principle of 'what you see is what you code'. An automated procedure was used to determine the underlying cause of death.



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# Contents

<b>Preface .....</b>	<b>ii</b>
<b>List of tables .....</b>	<b>v</b>
<b>List of figures.....</b>	<b>vi</b>
<b>Acknowledgements.....</b>	<b>vii</b>
<b>1. Introduction .....</b>	<b>1</b>
1.1 Background .....	1
1.2 Aims and objectives of this statistical release .....	1
1.3 Scope and limitations of this statistical release.....	1
1.4 Organisation and presentation of this release .....	2
<b>2. Data and methods .....</b>	<b>3</b>
2.1 Data .....	3
2.2 Methods.....	5
<b>3. Overall levels, patterns and differentials of mortality .....</b>	<b>10</b>
3.1 The levels and trends of registered deaths .....	10
3.2 Age differentials.....	11
3.3 Sex differentials.....	12
3.4 Age and sex differentials.....	13
3.5 Population group differences in mortality.....	16
3.6 Marital status differences in mortality.....	16
3.7 Differences in mortality by place of death .....	16
3.8 Provincial differences in mortality.....	17
<b>4. Causes of death in South Africa.....</b>	<b>18</b>
4.1 Introduction.....	18
4.2 Reported causes of death .....	18
4.3 Overview of the underlying causes of death .....	19
4.4 Natural and non-natural causes of death .....	20
4.5 Underlying natural causes of death.....	22
4.6 Non-natural causes of death .....	30
4.7 Comparison between underlying, immediate and contributing causes of death .....	36
<b>5. Concluding remarks .....</b>	<b>38</b>
<b>References .....</b>	<b>39</b>
<b>Appendices .....</b>	<b>40</b>
Appendix A: Definitions.....	40
Appendix B: Death notification form introduced in 1998 .....	41
Appendix C: Number of deaths by age and sex, 1997–1999 .....	43
Appendix C.1: Number of deaths by age and sex, 2000–2002 .....	44
Appendix C.2: Number of deaths by age and sex, 2003–2005.....	45
Appendix D: Age specific death rates (ASDR) by sex, 2006.....	46
Appendix E: All underlying causes of death, 2006 .....	47

Appendix F:	Detailed description of the broad groups of natural causes of death which were among the ten leading causes in 2006 .....	51
Appendix G:	Number and percentage of neonatal and post–neonatal deaths due to the ten leading underlying natural causes of death, 2006 .....	54
Appendix H:	The ten leading underlying natural causes of death by age and sex: South Africa, 2006 .....	55
Appendix H.1:	The ten leading underlying natural causes of death by age and sex: Western Cape, 2006 .....	56
Appendix H.2:	The ten leading underlying natural causes of death by age and sex: Eastern Cape, 2006 .....	57
Appendix H.3:	The ten leading underlying natural causes of death by age and sex: Northern Cape, 2006 .....	58
Appendix H.4:	The ten leading underlying natural causes of death by age and sex: Free State, 2006* .....	59
Appendix H.5:	The ten leading underlying natural causes of death by age and sex: KwaZulu–Natal, 2006 .....	60
Appendix H.6:	The ten leading underlying natural causes of death by age and sex: North West, 2006 .....	61
Appendix H.7:	The ten leading underlying natural causes of death by age and sex: Gauteng, 2006.....	62
Appendix H.8:	The ten leading underlying natural causes of death by age and sex: Mpumalanga, 2006 .....	63
Appendix H.9:	The ten leading underlying natural causes of death by age and sex: Limpopo, 2006.....	64
Appendix I:	Population group differences .....	65
Appendix I.1:	The ten leading underlying natural causes of death by population group, 2006 .....	66

## List of tables

Table 2.1:	Number of deaths published in June 2007 and late registrations processed in the 2007/8 processing phase by year of death: 1997–2005.....	5
Table 2.2:	Number and percentage distribution of deaths due to symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified: 2006 .....	9
Table 3.1:	Number and percentage distribution of deaths by age, 2006 .....	11
Table 3.2:	Number of deaths by age and sex, 2006 .....	14
Table 3.3:	Number and percentage distribution of deaths by population group, 2006 .....	16
Table 3.4:	Number and percentage distribution of deaths by marital status, 2006.....	16
Table 3.5:	Number and percentage distribution of deaths by place of death, 2006 .....	17
Table 4.1:	Distribution of death notification forms by the number of causes entered on the form, 2006 .....	18
Table 4.2:	Number of natural and non-natural deaths, 1997–2006 .....	20
Table 4.3:	Number of natural and non–natural causes of deaths by age, 2006.....	21
Table 4.4:	The ten leading underlying natural causes of death, 2006 .....	23
Table 4.5:	The ten leading underlying natural causes of death for males and females, 2006 .....	24
Table 4.6:	The ten leading underlying natural causes of death for each age group, 2006.....	25
Table 4.7:	The ten leading underlying natural causes of death for selected age groups, 2006 .....	27
Table 4.8:	The ten leading underlying natural causes of death in each province, 2006.....	29
Table 4.9:	Underlying non–natural causes of death, 2006 .....	30
Table 4.10:	Events of undetermined intent, 2006 .....	31
Table 4.11:	Underlying non–natural causes of death by age group and sex, 2006 .....	33
Table 4.12:	Underlying non–natural causes of death by province, 2006.....	35
Table 4.13:	Distribution of reported causes of death, 2006 .....	36
Table 4.14:	Number and percentage of deaths selected as underlying or reported as immediate or contributing causes of death, 2006.....	37

## List of figures

Figure 2.1:	Completeness of death registration by sex and year of death: 2001–2006 .....	4
Figure 3.1:	Distribution of registered deaths by year of death: 1997–2006 .....	10
Figure 3.2:	Distribution of deaths by age, 2002–2006 .....	12
Figure 3.3:	Percentage distribution of deaths by sex, 1997–2006 .....	13
Figure 3.4:	Percentage distribution of deaths by age and sex, 2006 .....	14
Figure 3.5:	Sex ratios by age, 2002–2006 .....	15
Figure 3.6:	Number and percentage distribution of deaths by province of death, 2006 .....	17
Figure 4.1:	Percentage distribution of deaths by main groups, 2006 .....	19
Figure 4.2:	Percentage distribution of natural and non–natural causes of death, 2006 .....	20
Figure 4.3:	Percentage distribution of natural and non-natural causes of death by age, 2006 .....	22

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## **1. Introduction**

### **1.1 Background**

The level of mortality is one of the indicators of the well-being and health status of a population, hence its inclusion, among others, in the construction of human development indices, the Millennium Development Goals (MDGs), and in the multi-dimensional approach to the measurement of poverty. Accurate and timely mortality statistics are needed for policy formulation, implementation and monitoring of health interventions aimed at increasing life expectancy and improving the health status of the population.

The systematic collection and processing of mortality data in South Africa is an ongoing process. Concerted efforts to improve the quality of data have resulted in a dramatic improvement of the death registration system in South Africa over the last decade.

### **1.2 Aims and objectives of this statistical release**

This release is part of a regular series by Statistics South Africa (Stats SA) on mortality and causes of death in South Africa. It has three main aims:

- To outline emerging trends and differentials of mortality by selected demographic and geographic characteristics in 2006.
- To present statistics on the causes of death in 2006, based on information from the death notification forms. The main focus is on the underlying causes of death, as this information is used for public healthcare interventions.
- To provide contextual information on the data and methods used in order to support further specialist analysis of the data available from the death notification forms.

### **1.3 Scope and limitations of this statistical release**

This release is based on the information that had reached Stats SA during the 2007/8 processing phase. The number of deaths discussed in this release excludes stillbirths. Several technical terms are used in this release. The definitions of these terms are provided in Appendix A.

Despite improved death registration in South Africa, particularly the introduction of a new death notification form in 1998, there are still some limitations that affect the quality of the information and overall coverage of deaths.

Some factors limiting the accuracy and completeness of data obtained from the death notification forms are:

- The data from the death notification forms are subject to content errors and omissions. Even though provision is made on the death notification form to record a deceased's information on education, occupation and type of business or industry, these variables have not been analysed in this release, due to lack of completeness of the information.

- Another limitation of the data is the probable under-registration of deaths, particularly in rural areas and among children. This leads to lower estimates of the total number of deaths that have occurred in the country and may lead to under-estimation of some causes of death. Deriving estimates of completeness of death registration in the country is a complex issue and is not part of this release. However, the release provides an indication of completeness of the information published for deaths that occurred between 2001 and 2006.
- The causes of death may also be misreported on the form. This happens when an incorrect cause of death is given.
- The causes of death reported on the form may not be detailed (i.e. an ill-defined cause of death). The quality of the reported information is determined largely by the diligence and integrity of the certifying official – physician, forensic pathologist, professional nurse or in some rural areas traditional headman. For example, the certifying officials sometimes write ‘natural causes’ instead of stating the actual cause.

Extensive assessment of the quality of the information reported on the death notification forms is beyond the scope of this release, and no adjustments were made for misclassification of underlying causes of death due to inadequacies of certification.

This release covers mortality and causes of death broadly, and hence does not focus specifically on HIV and AIDS. It does, however, provide indirect evidence that HIV may be contributing to the increase in the level of mortality for prime-aged adults, given the increase in the number of deaths due to associated diseases. The data captured through this exercise can contribute to detailed studies in which the incidence of deaths due to AIDS-related conditions is estimated.

#### **1.4 Organisation and presentation of this release**

The remainder of this release is organised as follows:

**Section 2** describes the data and methods used to provide the results in this release. Issues related to the completeness of the processed information and other aspects of data quality are discussed. The section also provides an overview of the data processing and the methods used to determine the underlying causes of death.

**Section 3** reports on the overall levels, patterns, and trends of mortality. Specific emphasis is placed on age, sex and geographic differences.

**Section 4** provides information on the underlying causes of death. The analysis distinguishes between natural and non-natural causes of death and then focuses on the leading underlying causes of death in each category. Information on multiple causes of death is also included.

Concluding remarks are presented in **Section 5**.

## 2. Data and methods

This section provides information on the data and methods used in this statistical release. The discussion on data includes the source of data, completeness of information and late registrations. The subsection on methods provides an overview of data processing and information about the classification of the causes of death and the derivation and ranking of the underlying cause of death.

### 2.1 Data

#### **Data source**

This release is based on information recorded on death notification forms received from the Department of Home Affairs (DHA) for deaths that occurred in 2006 and were registered at DHA. The death notification form that is currently being used (Form BI-1663) was introduced in 1998. This form replaced the BI-7 and BI-12 forms that were previously used. A copy of the new death notification form (Form BI-1663) is shown in Appendix B.

Death registration takes place at the DHA. After a death is registered, the DHA issues a death certificate and where applicable, updates the population register. The forms are then collected by Stats SA for processing. It should be noted that the number of deaths captured by Stats SA is not identical to the number of deaths recorded on the population register for the same period. According to the DHA, there are often delays in sending death notification forms from the provinces, such that not all forms received by the DHA reach Stats SA on time for processing for any specific year. In addition, deaths of people without identification numbers are not recorded on the population register, but are included in the information published by Stats SA. Consequently, the number of deaths for any particular year, based on death notification forms processed by Stats SA, is usually higher than the number of deaths recorded on the population register at the DHA.

Stats SA processed a total of 607 184 deaths that occurred in 2006 during the 2007/8 processing phase. This figure is 8,8% higher than the number of 2006 deaths recorded on the national population register (557 992). The number of 2006 deaths processed by Stats SA was 2,3% higher than the updated 2005 deaths (593 337); while the corresponding figure for the national population register was 4,1% higher (from 536 213 deaths in 2005 to 557 992 deaths in 2006). It is worth noting that while Stats SA updated the 2005 deaths with 2 124 deaths between the last and the current processing phases, the national population register was updated with 409 deaths over the same period.

#### **Completeness of information**

The Preston and Hill (1980) method was used to provide estimates of the level of completeness of the deaths reported in this statistical release. Further details on the choice of this method can be found in the report on *Mortality and causes of death in South Africa, 2003 and 2004: Findings from death notification*, Statistical release P0309.3 (Stats SA, 2006). This method was chosen mainly because it is able to provide annual completeness estimates and has minimal input requirements compared to other methods that were considered.

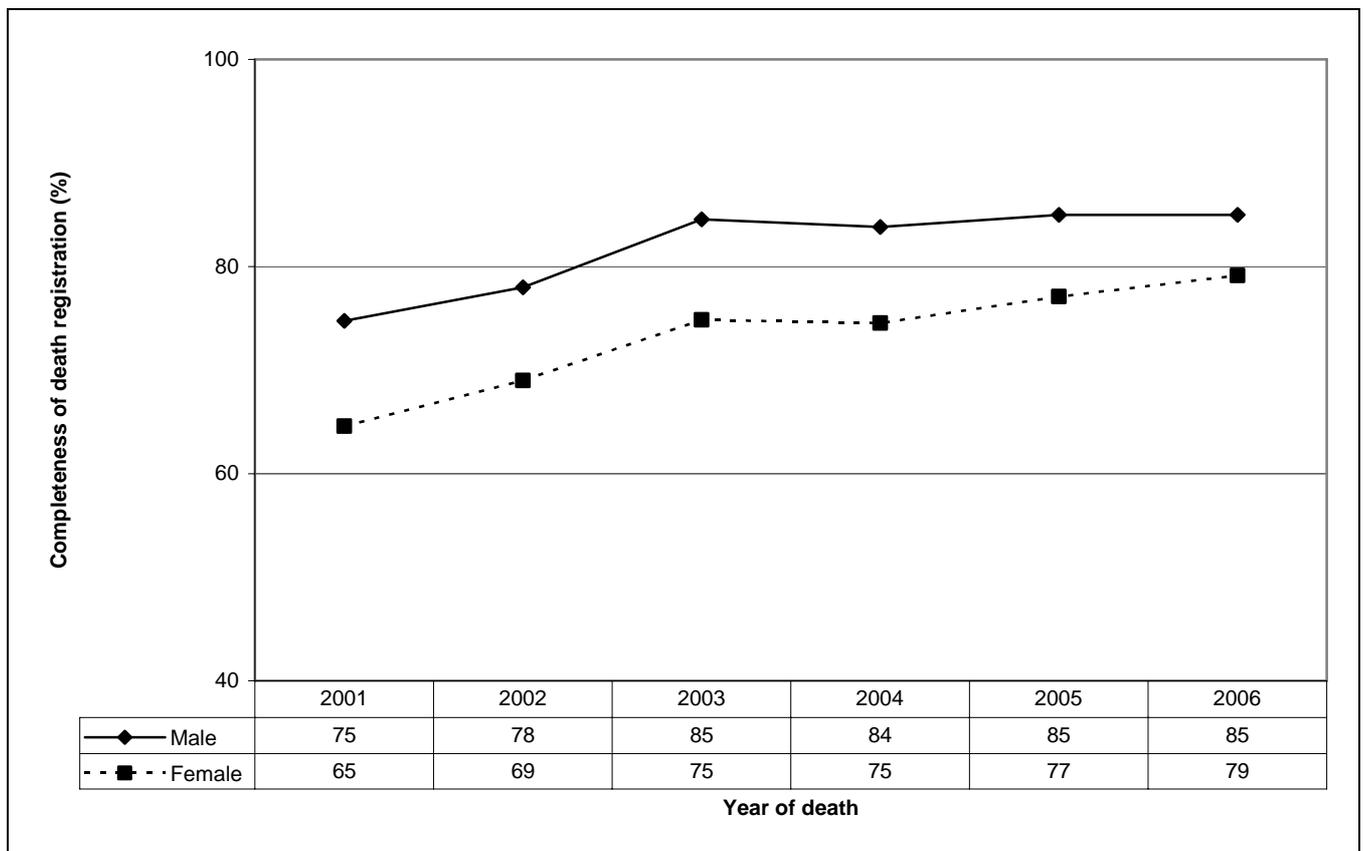
Readers are, however, cautioned against the interpretation of the completeness estimate derived from the Preston and Hill (1980) method. The method assumes a stable and closed population, which is not the case in South Africa. In addition, it assumes that the recording of deaths does not vary with age, which may not necessarily be true. Furthermore, the method provides estimates of completeness of published information for deaths from age five.

Other methods that were considered that do not assume a stable population (e.g. Bennett and Horiuchi (1981; 1984) and Hill (1987)) provide one estimate of completeness of death registration over an intercensal period. South Africa's first democratic population census was undertaken in 1996, followed by the next one in 2001 and then the Community Survey in 2007. Therefore, the Bennett and Horiuchi (1981; 1984) and Hill (1987) methods will only be able to provide estimates of completeness of death registration for South Africa for two periods (between 1996 and 2001; and between 2001 and 2007). The two estimates are not sufficient to assess the reliability of the estimates derived. As a result, the application of these methods will be considered after the population census scheduled to be carried out in 2011 has been conducted.

For the estimation of the completeness of death registration, the revised mid-year population estimates (medium variant) were used. Stats SA (2008) revised the mid-year population estimates from 2001 to 2007, following the undertaking of the Community Survey in 2007. Figure 2.1 shows the estimates of death registration completeness from 2001 to 2006. It is observed that the completeness of death registration has generally improved over time. In 2001, about 75% of male deaths and 65% of female deaths were registered. These figures increased to 85% for male deaths and 79% for female deaths in 2006. It is further observed that male deaths were more complete than female deaths throughout the years.

It is important to note that these estimates of completeness of the published mortality and causes of death information provide an indication of deaths that might never be registered, possible late death registrations, and those that had been registered at the DHA but had not reached Stats SA during the processing phase.

**Figure 2. 1: Completeness of death registration by sex and year of death: 2001–2006\***



\*Data for 2001–2005 updated to include late registrations.

Another indicator of completeness of information published in this release is based on the percentage of cases where information was unspecified or unknown for specific variables. For a relatively large percentage of deaths (25,9%), the population group was not recorded. Less than 1% of deaths had unspecified or unknown information for sex (0,3%) and for age (0,2%).

**Late registrations**

The current processing phase (2007/8) included death notification forms for deaths that occurred in 2006 and additional death notification forms for the years 1997–2005 that had not been received by Stats SA in the previous processing phases. Table 2.1 provides information on the number of deaths published in June 2007 for the years 1997–2005, and those obtained from additional forms received in the current processing phase for these years and the overall number of deaths for each year as of July 2008. In total, 3 538 additional death notification forms for 1997–2005 were received in the 2007/8 processing phase. The majority of these (60,0%) were deaths that occurred in 2005. Very few additional forms were received for 1997–1999.

**Table 2.1: Number of deaths published in June 2007 and late registrations processed in the 2007/8 processing phase by year of death: 1997–2005**

Year of death	Number of deaths published in June 2007	Additional forms received in the 2007/8 processing phase	Total number of deaths (by July 2008)
1997	316 507	52	316 559
1998	365 053	56	365 109
1999	380 982	55	381 037
2000	414 530	238	414 768
2001	453 404	105	453 509
2002	499 925	157	500 082
2003	553 718	481	554 199
2004	572 350	270	572 620
2005	591 213	2 124	593 377

This release will use the updated information for all comparative analyses undertaken between 2006 data and data from previous years. The distribution of these updated deaths (deaths published in June 2007 and additional deaths received during the 2007/8 processing phase) from 1997–2005 by age and sex is provided in Appendices C, C.1 and C.2. A dataset containing unit records of data on recorded deaths for 2006 is available on a compact disc (*Mortality and causes of death from death notification, South Africa: 2006*) on request from Stats SA.

**2.2 Methods**

**Overview of data processing**

The death notification forms were collected by Stats SA from the Department of Home Affairs. The forms were then sorted by year of death, month, day and finally by surname of the deceased in alphabetical order. The main purpose was to identify and remove duplicates. Most of the duplicates were identified during this stage. During data processing, unique identifiers (serial numbers) were developed for each form for the purpose of tracking the forms through the capturing and processing phases. Because of the complexity of the coding of diseases, Stats SA decided that all variables, except the actual causes of death, should be coded separately, to expedite the process. Thereafter, the causes of death were manually coded. Afterwards the data were captured and duplicates verified to ensure that all the death notification forms identified as duplicates during sorting were indeed duplicates, and to identify any forms that were mistakenly taken out as duplicates.

### **Classification of the causes of death**

The causes of death data presented in this release were coded by procedures described in the Stats SA manual: *Guidelines for coders using ICD-10*<sup>1</sup> (Stats SA, 2002). The ICD-10 coding provides the basic guidance used in virtually all countries to code and classify causes of death data. It provides information on coding in terms of disease, injury and poisoning categories. It also provides the rules for selecting the underlying cause of death from the several diagnoses that may be reported on the death certificate, as well as definitions, tabulation lists, guidelines for the death notification form, and regulations on the use of the classification. The ICD-10 contains approximately 8 000 categories of causes of death. The classification has been constructed for convenience and its usage is not mandatory. However, the ICD-10 has been adopted by member states, and the National Health Information System of South Africa has adopted it as its standard.

Mortality statistics released in this document are compiled in accordance with WHO regulations that specify that member nations classify and code causes of death in accordance with the current revision of the ICD-10 (WHO, 1992). The approach followed in this release is therefore consistent with international best practice. However, some researchers, especially those analysing causes of death over a long period spanning several revisions of the ICD codes, have reclassified individual causes of death into what these researchers have considered to be appropriate groups. In some instances, the main purpose of the regrouping was to remove the effect of different versions of the ICD coding system. For example, in the ICD-9 coding system, respiratory failure was grouped under the chapter on 'Symptoms, signs and ill-defined conditions', while in ICD-10, respiratory failure was placed in the chapter on 'Diseases of the respiratory system'.

In November 2003, Stats SA, the South African Medical Association, the Cancer Association of South Africa, the Medical Research Council, and the National Department of Health held a workshop where certain decisions were taken regarding coding problems, including the coding of immunosuppression as immunodeficiency. In terms of the Stats SA coding procedures and guidelines, immunosuppression was not coded as HIV, but as immunodeficiency, which has a separate ICD-10 code. There is no code for immunosuppression in the ICD-10 manuals. However, certifying officials sometimes reported the underlying cause of death as 'acquired immune suppression'. There is no code in the ICD-10 for 'acquired immune suppression'. In terms of the Stats SA coding procedures, this term was interpreted as HIV disease and given an HIV code (group B20-B24). If HIV was written on the form this was also coded in the HIV group, as required by the ICD-10. This approach followed the principle of 'what you see is what you code'.

The ICD-10 methodology also allows for the extension of classifications and codes. Many countries have developed unique codes and categories to reflect specific public health concerns. In South Africa, unique codes (Y67, Y68, Y37, Y38 and Y39) have been introduced for causes of death related to *herbal poisoning, enemas by traditional doctors, mine accidents, accidents in sports, and circumcision* respectively. Furthermore, as of the current processing phase, U51 and U52 were introduced for coding *multidrug-resistant tuberculosis* and *extensively drug-resistant tuberculosis*, respectively.

Coding the causes of death entailed a coder assigning an ICD-10 code for each cause of death recorded on the death notification form. An experienced coder then checked and confirmed the allocated codes.

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<sup>1</sup> ICD-10 is the tenth revision of the International Classification of Diseases developed by the World Health Organization (WHO), which is followed worldwide in order to have a uniform way of classifying morbidity as well as causes of death.

### **Changes in coding methodology**

In the previous releases, coding of causes of death for all children aged below one year did not take into consideration specific age in days, weeks or months at death. These were all assigned P-codes (*perinatal conditions*). During the current processing phase, coding of causes of death to children aged below one year has taken into account the above dimensions to provide ICD-10 codes that consider the exact age at death for infants. For example, the ICD-10 code provided in the previous processing phases for a child aged six months at death who died of *septicaemia* was P36. This has been assigned Code A41. Therefore, due to these changes in coding, comparison between the 2006 data on causes of death and those from previous years should be treated with caution.

Furthermore, two new codes were introduced during this processing phase as a result of emerging drug-resistant tuberculosis. *Multi-Drug-Resistant Tuberculosis* (MDR-TB) and *Extensively Drug-Resistant Tuberculosis* (XDR-TB) were included in this processing phase and given the Codes U51 and U52, respectively. These causes were first recorded in South Africa in 2006. For analytical purposes and for provision of more information on tuberculosis, both these causes are analysed under the main group of *certain infectious and parasitic diseases (A00-B99)* and the broad group of *tuberculosis (A15-A19)*.

### **Automated generation of the underlying causes of death**

More medical information may be reported on the death notification form than that reflected in the underlying cause of death. This information is referred to as multiple causes and is entered on the form. The underlying cause is determined by:

- the sequence of the conditions listed on the form, or
- the provisions of the ICD-10 and associated rules and modifications.

Once the causes of death given on the death notification forms had been coded as described above, the underlying causes of death were derived automatically, using a software program called Automated Classification of Medical Entities (ACME 2000.05) developed by the United States National Center for Health Statistics (NCHS). The ACME program applies World Health Organization rules on the selection of underlying causes of death. The ACME program is used as the international standard in the automated coding of causes of death.

For more information on the ACME program and an evaluation of the coding quality, the reader is referred to the following websites:

[www.cdc.gov/nchs/](http://www.cdc.gov/nchs/)  
[www.who.int/classifications/icd/en/](http://www.who.int/classifications/icd/en/)  
[www.who.int/classifications/network/en/](http://www.who.int/classifications/network/en/)

The Stats SA coding manual prescribes the use of three-character codes while the ACME program requires four-character codes in deriving the underlying cause of death. A conversion program was therefore applied to the codes for the ACME system to recognise the data as valid input. In most of the cases, the fourth character was '9' or '8', indicating that the detail of the coded disease was not specified.

The ACME program automatically derived the underlying cause of death for 99,6% of the records. The underlying causes for the remaining cases were manually derived. The preparation of the ACME 2001 input file involved the following:

- a) Conversion of the captured ICD-10 codes into the required ACME format.
- b) Comparison of coded value sets for up to five causes of death (cause A, B, C, D and other causes of death, with the associated injury when necessary) with the valid value sets in the ACME instruction manual, and editing where necessary.

ACME input data exclude stillbirths. The ACME system provides an editing user interface for cases to be resolved manually. This was required for some of the causes of death that are considered by the system as rare causes, such as cholera.

### ***Ranking the underlying causes of death***

Ranking of the underlying causes of death is useful for illustrating the relative burden of cause-specific mortality. The ranking simply denotes the frequency of causes of death among those causes eligible to be ranked, and does not reflect the causes of death in terms of their importance from a public health point of view. Due to concerns about violence and deaths due to accidents in South Africa, natural and non-natural causes have been ranked separately.

In ranking natural underlying causes of death, *symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified* (R00-R99) are excluded. This group includes all ill-defined conditions, for which no diagnosis classifiable elsewhere is recorded. For practical purposes, these categories could be designated as not otherwise specified, unknown aetiology or transient. Table 2.2 shows the number of deaths that fell in these categories and were therefore excluded from ranking of natural underlying causes of death.

It is observed that 13,5% of all deaths were classified under *symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified*. The majority of these (92,4%) were *ill-defined and unknown causes of mortality*, a group which includes *sudden infant death syndrome, other sudden death with causes unknown, unattended death, and any other ill-defined and unspecified causes of mortality*. Although in some cases these causes would have been among the ten leading underlying causes, they are excluded from the ranking, as the information cannot be effectively utilised for public health policy and planning purposes. A total of 82 064 deaths were excluded from the ranking of the most prevalent causes of death for 2006.

The causes of death were ranked according to the number of deaths assigned to the selected causes of death (excluding those due to *symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified*). The top-ranking causes determine the leading causes of death. Causes that had the same number of deaths received the same rank and a rank was skipped for the next cause. For example, if two causes of death had the same frequencies and were the top-ranking causes, they both received rank one, and the next cause received rank three.

It should be noted that the method of ranking underlying causes of death used in this release is not identical to the NCHS ranking list, as the suitability of the NCHS ranking list has not been established for South African circumstances. The NCHS ranking list is a well-established list that has become the standard used by the United States of America and other countries.

**Table 2.2: Number and percentage distribution of deaths due to symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified: 2006**

<b>ICD-10 Chapter 18 causes</b>	<b>Number</b>	<b>%</b>
Symptoms and signs involving the circulatory and respiratory systems (R00-R09)	884	1,1
Symptoms and signs involving the digestive system and abdomen (R10-R19)	460	0,6
Symptoms and signs involving the skin and subcutaneous tissue (R20-R23)	16	0,0
Symptoms and signs involving the nervous and musculoskeletal systems (R25-R29)	14	0,0
Symptoms and signs involving the urinary system (R30-R39)	14	0,0
Symptoms and signs involving cognition, perception, emotional state and behaviour (R40-R46)	35	0,0
Symptoms and signs involving speech and voice (R47-R49)	19	0,0
General symptoms and signs (R50-R69)	4 738	5,8
Abnormal findings on examination of blood, without diagnosis (R70-R79)	45	0,1
Abnormal findings on examination of urine without diagnosis (R80-R82)	0	0,0
Abnormal findings on examination of other body fluids, substances and tissues, without diagnosis (R83-R89)	10	0,0
Abnormal findings on diagnostic imaging and in function studies, without diagnosis (R90-R94)	25	0,0
Ill-defined and unknown causes of mortality (R95-R99)	75 804	92,4
<b>Subtotal</b>	<b>82 064</b>	<b>100,0</b>
Symptoms and signs (R00-R99)	82 064	13,5
Other causes	525 120	86,5
<b>All causes</b>	<b>607 184</b>	<b>100,0</b>

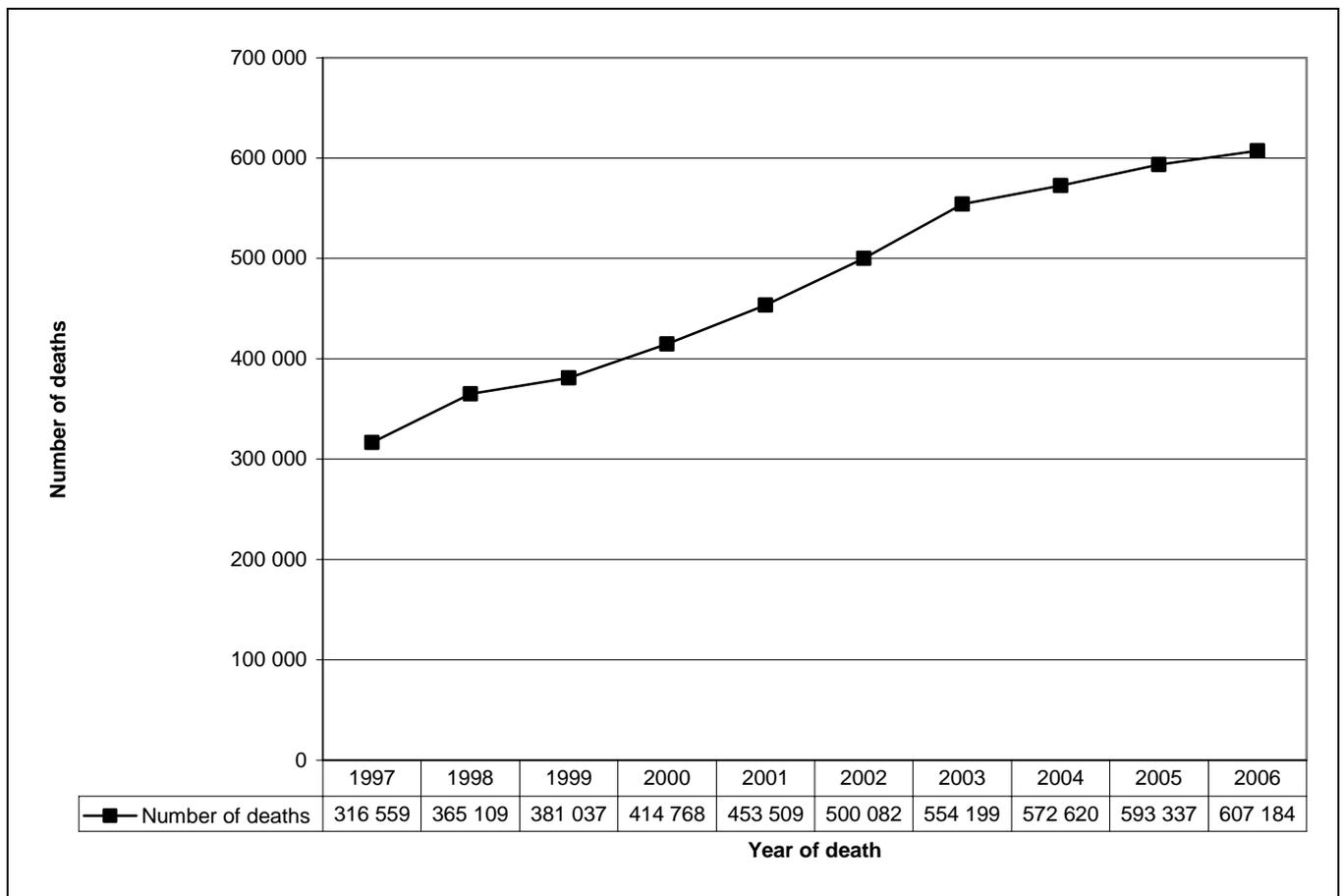
### 3. Overall levels, patterns and differentials of mortality

This section reports on the distribution of deaths that occurred in 2006 by age, sex, population group, marital status, province of death and place of death. The overall number of deaths is also provided by year of death for the period 1997–2005 to show trends in the number of deaths using updated data that include late registrations processed in 2007/8. The analyses on the number of deaths exclude stillbirths.

#### 3.1 The levels and trends of registered deaths

The overall number of registered deaths has increased consistently for each year from 1997 to 2006 as shown in Figure 3.1. In 2006, there were 607 184 deaths, indicating an increase of 2,3% from the total of 593 337 deaths that occurred in 2005. This percentage increase is the lowest increase observed from year to year since 1997. The increase in the number of deaths from one year to another may partly be attributed to improvements in death registration and population growth.

Figure 3.1: Distribution of registered deaths by year of death: 1997–2006\*



\*Data for 1997–2005 updated to include late registrations processed in 2007/8.

### 3.2 Age differentials

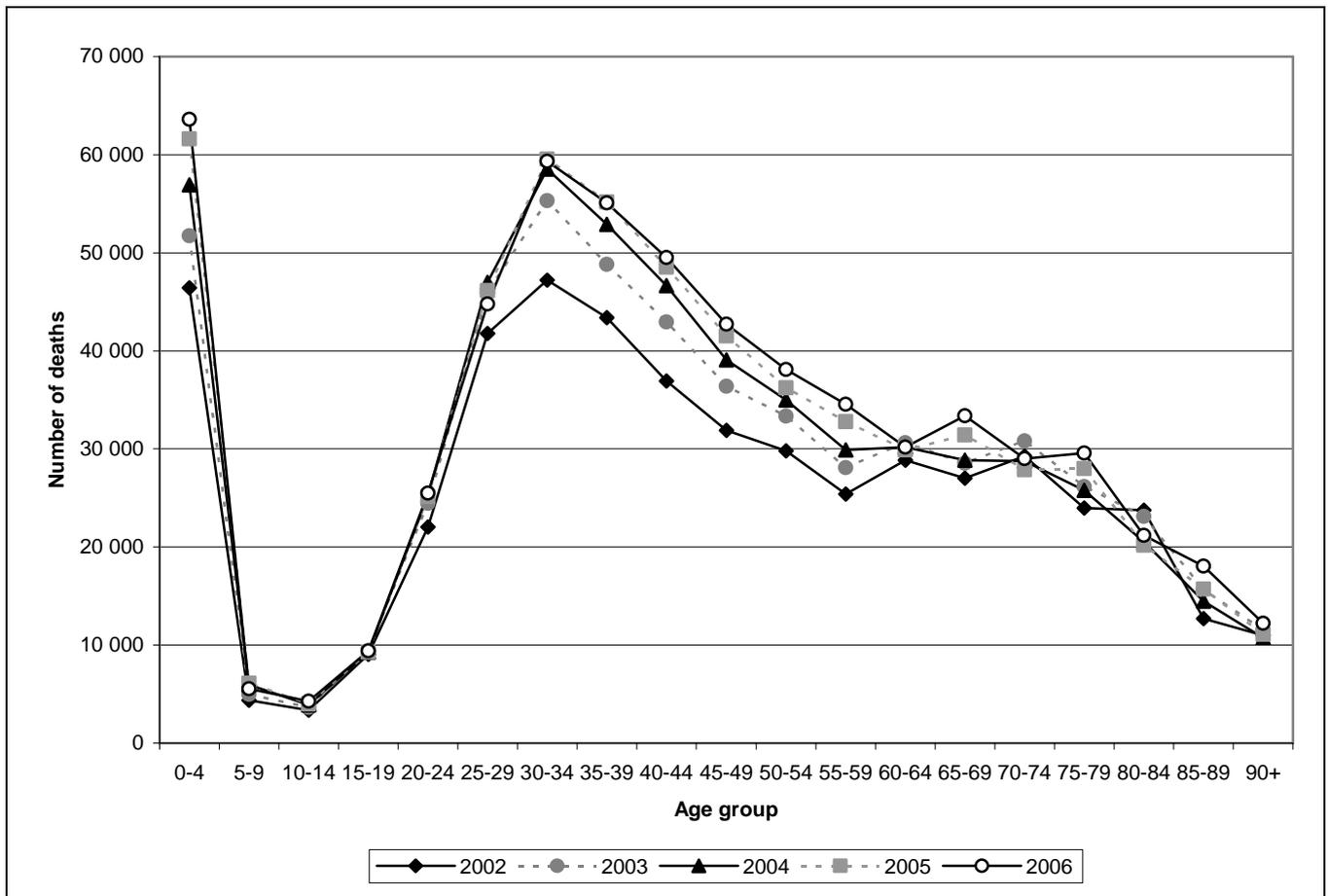
As with the 2005 deaths, the highest percentage of deaths that occurred in 2006 was among those aged 0–4 years, comprising 10,5% of all deaths; followed by those aged 30–34 years (9,8%) and 35–39 (9,1%) (see Table 3.1). The lowest number of deaths was among those aged 10–14 years (0,7%). The number of deaths from one age group to another declined sharply from age group 0–4 to age group 5–9 (from 63 596 to 5 544 deaths), reaching the lowest level in age group 10–14, after which there was an increase in the number of deaths up to age group 30–34. From age group 35–39, the number of deaths generally declined with age. The distribution of deaths by age and sex for the period 1997–2005 is provided in Appendices C, C.1 and C.2.

**Table 3.1: Number and percentage distribution of deaths by age, 2006**

Age group	Number	Percentage
0–4	63 596	10,5
5–9	5 544	0,9
10–14	4 273	0,7
15–19	9 394	1,5
20–24	25 477	4,2
25–29	44 762	7,4
30–34	59 344	9,8
35–39	55 083	9,1
40–44	49 527	8,2
45–49	42 713	7,0
50–54	38 073	6,3
55–59	34 556	5,7
60–64	30 167	5,0
65–69	33 358	5,5
70–74	29 009	4,8
75–79	29 571	4,9
80–84	21 178	3,5
85–89	18 057	3,0
90+	12 209	2,0
Unspecified	1 293	0,2
<b>Total</b>	<b>607 184</b>	<b>100,0</b>

Figure 3.2 shows the distribution of deaths by age for the years 2002–2006 to provide an indication of the age pattern of mortality over time. It is observed that the age pattern of mortality is generally the same for all these years. The main difference observed is that while the highest number of deaths in 2005 and 2006 was observed in age group 0–4 followed by age group 30–34, more deaths occurred in age group 30–34 followed by age group 0–4 during 2002–2004. For all the years, the lowest numbers of deaths occurred in age groups 5–9 and 10–14.

**Figure 3.2: Distribution of deaths by age, 2002–2006\***



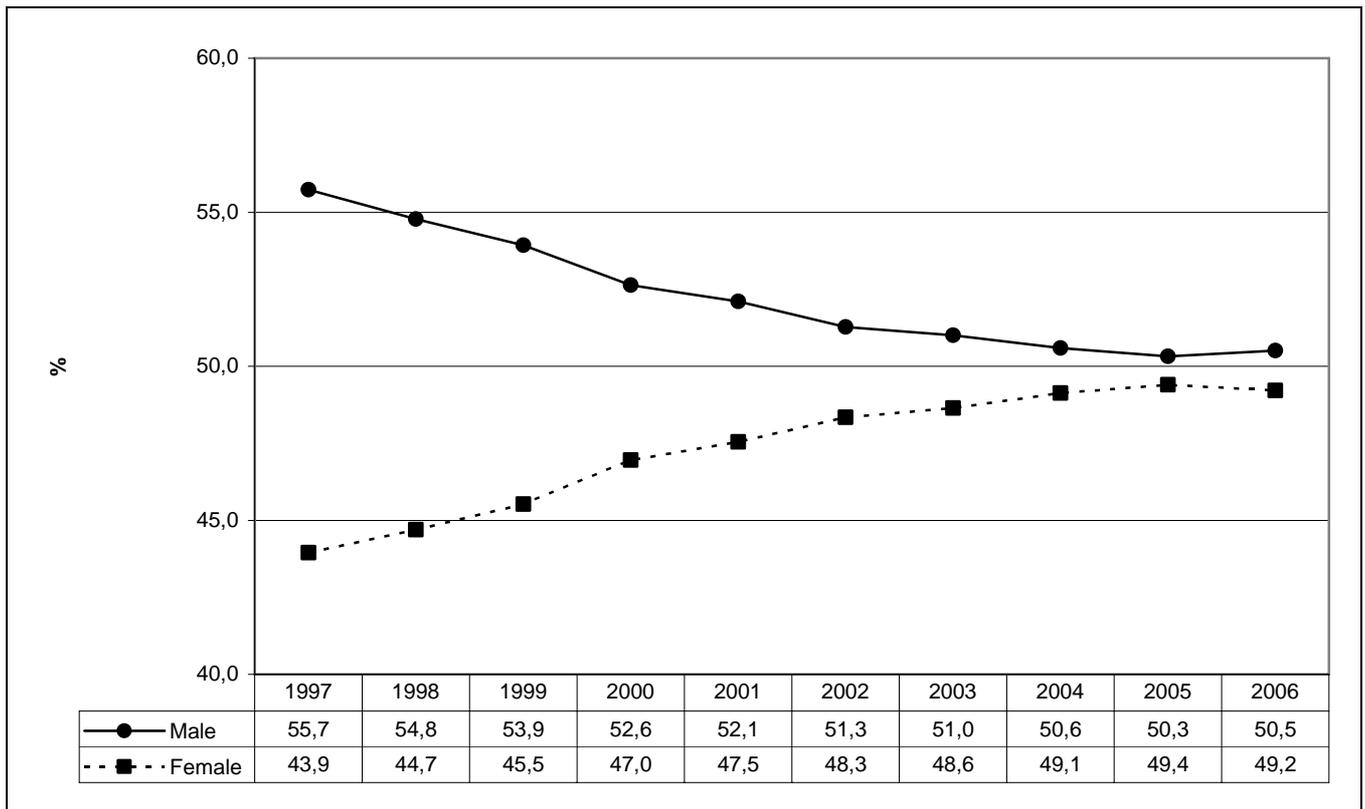
\*Excluding deaths with unspecified age (2 030 deaths in 2002; 2 796 deaths in 2003; 3 073 deaths in 2004; 3 235 deaths in 2005 and 1 704 deaths in 2006). Data for 2002–2005 updated to include late registrations processed in 2007/8.

### 3.3 Sex differentials

There were slightly more male (50,5%) than female deaths (49,2%) for 2006. About 0,3% of the deaths had unspecified information on the sex of the deceased. Between 2005 and 2006, male deaths increased by 2,7% while female deaths increased by 1,9%.

The percentage distribution of deaths by sex from 1997–2006 indicates that the gap between male and female deaths has generally been narrowing down over time (see Figure 3.3). While 55,7% of all deaths in 1997 were male deaths, this number reduced to 52,1% in 2001 and then to 50,5% in 2006. The updated information on age and sex distribution for deaths from 1997 to 2005 is shown in Appendices C, C.1 and C.2.

**Figure 3.3: Percentage distribution of deaths by sex, 1997–2006\***



\* (1) Excluding deaths with unspecified sex (1 019 deaths in 1997; 1 920 deaths in 1998; 2 062 deaths in 1999; 1 703 deaths in 2000; 1 629 deaths in 2001; 1 928 deaths in 2002; 1 944 deaths in 2003; 1 601 deaths in 2004; 1 695 deaths in 2005 and 1 704 deaths in 2006).  
 (2) Data for 1997–2005 updated to include late registrations processed in 2007/8.

### 3.4 Age and sex differentials

#### *Percentage distribution*

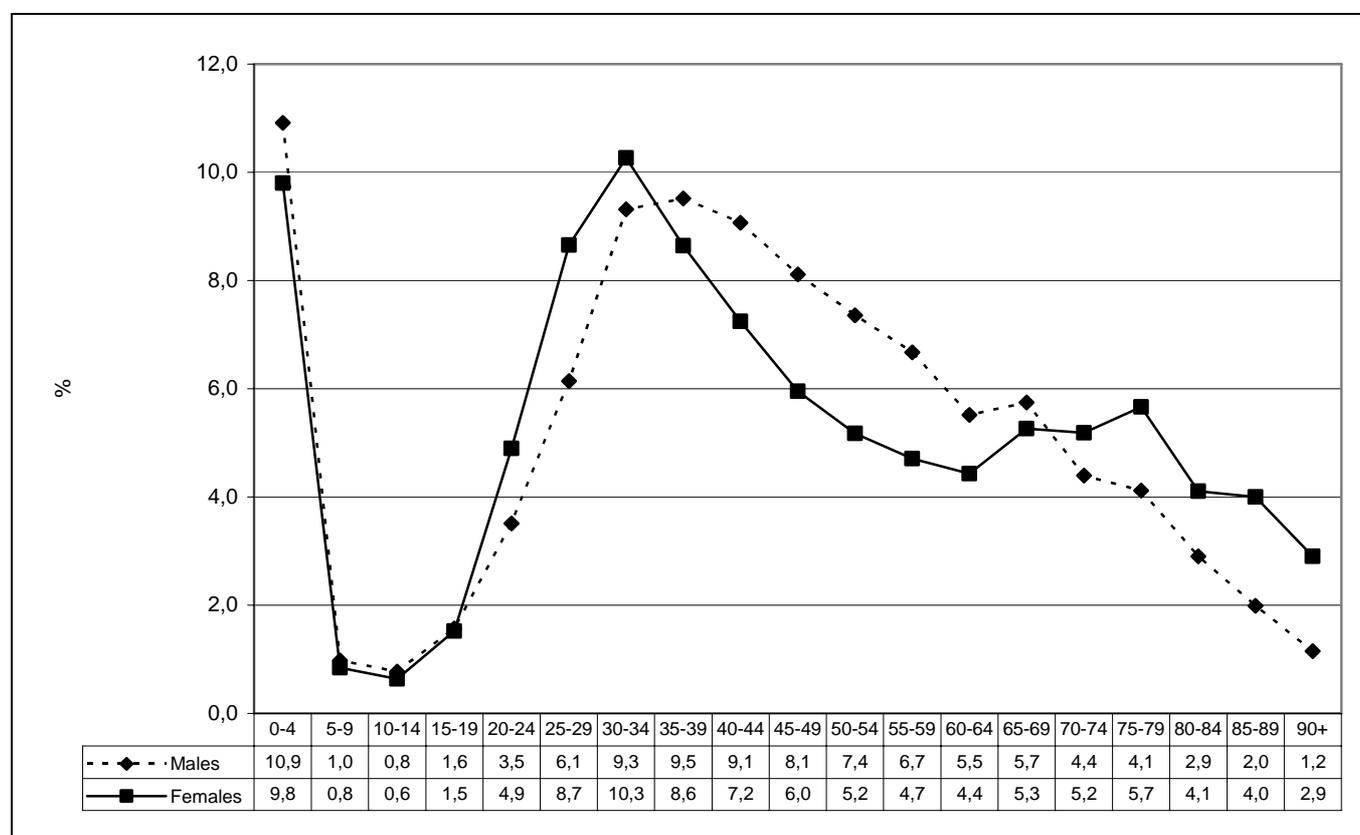
The age and sex distribution of deaths that occurred in 2006 is shown in Table 3.2 and Figure 3.4. The highest number of male deaths occurred among those aged 0–4 (10,9%), followed by those aged 35–39 (9,5%). For female deaths, the highest number of deaths was among those aged 30–34 (10,3%), followed by those aged 0–4 (9,8%). For both male and females, the lowest number of deaths occurred among those aged 10–14. Crude measures of age specific death rates for the total population, males and females (unadjusted for incompleteness) are shown in Appendix D to provide an indication of the age pattern of mortality, taking into consideration population size for each category.

**Table 3.2: Number of deaths by age and sex, 2006\***

Age group	Male	Female
0-4	33 477	29 288
5-9	2 999	2 528
10-14	2 362	1 897
15-19	4 806	4 552
20-24	10 760	14 626
25-29	18 827	25 853
30-34	28 576	30 679
35-39	29 177	25 831
40-44	27 808	21 647
45-49	24 882	17 787
50-54	22 568	15 466
55-59	20 458	14 059
60-64	16 911	13 231
65-69	17 614	15 721
70-74	13 485	15 498
75-79	12 627	16 920
80-84	8 896	12 262
85-89	6 098	11 948
90+	3 531	8 670
Unspecified	814	341
<b>Total</b>	<b>306 676</b>	<b>298 804</b>

\*Excluding 1 704 deaths with unspecified sex.

**Figure 3.4: Percentage distribution of deaths by age and sex, 2006\***



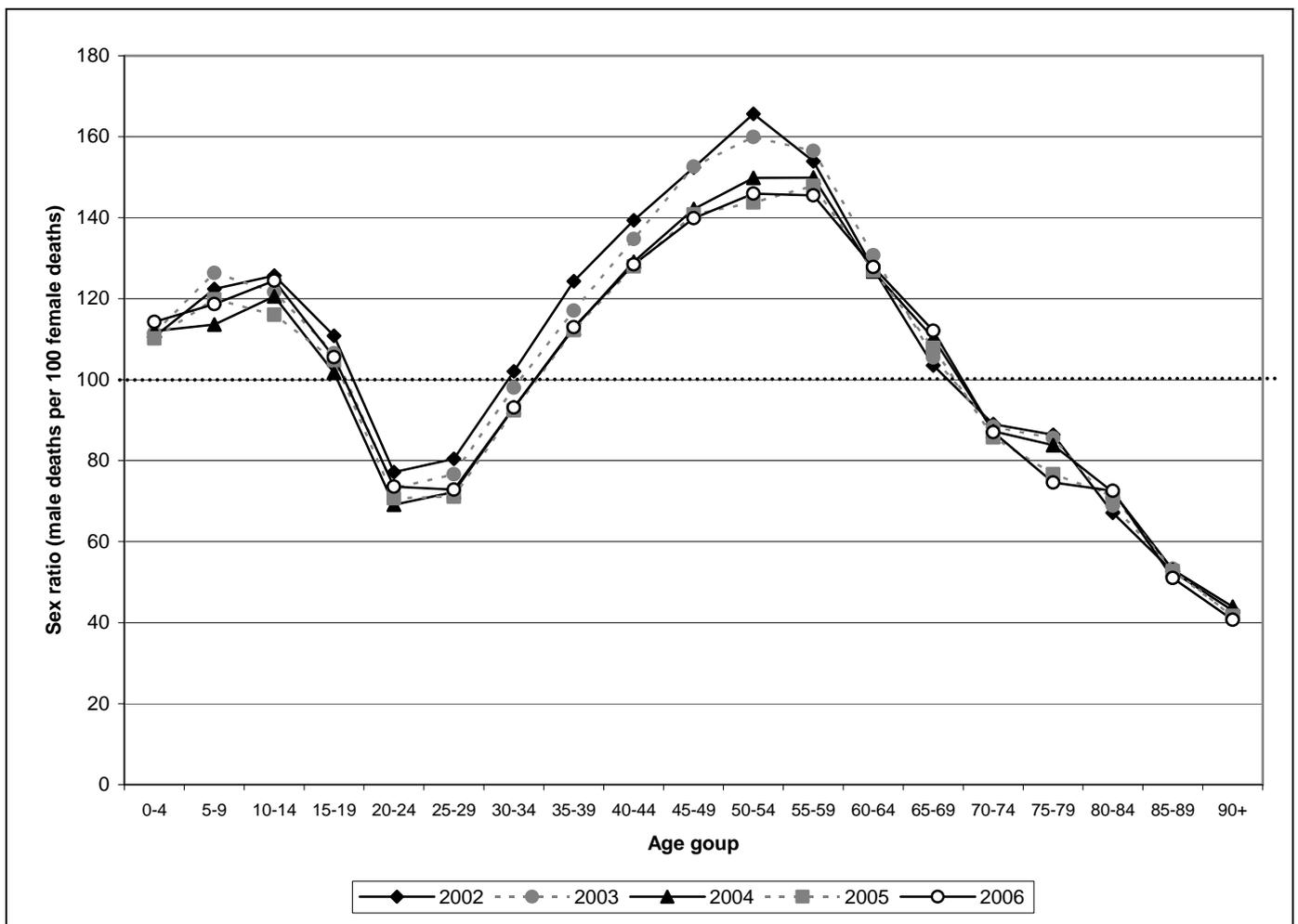
\*Excluding 2 859 deaths with unspecified age and unspecified sex

### Sex ratios by age

The sex ratio of deaths (the number of male deaths per 100 female deaths) is another measure that shows the relative number of male to female deaths. A ratio of 100 indicates that there is an equal number of male and female deaths, a ratio less than 100 indicates more female deaths and a ratio of more than 100 indicates more male deaths. The overall sex ratio of 2006 deaths is 103 male deaths per 100 female deaths, indicating slightly more male than female deaths.

Figure 3.5 shows the sex ratios of 2002–2006 deaths by age. Values above the dotted line indicate a higher number of male than female deaths while those below the dotted line indicate a higher number of female than male deaths. It is observed that the age pattern of sex ratios is similar during the period 2002–2006. Generally, there were more male than female deaths from age group 0–4 up to age group 15–19, after which there were more female than male deaths from age group 20–24 up to age group 30–34. Male deaths exceeded female deaths again from age group 35–39 up to age group 65–69, after which there were more female than male deaths. Sex ratios consistently declined with age from age group 55–59.

Figure 3.5: Sex ratios by age, 2002–2006\*



\* Excluding deaths with unspecified sex (1 928 deaths in 2002; 1 944 deaths in 2003; 1 601 deaths in 2004; 1 695 deaths in 2005 and 1 704 deaths in 2006).

### 3.5 Population group differences in mortality

Table 3.3 shows that compared to other population groups, black Africans constituted the highest percentage of registered deaths (62,7%) while Indian or Asians had the lowest percentage of deaths (1,3%). However, over a quarter (25,9%) of registered deaths in 2006 had population group classified as 'other', unspecified or unknown. As such, the results on population groups have to be treated with caution due to this high percentage of unknown, unspecified, or 'other' population groups.

**Table 3.3: Number and percentage distribution of deaths by population group, 2006**

Population group	Number	Percentage
Black African	380 886	62,7
Coloured	25 511	4,2
Indian or Asian	7 952	1,3
White	35 464	5,8
Other, Unknown or unspecified	157 371	25,9
<b>Total</b>	<b>607 184</b>	<b>100,0</b>

### 3.6 Marital status differences in mortality

The informant reporting a death had to indicate the marital status of the deceased. Table 3.4 shows that just less than half (49,3%) of the deceased were never married at the time of death. About a quarter (24,3%) of the deceased were married or living as married persons at the time of death while less than 10% were widowed or divorced.

**Table 3.4: Number and percentage distribution of deaths by marital status, 2006**

Marital status	Number	Percentage
Never married	299 335	49,3
Married or living as married	147 565	24,3
Widowed	50 252	8,3
Divorced	8 681	1,4
Unknown or unspecified	101 351	16,7
<b>Total</b>	<b>607 184</b>	<b>100,0</b>

### 3.7 Differences in mortality by place of death

Table 3.5 shows that the highest number of deaths occurred in hospitals (41,9%), followed by those which occurred at home (32,4%). About 2,5% of the deaths were declared dead on arrival at health facilities. The lowest percentage of deaths (1,8%) occurred in hospital emergency rooms or out-patient department.

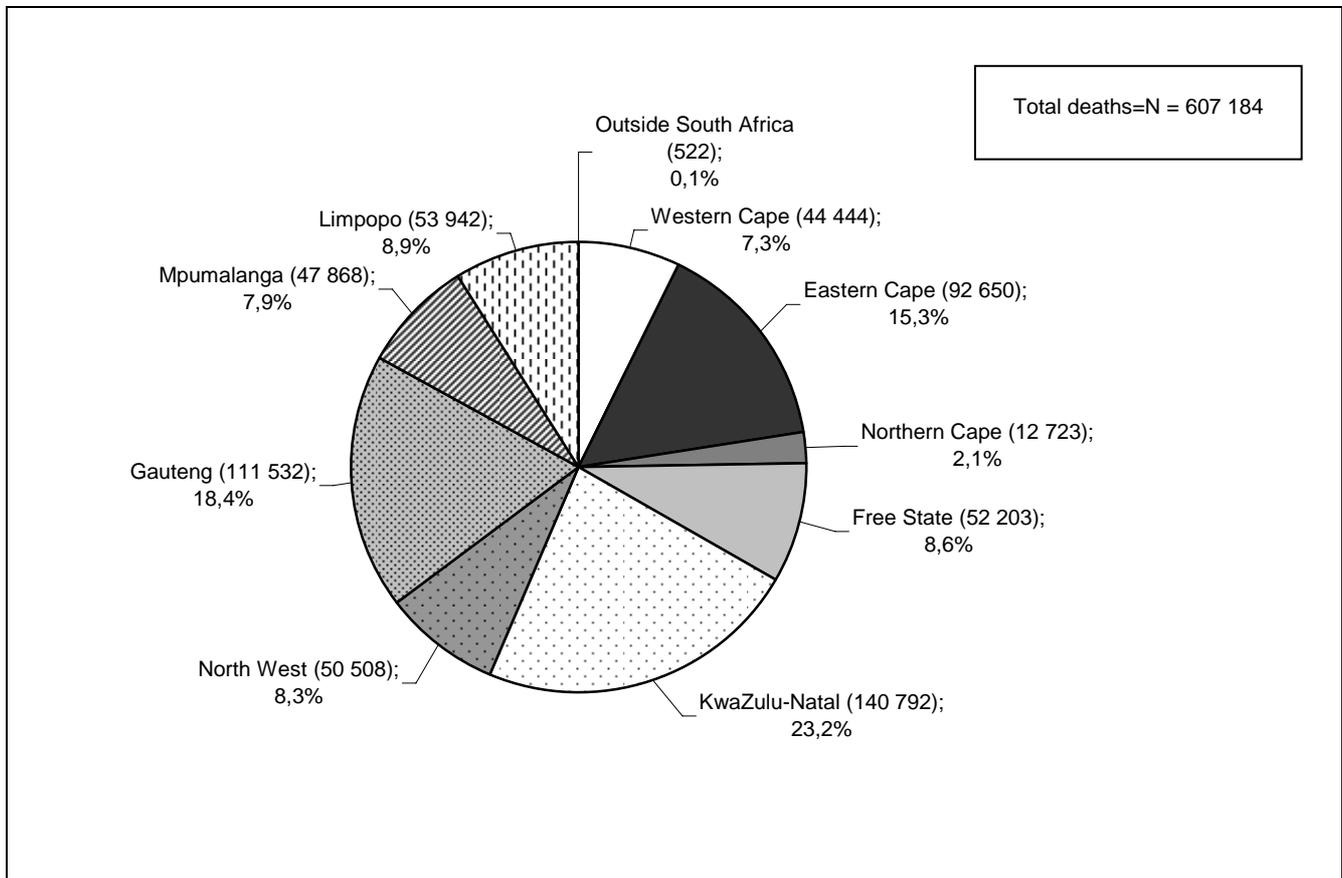
**Table 3.5: Number and percentage distribution of deaths by place of death, 2006**

Place of death	Number	Percentage
Hospital	254 612	41,9
Emergency room (ER) or outpatient department	10 698	1,8
Dead on arrival	15 092	2,5
Nursing home	12 613	2,1
Home	196 976	32,4
Other	25 636	4,2
Unknown or unspecified	91 557	15,1
<b>Total</b>	<b>607 184</b>	<b>100,0</b>

### 3.8 Provincial differences in mortality

This last subsection provides information on the distribution of deaths by province. It is observed from Figure 3.6 that nearly one quarter (23,2%) of the deaths occurred in KwaZulu–Natal, followed by Gauteng (18,4%) and Eastern Cape (15,3%). The lowest percentage of deaths occurred in Northern Cape (2,1%) and less than 1% of deaths occurred outside South Africa. It is important to note that the distribution of deaths by province to a large extent represents the distribution of the total population by province.

**Figure 3.6: Number and percentage distribution of deaths by province of death, 2006**



## 4. Causes of death in South Africa

### 4.1 Introduction

Information on causes of death for individual deaths (excluding stillbirths), which occurred in 2006 is presented in this section. Specifically, the section provides information on the number of causes of death recorded on the death notification forms. It then gives a breakdown of deaths according to the selected 19 main groups (chapters) of the classification of death and an age breakdown of the proportion of deaths due to natural and non-natural causes. This is followed by an analysis of natural deaths according to the leading underlying causes, using the ranking described in Section 2 of this release. This analysis is undertaken for the South African population as a whole and by sex, age and province.

In view of the concern in South Africa about levels of violence and deaths due to accidents, non-natural underlying causes of death are treated as a separate group. Non-natural causes of death comprise all deaths that were not attributable, or may not have been attributable to natural causes. In terms of the Inquests Act (Act No. 58 of 1959), these deaths are subject to medico-legal investigation. An autopsy must be performed to establish the cause of death, and an inquest is compulsory. The results of the inquest are then sent to the Department of Home Affairs, which issues the final death certificate.

The last subsection provides a comparison between underlying, immediate and contributing causes of death. This analysis gives an overview of the recorded instances of multiple causes of death.

Information on trends discussed in this section only pertains to the classification of deaths by whether the death was natural or non-natural. The information on specific causes of death is not used for trends analysis due to the changes in coding methodology for infant deaths as highlighted in Section 2.

### 4.2 Reported causes of death

Information on diseases, injuries or complications that caused death is provided on a death notification form when a death is registered at the Department of Home Affairs. Provision is made for one or more causes to be recorded on the form (see copy of the form in Appendix B). Table 4.1 provides information on the number of causes of death reported on each death notification form for deaths that occurred in 2006. About three in five (60,1%) death notification forms had one cause recorded on the form and just over a quarter (26,8%) had two causes recorded. Close to 1% (0,7%) had five or more causes recorded.

**Table 4.1: Distribution of death notification forms by the number of causes entered on the form, 2006**

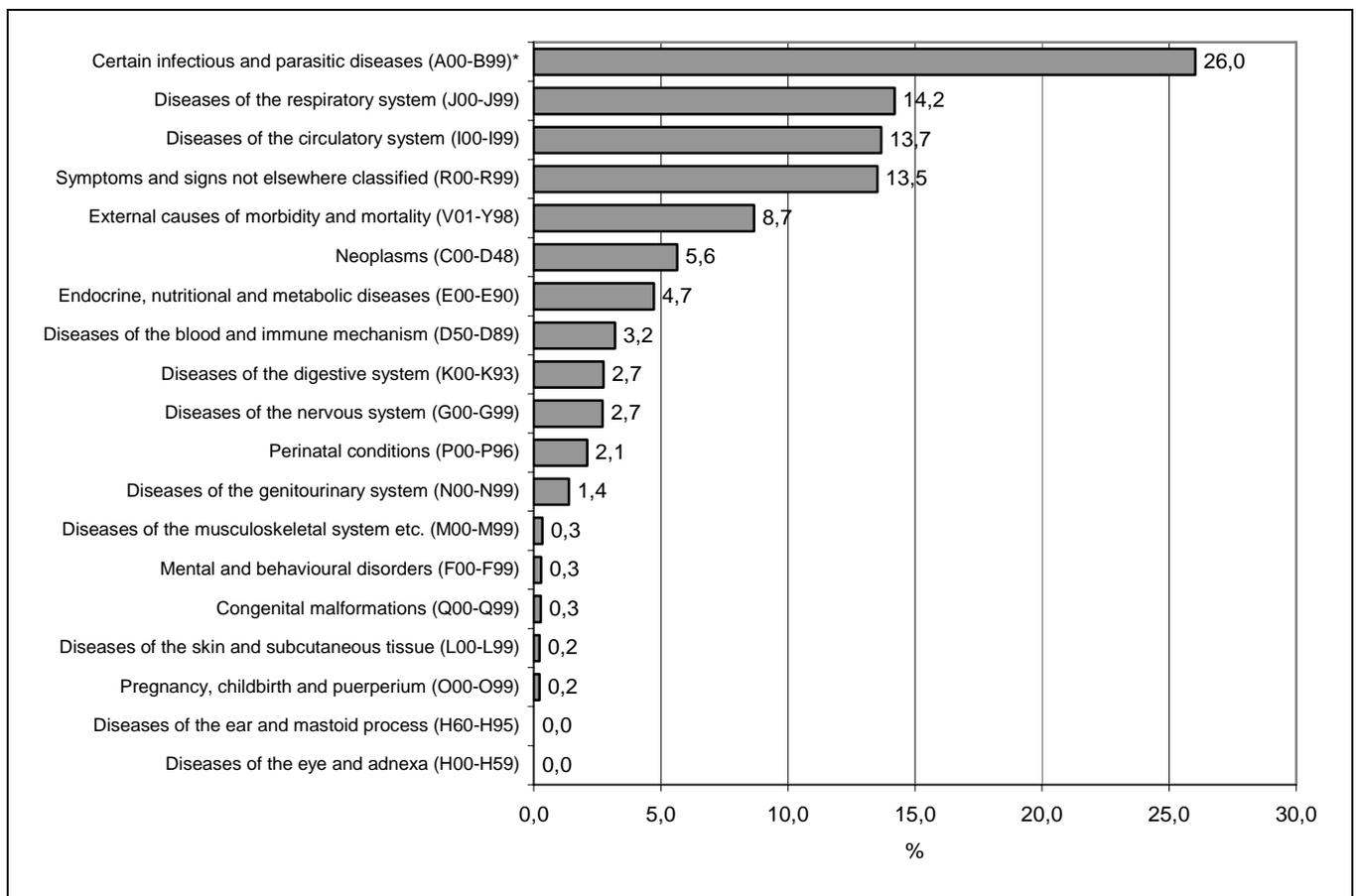
Number of reported causes of death	Number of death notification forms	Percentage
One cause	364 623	60,1
Two causes	162 990	26,8
Three causes	58 914	9,7
Four causes	16 572	2,7
Five or more causes	4 085	0,7
<b>Total</b>	<b>607 184</b>	<b>100,0</b>

### 4.3 Overview of the underlying causes of death

This subsection gives an overview of the underlying causes of death for 19 main groups (chapters) of classification of causes of death. Figure 4.1 shows these 19 groups ranked according to the most common cause of death. The top ranking main group of causes of death in 2006 was *certain infectious and parasitic diseases*, comprising just over a quarter (26,0%) of all deaths. It should be noted that this group also includes a total of 607 deaths due to *multidrug-resistant tuberculosis (MDR-TB)* and *extensively drug-resistant tuberculosis (XDR-TB)*.

The second most common main group of causes of death was *diseases of the respiratory system* (14,2%), followed by *diseases of the circulatory system* (13,7%). *Neoplasms* comprised 5,6% of all deaths, *perinatal conditions* contributed to 2,1% of all deaths, while *pregnancy, childbirth and puerperium* contributed to 0,2% of all deaths. Deaths due to *external causes of morbidity and mortality* comprised 8,7% of all deaths.

**Figure 4.1: Percentage distribution of deaths by main groups, 2006**



\*Including 604 deaths due to *MDR-TB* and three (3) deaths due to *XDR-TB*.

### 4.4 Natural and non-natural causes of death

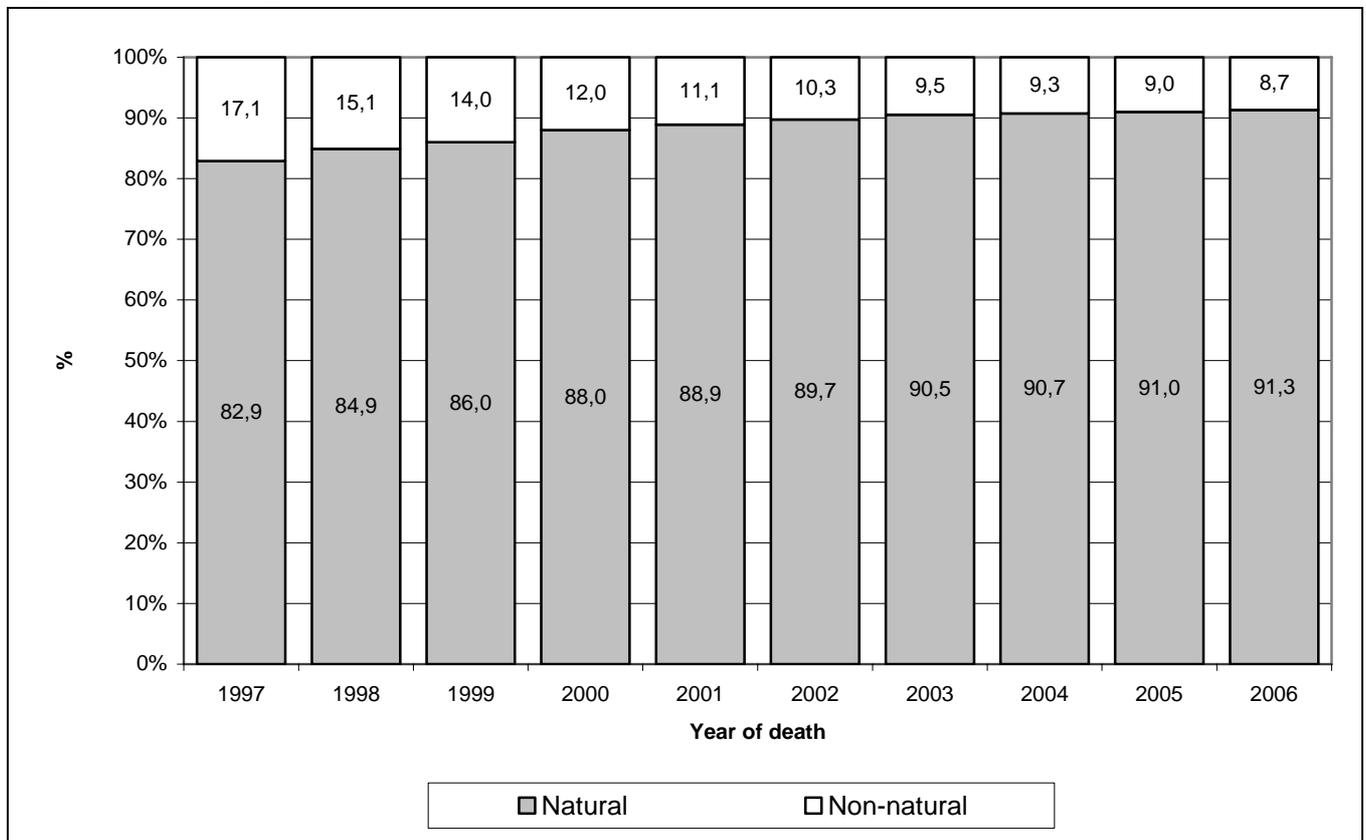
Table 4.2 and Figure 4.2 show natural and non-natural deaths recorded from 1997 to 2006. Throughout the years, the majority of deaths were natural deaths (ranging between 82,9% in 1997 to 91,3% in 2006). The percentage of deaths due to natural causes has consistently increased over time and vice versa for non-natural deaths. While the absolute number of natural deaths has increased steadily from 1997 (262 505) to 2006 (554 570), the number of non-natural deaths has more or less remained constant at between 50 000 and 55 000 deaths per year. Between 2005 and 2006, natural deaths increased by 2,7% while non-natural deaths decreased by 1,4%.

**Table 4.2: Number of natural and non-natural deaths, 1997–2006\***

Year of death	Natural	Non-natural	Total
1997	262 505	54 054	316 559
1998	310 063	55 046	365 109
1999	327 758	53 279	381 037
2000	365 118	49 650	414 768
2001	403 276	50 233	453 509
2002	448 765	51 317	500 082
2003	501 595	52 604	554 199
2004	519 644	52 976	572 620
2005	540 002	53 335	593 337
2006	554 570	52 614	607 184

\*Data for 1997–2005 updated to include late registrations processed in 2006.

**Figure 4.2: Percentage distribution of natural and non-natural causes of death, 2006\***



\*Data for 1997–2005 updated to include late registrations processed in 2007/8.

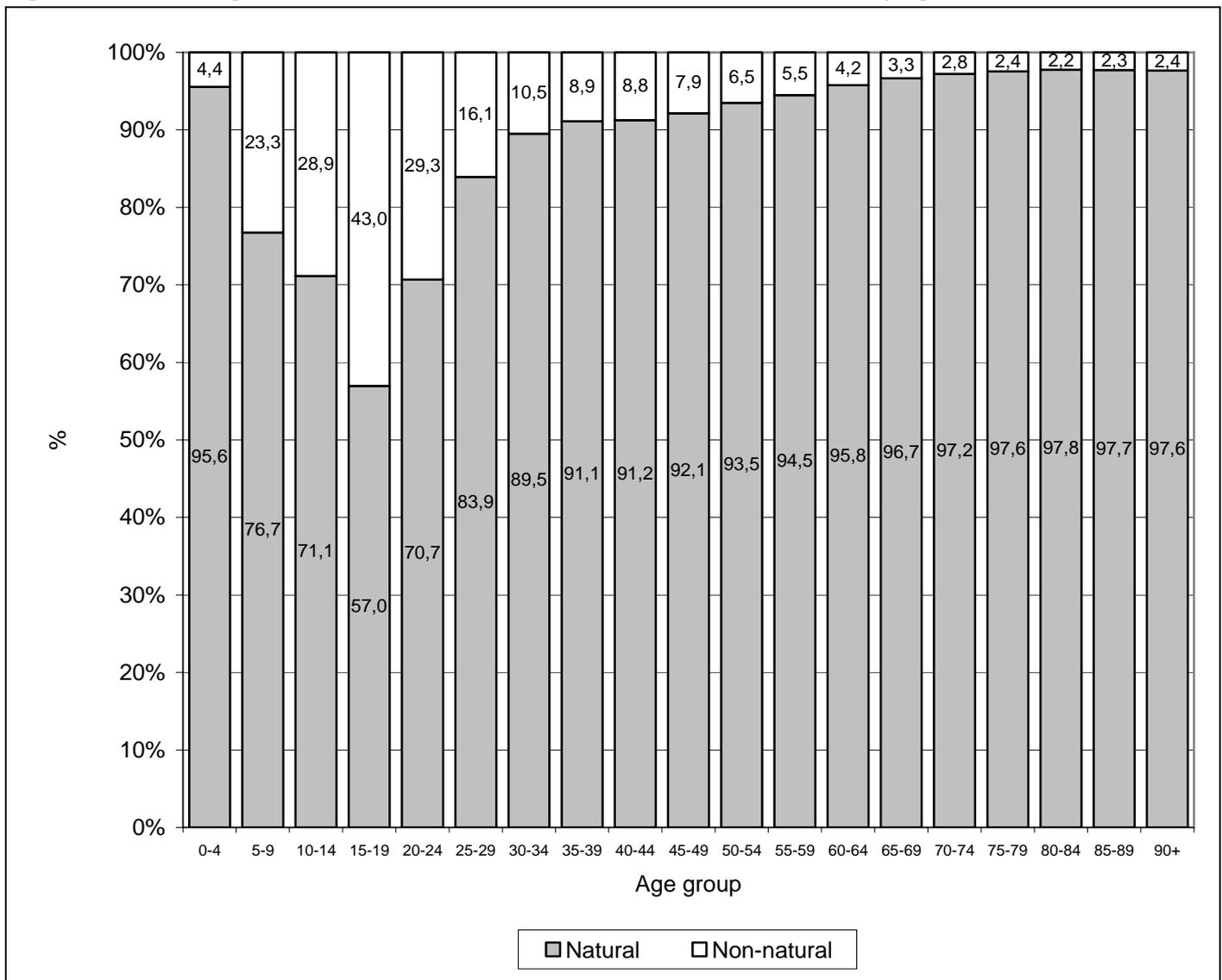
**Natural and non-natural causes of death by age**

Table 4.3 and Figure 4.3 show the distribution of deaths due to natural and non-natural causes of death classified by age group, for deaths that occurred in 2006. The highest proportion of non-natural deaths is observed among those aged 15–19, whereby over four in ten deaths (43,0%) were due to non–natural causes. Other ages with high proportions of deaths due to non-natural causes were age groups 5–9, 10–14 and 20–24 where more than 20% of the deaths in each of these age groups resulted from non–natural causes. Less than 3% of those in each of the age groups from 70–74 to 90 and older died due to non–natural causes.

**Table 4.3: Number of natural and non–natural causes of deaths by age, 2006**

Age group	Natural	Non–natural	Total
0–4	60 774	2 822	63 596
5–9	4 255	1 289	5 544
10–14	3 040	1 233	4 273
15–19	5 350	4 044	9 394
20–24	18 011	7 466	25 477
25–29	37 568	7 194	44 762
30–34	53 125	6 219	59 344
35–39	50 195	4 888	55 083
40–44	45 191	4 336	49 527
45–49	39 354	3 359	42 713
50–54	35 603	2 470	38 073
55–59	32 648	1 908	34 556
60–64	28 891	1 276	30 167
65–69	32 247	1 111	33 358
70–74	28 209	800	29 009
75–79	28 849	722	29 571
80–84	20 704	474	21 178
85–89	17 644	413	18 057
90+	11 921	288	12 209
Unspecified	991	302	1 293
<b>Total</b>	<b>554 570</b>	<b>52 614</b>	<b>607 184</b>

**Figure 4.3: Percentage distribution of natural and non-natural causes of death by age, 2006\***



\*Excluding 1 293 deaths with unspecified age.

### 4.5 Underlying natural causes of death

This subsection provides information on the ten leading underlying natural causes of death. The ten leading causes are identified by ranking the deaths by frequency among the causes that are eligible for ranking as described in Section 2. The top-ranking causes determine the leading natural underlying causes of death. The percentage distribution of the contribution of each of the ten leading causes is based on the total number of deaths for each category, including both natural and non-natural causes.

#### *Overall pattern of the leading underlying natural causes of death*

The ten leading underlying causes of death in South Africa in 2006 are shown in Table 4.4. The rankings of all the broad groups of causes of death (including non-natural causes) are shown in Appendix E, while the breakdown of individual causes for the broad groups that were among the ten leading causes is provided in Appendix F.

Table 4.4 shows that *tuberculosis* was the leading cause of death in 2006, accounting for 12,7% of all deaths. It should be noted that *tuberculosis* included 607 deaths due to *MDR-TB* and *XDR-TB*. *Influenza and pneumonia* was the second leading underlying cause of natural deaths (8,7%), followed by *intestinal infectious diseases*, (6,5%), *other forms of heart disease* (4,4%) and *cerebrovascular diseases* (4,2%). These first five leading causes of death accounted for over a third (36,4%) of all deaths. *Human immunodeficiency virus (HIV) disease* was the ninth leading cause of death, accounting for 2,4% of all deaths.

**Table 4.4: The ten leading underlying natural causes of death, 2006**

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	Rank	Number	%
Tuberculosis (A15-A19)*	1	77 009	12,7
Influenza and pneumonia (J10-J18)	2	52 791	8,7
Intestinal infectious diseases (A00-A09)	3	39 239	6,5
Other forms of heart disease (I30-I52)	4	26 628	4,4
Cerebrovascular diseases (I60-I69)	5	25 246	4,2
Diabetes mellitus (E10-E14)	6	19 549	3,2
Chronic lower respiratory diseases (J40-J47)	7	15 823	2,6
Certain disorders involving the immune mechanism (D80-D89)	8	15 736	2,6
Human immunodeficiency virus [HIV] disease (B20-B24)	9	14 783	2,4
Ischaemic heart diseases (I20-I25)	10	13 025	2,1
Other natural causes		254 741	42,0
Non-natural causes		52 614	8,7
<b>All causes</b>		<b>607 184</b>	<b>100,0</b>

\*Including 604 deaths due to *MDR-TB* and three (3) deaths due to *XDR-TB*.

**Leading underlying natural causes of death by sex**

The distribution of the ten leading underlying natural causes of death by sex is provided in Table 4.5. Nine of the ten leading causes were the same for both sexes, although with different rankings. However, the first five leading causes of death were similar in ranking for both sexes, as they were for all deaths presented in Table 4.4. It should also be noted that while the rankings may be the same, the contribution of each cause differs for each sex. For example, although *tuberculosis* was the leading underlying cause of death for males and for females, it accounted for 13,7% of male deaths and 11,7% of female deaths.

The main difference between the ten leading underlying natural causes of death for males and females is that while *ischaemic heart diseases* were among the ten leading cause of death for males, they were not among the ten leading causes of death for females. *Hypertensive diseases* were among the top ten underlying causes of death for females but not for males. Furthermore, *human immunodeficiency virus (HIV) disease* was the tenth leading cause of death for males (accounting for 2,2% of all male deaths), while it was the eighth leading cause of death among females (accounting for 2,6% of all female deaths).

**Table 4.5: The ten leading underlying natural causes of death for males and females, 2006\***

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	Males			Females		
	Rank	Number	%	Rank	Number	%
Tuberculosis (A15-A19)**	1	41 985	13,7	1	34 896	11,7
Influenza and pneumonia (J10-J18)	2	25 176	8,2	2	27 442	9,2
Intestinal infectious diseases (A00-A09)	3	17 827	5,8	3	21 261	7,1
Other forms of heart disease (I30-I52)	4	11 763	3,8	4	14 835	5,0
Cerebrovascular diseases (I60-I69)	5	10 474	3,4	5	14 745	4,9
Chronic lower respiratory diseases (J40-J47)	6	9 254	3,0	10	6 552	2,2
Diabetes mellitus (E10-E14)	7	7 620	2,5	6	11 912	4,0
Ischaemic heart diseases (I20-I25)	8	7 607	2,5	...	...	...
Certain disorders involving the immune mechanism (D80-D89)	9	6 967	2,3	7	8 738	2,9
Human immunodeficiency virus [HIV] disease (B20-B24)	10	6 854	2,2	8	7 893	2,6
Hypertensive diseases (I10-I15)	...	...	...	9	7 833	2,6
Other natural causes		121 289	39,5		130 083	43,5
Non-natural causes		39 860	13,0		12 614	4,2
<b>All causes</b>		<b>306 676</b>	<b>100,0</b>		<b>298 804</b>	<b>100,0</b>

\*Excluding 1 704 cases with unspecified sex      \*\*Including *MDR-TB* (353 for males and 251 for females) and *XDR-TB* (3 for females)  
 ... Category not in top ten leading underlying natural causes of death

**Leading underlying natural causes of death by age**

The ten leading natural causes of death classified by broad age groups (0–14, 15–49, 50–64 and 65 years and older) for 2006 are given in Table 4.6. The underlying natural causes of death that were common for all these age groups were *intestinal infectious diseases*, *influenza and pneumonia* and *tuberculosis*. However, the ranking of these causes differed by age. For example, *tuberculosis* ranked first for those aged 15–49 years and those aged 50–64 years (contributing 20,1% and 11,6% of all deaths, respectively), but ranked ninth for those 65 years and older (contributing 3,2% of all deaths).

The leading underlying cause of death for those aged 0–14 years was *intestinal infectious diseases*, (accounting to almost one fifth of all deaths to children aged less than 15 years), followed by *influenza and pneumonia* at 14,2% of deaths in this age group. Amongst those aged 15–49 and 50–64, *tuberculosis* and *influenza and pneumonia* were the first two leading causes of death. It is worth noting that the highest number of deaths due to *MDR-TB* and *XDR-TB* (84,3%) was among those aged 15–49. *Cerebrovascular diseases* and *other forms of heart disease* were the first two leading causes of death for those aged 65 years and older. Although the rankings differ, the ten leading causes of death for those aged 50–64 were similar to those aged 65 years and older.

On one hand, *human immunodeficiency virus [HIV] disease* and *certain disorders involving the immune mechanism* were among the ten leading causes of death only for those aged 0–14 and those aged 15–49. On the other hand, *diabetes mellitus*, *chronic lower respiratory diseases*, *ischaemic heart diseases*, *hypertensive diseases* and *malignant neoplasms of digestive organs* were among the ten leading causes of death only for those aged 50–64 years and those aged 65 years and older. *Respiratory and cardiovascular disorders specific to the perinatal period*, *malnutrition*, *disorders related to length of gestation and foetal growth*, *infections specific to the perinatal period* and *other disorders originating in the perinatal period* were among the top ten causes of death only for those aged 0–14 while *other viral diseases* were among the ten leading causes of death only for those aged 15–49.

**Table 4.6: The ten leading underlying natural causes of death for each age group, 2006\***

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	0–14			15–49			50–64			65+		
	Rank	Number	%	Rank	Number	%	Rank	Number	%	Rank	Number	%
Intestinal infectious diseases (A00-A09)	1	14 366	19,6	3	17 810	6,2	8	3 727	3,6	10	3 258	2,3
Influenza and pneumonia (J10-J18)	2	10 455	14,2	2	28 232	9,9	2	6 600	6,4	5	7 410	5,2
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	3	6 465	8,8	...	...	...	...	...	...	...	...	...
Tuberculosis (A15-A19)**	4	2 637	3,6	1	57 660	20,1	1	11 888	11,6	9	4 594	3,2
Malnutrition (E40-E46)	5	2 186	3,0	...	...	...	...	...	...	...	...	...
Disorders related to length of gestation and foetal growth (P05-P08)	6	1 941	2,6	...	...	...	...	...	...	...	...	...
Certain disorders involving the immune mechanism (D80-D89)	7	1 524	2,1	4	12 295	4,3	...	...	...	...	...	...
Infections specific to the perinatal period (P35-P39)	8	1 407	1,9	...	...	...	...	...	...	...	...	...
Human immunodeficiency virus [HIV] disease (B20-B24)	9	1 235	1,7	5	11 976	4,2	...	...	...	...	...	...
Protozoal diseases (B50-B64)	10	1 208	1,6	...	...	...	...	...	...	...	...	...
Other viral diseases (B25-B34)	...	...	...	6	8 927	3,1	...	...	...	...	...	...
Inflammatory diseases of the central nervous system (G00-G09)	...	...	...	7	6 684	2,3	...	...	...	...	...	...
Other forms of heart disease (I30-I52)	...	...	...	8	6 610	2,3	5	5 623	5,5	2	13 729	9,6
Cerebrovascular diseases (I60-I69)	...	...	...	9	4 167	1,5	3	6 215	6,0	1	14 730	10,3
Other acute lower respiratory infections (J20-J22)	...	...	...	10	3 678	1,3	...	...	...	...	...	...
Diabetes mellitus (E10-E14)	...	...	...	...	...	...	4	6 205	6,0	3	10 440	7,3
Chronic lower respiratory diseases (J40-J47)	...	...	...	...	...	...	6	4 536	4,4	6	7 408	5,2
Ischaemic heart diseases (I20-I25)	...	...	...	...	...	...	7	3 837	3,7	4	7 507	5,2
Hypertensive diseases (I10-I15)	...	...	...	...	...	...	9	3 412	3,3	7	7 353	5,1
Malignant neoplasms of digestive organs (C15-C26)	...	...	...	...	...	...	10	3 164	3,1	8	4 706	3,3
Other natural causes	...	24 655	33,6	...	90 755	31,7	...	41 935	40,8	...	58 439	40,8
Non-natural causes	...	5 334	7,3	...	37 506	13,1	...	5 654	5,5	...	3 808	2,7
<b>All causes</b>	...	<b>73 413</b>	<b>100,0</b>	...	<b>286 300</b>	<b>100,0</b>	...	<b>102 796</b>	<b>100,0</b>	...	<b>143 382</b>	<b>100,0</b>

\*Excluding 1 293 cases with unspecified age

\*\*Including deaths due to *MDR-TB* (0–14 = 16; 15–49 = 509; 50–64 = 66; 65+ = 12) and *XDR-TB* (; 15–49 = 2; 65+ = 1)

... Category not in top ten leading underlying natural causes of death

### ***Leading underlying natural causes of infant and child mortality***

Table 4.7 shows the differences in the ten leading causes of death for infants (aged below one year), those aged 1–4 years; and those aged 15–24 years for deaths that occurred in 2006. The 15–24 year age group has been included as suggested in the ICD–10 recommendations for purposes of international comparison. Information on neonatal and post–neonatal deaths is not discussed in this subsection but is provided in Appendix G.

Three underlying natural causes of death were common for all of these three age groups: *intestinal infectious diseases, influenza and pneumonia* and *certain disorders involving the immune mechanism*. Almost one in four (24,7%) and one in five (20,1%) of deaths occurring to children aged 1–4 years and less than one year, respectively, were due to *intestinal infectious diseases*. Most deaths among those aged 15–24 years were due to *tuberculosis*, accounting for almost 15% of all deaths in this age group.

The causes of death that were among the leading causes only for those aged less than one year were: *respiratory and cardiovascular disorders specific to the perinatal period, disorders related to the length of gestation and foetal growth, infections specific to the perinatal period* and *other disorders originating in the perinatal period*. *Non-infective enteritis and colitis* were among the ten leading causes of death only for those aged 1–4 years while *other forms of heart disease, episodic and paroxysmal disorders* and *other acute lower respiratory infections* were among the ten leading causes only for those aged 15–24.

*Malnutrition* was the third leading cause of death for those aged 1–4 years and the eighth leading cause for those aged less than one year while *human immunodeficiency virus [HIV] disease* ranked sixth and fifth for those aged 1–4 years and 15–24, respectively. *Human immunodeficiency virus [HIV] disease* was not among the ten leading causes of death for those aged less than one year.

**Table 4.7: The ten leading underlying natural causes of death for selected age groups, 2006**

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	Less than 1 year			1–4 years			15–24 years		
	Rank	Number	%	Rank	Number	%	Rank	Number	%
Intestinal infectious diseases (A00-A09)	1	9 579	20,1	1	3 928	24,7	3	1 644	4,7
Influenza and pneumonia (J10-J18)	2	7 525	15,8	2	2 108	13,3	2	2 633	7,6
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	3	6 424	13,5	...	...	...	...	...	...
Disorders related to length of gestation and foetal growth (P05-P08)	4	1 929	4,0	...	...	...	...	...	...
Infections specific to the perinatal period (P35-P39)	5	1 402	2,9	...	...	...	...	...	...
Other disorders originating in the perinatal period (P90-P96)	6	1 195	2,5	...	...	...	...	...	...
Protozoal diseases (B50-B64)	7	1 003	2,1	...	...	...	...	...	...
Malnutrition (E40-E46)	8	992	2,1	3	1 129	7,1	...	...	...
Certain disorders involving the immune mechanism (D80-D89)	9	863	1,8	5	399	2,5	4	1 097	3,1
Other acute lower respiratory infections (J20-J22)	10	851	1,8	9	220	1,4	...	...	...
Tuberculosis (A15-A19)*	...	...	...	4	938	5,9	1	5 179	14,9
Human immunodeficiency virus [HIV] disease (B20-B24)	...	...	...	6	348	2,2	5	1 041	3,0
Other viral diseases (B25-B34)	...	...	...	7	327	2,1	7	795	2,3
Inflammatory diseases of the central nervous system (G00-G09)	...	...	...	8	254	1,6	6	855	2,5
Noninfective enteritis and colitis (K50-K52)	...	...	...	10	176	1,1	...	...	...
Other forms of heart disease (I30-I52)	...	...	...	...	...	...	8	622	1,8
Episodic and paroxysmal disorders (G40-G47)	...	...	...	...	...	...	9	388	1,1
Other acute lower respiratory infections (J20-J22)	...	...	...	...	...	...	10	370	1,1
Other natural causes		14 648	30,7		4 536	28,5		8 737	25,1
Non-natural causes		1 292	2,7		1 530	9,6		11 510	33,0
<b>All causes</b>		<b>47 703</b>	<b>100,0</b>		<b>15 893</b>	<b>100,0</b>		<b>34 871</b>	<b>100,0</b>

\*Including deaths due to *MDR-TB* (1–4 = 2; 15–24 = 54) ... Category not in top ten leading underlying natural causes of death

### ***Leading underlying natural causes of death by province***

Table 4.8 shows the provincial differences in the ranking of the ten leading underlying causes of death for 2006. With the exception of Free State and Limpopo, *tuberculosis* was the leading cause of death in all provinces. In Free State and Limpopo, the leading cause of death was *influenza and pneumonia*. The contribution of *tuberculosis* on overall number of deaths in the provinces was higher in KwaZulu-Natal, where 17,1% of all deaths in this province were due to *tuberculosis*. It is worth noting that the highest number of deaths in which *MDR-TB* and *XDR-TB* were the underlying cause of death was recorded in KwaZulu-Natal.

The causes of death that were common for all the nine provinces were *tuberculosis*, *diabetes mellitus*, *cerebrovascular diseases*, *other forms of heart disease* and *influenza and pneumonia*. The rankings of these causes differed widely between provinces. For example, while *influenza and pneumonia* was the first leading cause of death in Free State, it was the tenth leading cause in Western Cape.

Western Cape was the only province where *malignant neoplasms of digestive organs* and *malignant neoplasms of respiratory and intrathoracic organs* were among the ten leading underlying causes of death. Furthermore, it was only in KwaZulu-Natal where *inflammatory diseases of the central nervous system* was among the ten leading causes of death and only in Limpopo where *renal failure* was listed among the top ten leading causes of death. However, *human immunodeficiency virus [HIV] disease* was among the ten leading causes of death in all provinces except in Limpopo, and *intestinal infectious diseases* were also among the ten leading causes of death in all provinces, except in Western Cape.

**Table 4.8: The ten leading underlying natural causes of death in each province, 2006\***

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	Western Cape			Eastern Cape			Northern Cape			Free State			KwaZulu-Natal			North West			Gauteng			Mpumalanga			Limpopo			
	**	N	%	**	N	%	**	N	%	**	N	%	**	N	%	**	N	%	**	N	%	**	N	%	**	N	%	
Tuberculosis (A15-A19)***	1	4 061	9,1	1	12 412	13,4	1	1 684	13,2	2	6 354	12,2	1	24 139	17,1	1	6 086	12,0	1	10 773	9,7	1	6 533	13,6	3	4 918	9,1	
Ischaemic heart diseases (I20-I25)	2	2 843	6,4	...	...	...	8	424	3,3	...	...	...	9	2 845	2,0	...	...	...	7	3 092	2,8	...	...	...	...	...	...	
Diabetes mellitus (E10-E14)	3	2 547	5,7	7	2 679	2,9	9	371	2,9	7	1 196	2,3	6	5 088	3,6	9	1 180	2,3	6	3 471	3,1	7	1 427	3,0	6	1 576	2,9	
Cerebrovascular diseases (I60-I69)	4	2 383	5,4	5	3 611	3,9	3	683	5,4	6	1 894	3,6	4	6 437	4,6	5	1 875	3,7	5	3 988	3,6	6	2 159	4,5	5	2 201	4,1	
Chronic lower respiratory diseases (J40-J47)	5	1 878	4,2	4	3 906	4,2	4	576	4,5	8	1 150	2,2	...	...	...	8	1 231	2,4	...	...	...	9	1 082	2,3	9	943	1,7	
Human immunodeficiency virus [HIV] disease (B20-B24)	6	1 709	3,8	8	2 412	2,6	10	327	2,6	10	758	1,5	7	3 944	2,8	10	1 095	2,2	8	3 032	2,7	8	1 093	2,3	...	...	...	
Malignant neoplasms of digestive organs (C15-C26)	7	1 708	3,8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other forms of heart disease (I30-I52)	8	1 632	3,7	6	3 392	3,7	6	530	4,2	4	2 471	4,7	5	5 357	3,8	4	3 148	6,2	3	5 573	5,0	5	2 220	4,6	4	2 288	4,2	
Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	9	1 521	3,4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Influenza and pneumonia (J10-J18)	10	1 154	2,6	2	4 912	5,3	2	809	6,4	1	7 861	15,1	3	10 061	7,1	2	5 981	11,8	2	10 249	9,2	2	5 224	10,9	1	6 518	12,1	
Intestinal infectious diseases (A00-A09)	...	...	...	3	4 213	4,5	5	558	4,4	3	4 100	7,9	2	10 367	7,4	3	3 826	7,6	4	5 542	5,0	3	4 442	9,3	2	5 500	10,2	
Certain disorders involving the immune mechanism (D80-D89)	...	...	...	9	2 254	2,4	7	465	3,7	5	2 039	3,9	...	...	...	6	1 545	3,1	9	2 817	2,5	4	2 313	4,8	8	1 222	2,3	
Other viral diseases (B25-B34)	...	...	...	10	2 092	2,3	...	...	...	...	...	...	8	3 113	2,2	...	...	...	10	2 539	2,3	...	...	...	...	...	...	
Hypertensive diseases (I10-I15)	...	...	...	...	...	...	...	...	...	9	1 118	2,1	...	...	...	7	1 426	2,8	...	...	...	10	1 056	2,2	7	1 248	2,3	
Inflammatory diseases of the central nervous system (G00-G09)	...	...	...	...	...	...	...	...	...	...	...	...	10	2 684	1,9	...	...	...	...	...	...	...	...	...	...	...	...	...
Renal failure (N17-N19)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	823	1,5	
Other natural causes	...	16 837	37,9	...	42 467	45,8	...	5 074	39,9	...	19 960	38,2	...	55 072	39,1	...	19 786	39,2	...	49 225	44,1	...	16 638	34,8	...	23 077	42,8	
Non-natural causes	...	6 171	13,9	...	8 300	9,0	...	1 222	9,6	...	3 302	6,3	...	11 685	8,3	...	3 329	6,6	...	11 231	10,1	...	3 681	7,7	...	3 628	6,7	
<b>All causes</b>	...	<b>44 444</b>	<b>100,0</b>	...	<b>92 650</b>	<b>100,0</b>	...	<b>12 723</b>	<b>100,0</b>	...	<b>52 203</b>	<b>100,0</b>	...	<b>140 792</b>	<b>100,0</b>	...	<b>50 508</b>	<b>100,0</b>	...	<b>111 532</b>	<b>100,0</b>	...	<b>47 868</b>	<b>100,0</b>	...	<b>53 942</b>	<b>100,0</b>	

\*Excluding 522 deaths that took place outside South Africa \*\*Rank \*\*\*Including MDR-TB (Western Cape = 105; Eastern Cape = 63; Northern Cape = 42; Free State = 23; KwaZulu-Natal = 220; North West = 31; Gauteng = 88; Mpumalanga = 17; Limpopo = 15) and XDR-RB (KwaZulu-Natal = 2; Limpopo = 1) ... Category not in top ten leading underlying natural causes of death

## 4.6 Non-natural causes of death

This subsection presents statistics on non-natural causes of death, which represented 8,7% of all deaths in 2006. When completing death notification forms, medical practitioners are expected to specify whether the deceased died from natural or non-natural causes. In addition, information on specific causes of death provided on the form, and the resulting ICD-10 code, can be used to determine whether the death was due to natural or non-natural causes. All external causes of morbidity and mortality (codes V01 up to Y98) are treated as non-natural causes of death. This release uses the specified cause of death and the corresponding ICD-10 code to classify a death as natural or non-natural.

It should be noted that all broad groups are reported in this sub-section, not just the ten leading underlying causes of death as provided for natural causes. In addition, the percentages calculated for each cause are based on all non-natural deaths, not all deaths (natural and non-natural) as was the case in the analysis of natural causes of death.

Table 4.9 shows the categories of non-natural causes and the associated number of deaths. It is observed that non-natural causes of death resulted mainly from *events of undetermined intent*, representing about two-thirds (66,8%) of all non-natural deaths. The second most common cause of non-natural deaths was *transport accidents* (10,8%), followed by *assault* (10,2%). *Intentional self-harm* was the underlying cause of death in about 1% of non-natural deaths.

**Table 4.9: Underlying non-natural causes of death, 2006**

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	Number	%
Event of undetermined intent (Y10-Y34)	35 133	66,8
Transport accidents (V01-V99)	5 683	10,8
Assault (X85-Y09)	5 375	10,2
Other external causes of accidental injury (W00-X59)	3 947	7,5
Complications of medical and surgical care (Y40-Y84)*	1 871	3,6
Intentional self-harm (X60-X84)	517	1,0
Sequelae of external causes of morbidity and mortality (Y85-Y89)	88	0,2
<b>Total</b>	<b>52 614</b>	<b>100,0</b>

\*Including mine accidents, circumcision and accidents in sports

Due to a high proportion of deaths resulting from *events of undetermined intent*, it is important to show the specific causes of death that comprise this category for further understanding of the specific events captured in this grouping (see Table 4.10). It is observed that almost half (49,1%) of *events of undetermined intent* resulted from *unspecified events*, which is 2,8% of all deaths. Among those that were specified, a relatively large proportion of deaths due to *events of undetermined intent* resulted from *other and unspecified firearm discharge* (15,5%); *hanging, strangulation and suffocation* (8,7%); *contact with blunt object* (8,2%) and *exposure to smoke, fires and flames* (6,4%).

**Table 4.10: Events of undetermined intent, 2006**

<b>Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)</b>		<b>Number</b>	<b>%</b>
Y10	Poisoning by and exposure to non-opioid analgesics, antipyretics and antirheumatics	6	0,0
Y11	Poisoning by and exposure to anti-epileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified	12	0,0
Y12	Poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified	5	0,0
Y13	Poisoning by and exposure to other drugs acting on the autonomic nervous system	0	0,0
Y14	Poisoning by and exposure to other and unspecified drugs, medicaments and biological substances	165	0,5
Y15	Poisoning by and exposure to alcohol	44	0,1
Y16	Poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours	13	0,0
Y17	Poisoning by and exposure to other gases and vapours	257	0,7
Y18	Poisoning by and exposure to pesticides	192	0,5
Y19	Poisoning by and exposure to other and unspecified chemicals and noxious substances	458	1,3
Y20	Hanging, strangulation and suffocation	3 059	8,7
Y21	Drowning and submersion	1 376	3,9
Y22	Handgun discharge	2	0,0
Y23	Rifle, shotgun and larger firearm discharge	20	0,1
Y24	Other and unspecified firearm discharge	5 457	15,5
Y25	Contact with explosive material	6	0,0
Y26	Exposure to smoke, fire and flames	2 263	6,4
Y27	Contact with steam, hot vapours and hot objects	0	0,0
Y28	Contact with sharp object	1 635	4,7
Y29	Contact with blunt object	2 884	8,2
Y30	Falling, jumping or pushed from a high place	13	0,0
Y31	Falling, lying or running before or into moving object	15	0,0
Y32	Crashing of motor vehicle	5	0,0
Y33	Other specified events	12	0,0
Y34	Unspecified event	17 234	49,1
<b>Total</b>		<b>35 128</b>	<b>35 133</b>

### ***Non-natural causes of death by sex and age groups***

This subsection reports on the distribution of non-natural causes of death by sex and broad age groups (0–14, 15–49, 50–64 and 65 and older) for deaths that occurred in 2006. This information is shown in Table 4.11. While the distribution of non-natural deaths includes *event of undermined intent*, this category is not included in the discussions due to a large percentage of deaths of unspecified intent. It should also be noted that the percentages for both sexes may not be similar to the one presented earlier as the deaths that did not have information on age are excluded in this subsection.

The overall pattern shows that, regardless of age and sex, the majority of deaths were natural, although the magnitude differs by age and sex. It is observed that compared to females, males had a higher proportion of deaths due to non-natural deaths (13,0% for males and 4,2% for females). Furthermore, the age group mostly affected by non-natural causes for males was age group 15–49, whereby as much as 20,9% of the deaths in this age group were due to non-natural causes. For the females, the age group mostly affected by non-natural causes was 0–14, affecting 6,4% of all deaths.

The most common causes of non-natural death for males were *assault* and *transport accidents*, accounting for just over 10% of deaths for each cause. For the female deaths, the most common causes of non-natural deaths were *transport accidents* (12,7%) and *other external causes of accidental injury* (11,6%). *Assault* accounted for 5,5% of non-natural female deaths, which is about half of the percentage of male deaths due to this cause. For each of the sexes, *intentional self-harm* and *sequelae of external causes of morbidity and mortality* were uncommon.

Considering the differences by age group, it is observed that among those aged 0–14 years, *other external causes of accidental injury* and *complications of medical and surgical care* were the most common cause of non-natural deaths, regardless of sex. The next common cause of non-natural deaths for this age group was *transport accidents*. Among those aged 15–49, *assault* and *transport accidents* ranked higher for both sexes, although *assault* ranked highest for males and *transport accidents* ranked highest for females. *Assault* accounted for 13,9% of non-natural male deaths, while it accounted for 7,4% of non-natural female deaths. About 13% of non-natural female deaths were due to *transport accidents* while 9,9% of male deaths were due to this cause.

*Transport accidents* was the most common cause of non-natural deaths for those aged 50–64, regardless of the sex of the deceased. *Other external causes of accidental injury* were most common among those aged 65 and older, particularly for the females, where this cause accounted for almost one-third (31,4%) of non-natural deaths.

**Table 4.11: Underlying non-natural causes of death by age group and sex, 2006**

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	Number					Percentage				
	0-14	15-49	50-64	65+	Total	0-14	15-49	50-64	65+	Total
<b>Both sexes*</b>										
Event of undetermined intent (Y10-Y34)	2 879	26 079	3 899	2 056	34 913	53,9	69,5	69,0	54,0	66,7
Transport accidents (V01-V99)	681	3 929	703	342	5 655	12,7	10,5	12,4	9,0	10,8
Assault (X85-Y09)	96	4 755	344	147	5 342	1,8	12,7	6,1	3,9	10,2
Other external causes of accidental injury (W00-X59)	839	1 719	435	936	3 929	15,7	4,6	7,7	24,6	7,5
Complications of medical and surgical care (Y40-Y84)****	826	561	211	270	1 868	15,5	1,5	3,7	7,1	3,6
Intentional self-harm (X60-X84)	18	406	49	44	517	0,3	1,1	0,9	1,2	1,0
Sequelae of external causes of morbidity and mortality (Y85-Y89)	5	57	13	13	88	0,1	0,2	0,2	0,3	0,2
Subtotal	5 344	37 506	5 654	3 808	52 312	100,0	100,0	100,0	100,0	100,0
Non-natural causes	5 344	37 506	5 654	3 808	52 312	7,3	13,1	5,5	2,7	8,6
Natural causes	68 069	248 794	97 142	139 574	553 579	92,7	86,9	94,5	97,3	91,4
All causes	73 413	286 300	102 796	143 382	605 891	100,0	100,0	100,0	100,0	100,0
<b>Males**</b>										
Event of undetermined intent (Y10-Y34)	1 767	21 078	2 992	1 159	26 996	56,2	69,6	71,0	57,9	68,1
Transport accidents (V01-V99)	374	2 985	486	200	4 045	11,9	9,9	11,5	10,0	10,2
Assault (X85-Y09)	49	4 213	286	85	4 633	1,6	13,9	6,8	4,2	11,7
Other external causes of accidental injury (W00-X59)	504	1 299	287	371	2 461	16,0	4,3	6,8	18,5	6,2
Complications of medical and surgical care (Y40-Y84)****	435	309	114	145	1 003	13,8	1,0	2,7	7,2	2,5
Intentional self-harm (X60-X84)	10	333	41	34	418	0,3	1,1	1,0	1,7	1,1
Sequelae of external causes of morbidity and mortality (Y85-Y89)	3	51	11	7	72	0,1	0,2	0,3	0,3	0,2
Subtotal	3 142	30 268	4 217	2 001	39 628	100,0	100,0	100,0	100,0	100,0
Non-natural causes	3 142	30 268	4 217	2 001	39 628	8,1	20,9	7,0	3,2	13,0
Natural causes	35 696	114 568	55 720	60 250	266 234	91,9	79,1	93,0	96,8	87,0
Total	38 838	144 836	59 937	62 251	305 862	100,0	100,0	100,0	100,0	100,0
<b>Females***</b>										
Event of undetermined intent (Y10-Y34)	1 099	4 956	904	892	7 851	50,6	69,1	63,2	49,5	62,4
Transport accidents (V01-V99)	305	940	216	142	1 603	14,0	13,1	15,1	7,9	12,7
Assault (X85-Y09)	46	531	58	61	696	2,1	7,4	4,1	3,4	5,5
Other external causes of accidental injury (W00-X59)	330	416	146	565	1 457	15,2	5,8	10,2	31,4	11,6
Complications of medical and surgical care (Y40-Y84)****	381	251	97	125	854	17,5	3,5	6,8	6,9	6,8
Intentional self-harm (X60-X84)	8	72	8	10	98	0,4	1,0	0,6	0,6	0,8
Sequelae of external causes of morbidity and mortality (Y85-Y89)	2	6	2	6	16	0,1	0,1	0,1	0,3	0,1
Subtotal	2 171	7 172	1 431	1 801	12 575	100,0	100,0	100,0	100,0	100,0
Non-natural causes	2 171	7 172	1 431	1 801	12 575	6,4	5,1	3,3	2,2	4,2
Natural causes	31 542	133 803	41 325	79 218	285 888	93,6	94,9	96,7	97,8	95,8
Total	33 713	140 975	42 756	81 019	298 463	100,0	100,0	100,0	100,0	100,0

\*Excluding 1 293 cases with unspecified age

\*\*Excluding 814 cases with unspecified age

\*\*\*Excluding 341 cases with unspecified age

\*\*\*\*Including mine accidents, circumcision and accidents in sports

### ***Non-natural causes of death by province***

Table 4.12 shows the distribution of underlying non-natural causes of death by province for 2006. It is observed that Western Cape and Gauteng had the highest proportion of deaths due to non-natural causes. Nearly 14% and 10% of deaths in these provinces, respectively, were attributed to non-natural causes. The lowest percentages of deaths due to non-natural causes were observed in Free State (6,3%), North West (6,6%) and Limpopo (6,7%).

In Western Cape, Eastern Cape, Northern Cape, Free State and KwaZulu-Natal, the most common cause of non-natural deaths was *assault*, ranging from 9,7% in KwaZulu-Natal to 21,3% in Northern Cape. The percentages of deaths due to *assault* were also high in Eastern Cape (16,5%) and Western Cape (16,4%). Mpumalanga had the lowest percentage of non-natural deaths resulting from *assault* (3,9%).

*Transport accidents* were the most common non-natural underlying cause of death in North West, Gauteng, Mpumalanga and Limpopo. Limpopo had the highest percentage of deaths due to *transport accidents*, accounting for 30% of all non-natural deaths occurring in that province. The lowest percentage of deaths due to *transport accidents* was observed in Gauteng (6,6%).

**Table 4.12: Underlying non-natural causes of death by province, 2006\***

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Events of undetermined intent (Y10-Y34)	3 992	64,7	4 995	60,2	623	51,0	2 186	66,2	8 003	68,5	2 097	63,0	8 859	78,9	2 691	73,1	1 648	45,4
Transport accidents (V01-V99)	590	9,6	983	11,8	160	13,1	330	10,0	976	8,4	470	14,1	742	6,6	330	9,0	1 088	30,0
Assault (X85-Y09)	1 012	16,4	1 373	16,5	260	21,3	369	11,2	1 137	9,7	313	9,4	526	4,7	142	3,9	240	6,6
Other external causes of accidental injury (W00-X59)	423	6,9	679	8,2	121	9,9	307	9,3	881	7,5	234	7,0	701	6,2	291	7,9	304	8,4
Complications of medical and surgical care (Y40-Y84)**	66	1,1	210	2,5	15	1,2	86	2,6	533	4,6	163	4,9	363	3,2	151	4,1	283	7,8
Intentional self-harm (X60-X84)	77	1,2	57	0,7	43	3,5	21	0,6	106	0,9	50	1,5	25	0,2	74	2,0	62	1,7
Sequelae of external causes of morbidity and mortality (Y85-Y89)	11	0,2	3	0,0	0	0,0	3	0,1	49	0,4	2	0,1	15	0,1	2	0,1	3	0,1
Subtotal	6 171	100,0	8 300	100,0	1 222	100,0	3 302	100,0	11 685	100,0	3 329	100,0	11 231	100,0	3 681	100,0	3 628	100,0
Non-natural causes	6 171	13,9	8 300	9,0	1 222	9,6	3 302	6,3	11 685	8,3	3 329	6,6	11 231	10,1	3 681	7,7	3 628	6,7
Natural causes	38 273	86,1	84 350	91,0	11 501	90,4	48 901	93,7	129 107	91,7	47 179	93,4	100 301	89,9	44 187	92,3	50 314	93,3
Total	44 444	100,0	92 650	100,0	12 723	100,0	52 203	100,0	140 792	100,0	50 508	100,0	111 532	100,0	47 868	100,0	53 942	100,0

\*Excluding 522 deaths that took place outside South Africa

\*\*Including *mine accidents, circumcision and accidents in sports*

### 4.7 Comparison between underlying, immediate and contributing causes of death

The South African death notification form makes provision for reporting one or more causes of death on each form. A cause can be indicated as immediate, contributing or underlying. Table 4.13 shows the total number of times a specific cause of death was recorded on the 2006 death notification forms, be it an immediate, contributing or underlying cause for the 20 most commonly reported causes of death. These 20 causes of death include natural and non-natural causes, as well as deaths due to *symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified*.

Overall, *tuberculosis* was the most frequently reported cause of death in 2006, mentioned on 89 062 death notification forms as either an immediate, contributing or underlying cause. *Influenza and pneumonia* was the second most reported cause of death, mentioned in 86 795 forms. *Human immunodeficiency virus [HIV] diseases* were the twentieth most commonly mentioned cause of death.

**Table 4.13: Distribution of reported causes of death, 2006**

Rank	Cause of Death	Number of deaths in which the cause was reported
1	Tuberculosis (A15-A19)*	89 062
2	Influenza and pneumonia (J10-J18)	86 795
3	Ill-defined and unknown causes of mortality (R95-R99)	77 346
4	Other forms of heart diseases (I30-I52)	56 530
5	Intestinal infectious diseases (A00-A09)	44 400
6	Events of undetermined intent (Y10-Y34)	35 587
7	Cerebrovascular diseases (I60-I69)	34 926
8	Hypertensive diseases (I10-I15)	32 410
9	Certain disorders involving the immune mechanism(D80-D89)	28 997
10	Metabolic disorders (E70-E88)	23 780
11	General symptoms and signs (R50-R69)	22 807
12	Other viral diseases (B25-B34)	22 515
13	Diabetes mellitus (E10-E14)	21 780
14	Chronic lower diseases respiratory (J40-J47)	21 537
15	Other diseases of the respiratory system (J95-J99)	21 092
16	Ischaemic heart diseases (I20-I25)	18 754
17	Other bacterial diseases (A30-49)	18 273
18	Renal failure (N17-N19)	17 705
19	Symptoms and signs involving the circulatory and respiratory systems (R00-R09)	15 749
20	Human immunodeficiency virus [HIV] diseases (B20-B24)	14 969

\*Including deaths due to *MDR-TB* and *XDR-TB*.

Table 4.14 provides the breakdown of the number of deaths by whether the death was selected as the underlying cause or whether it was reported as the immediate or contributing cause. The table only provides information on the 12 leading underlying causes of death, including both natural and non-natural causes. Within each category, the counts of underlying causes and immediate or contributing causes are not duplicated, so that they can be summed to equal the total number of times a specific cause of death was recorded on a death notification form. For example, 76 402 deaths had *tuberculosis* as the underlying cause and another 12 660 deaths had it as an immediate or contributing cause. This gives a total of 89 062 death notification forms that had *tuberculosis* mentioned on them.

Table 4.14 shows that where *tuberculosis, intestinal infectious diseases, events of undetermined intent, diabetes mellitus* and *human immunodeficiency virus [HIV] disease* were mentioned, they were mostly selected as the underlying causes. These were selected as underlying causes in more than 80% of cases for each cause. In less than half of the cases where *other forms of heart disease* and *hypertensive diseases* were mentioned, they were selected as underlying causes.

**Table 4.14: Number and percentage of deaths selected as underlying or reported as immediate or contributing causes of death, 2006**

Cause of Death	Underlying rank	Number of deaths			Percentage		
		Underlying	Immediate or contributing	Total recorded	Underlying	Immediate or contributing	Total recorded
Tuberculosis (A15-A19)	1	76 402	12 660	89 062	85,8	14,2	100,0
Influenza and pneumonia (J10-J18)	2	52 791	34 004	86 795	60,8	39,2	100,0
Intestinal infectious diseases (A00-A09)	3	39 239	5 161	44 400	88,4	11,6	100,0
Events of undetermined intent (Y10-Y34)	4	35 133	454	35 587	98,7	1,3	100,0
Other forms of heart diseases (I30-I52)	5	26 628	29 902	56 530	47,1	52,9	100,0
Cerebrovascular diseases (I60-I69)	6	25 246	9 680	34 926	72,3	27,7	100,0
Diabetes mellitus (E10-E14)	7	19 549	2 231	21 780	89,8	10,2	100,0
Chronic lower respiratory diseases (J40-J47)	8	15 823	5 714	21 537	73,5	26,5	100,0
Certain disorders involving the immune mechanism (D80-D89)	9	15 736	13 261	28 997	54,3	45,7	100,0
Human immunodeficiency virus [HIV] diseases (B20-B24)	10	14 783	186	14 969	98,8	1,2	100,0
Ischaemic heart diseases (I20-I25)	11	13 025	5 729	18 754	69,5	30,5	100,0
Hypertensive diseases (I10-I15)	12	12 584	19 826	32 410	38,8	61,2	100,0

## 5. Concluding remarks

This release has outlined trends and differentials in mortality and patterns of causes of death in South Africa. The information provided can be used to inform health policies aimed at improving the well-being and health status of the South African population.

The results indicate that mortality continues to increase in the country. More deaths occurred in KwaZulu–Natal and Gauteng, and the lowest in Northern Cape, largely representing the distribution of the total population by province. The age pattern of death has remained more or less the same between 2002 and 2006, with more deaths observed at age group 0–4 and 30–34. Overall, there were slightly more male than female deaths, although female deaths exceeded male deaths at reproductive ages (20–24, 25–29, 30–34) and at ages 70 and older since fewer males survive to old ages compared to females. The gap between the proportion of male and female deaths was observed to be narrowing over time.

Information on causes of death shows that the majority of deaths were linked to natural causes and that the contribution of natural deaths to the overall number of deaths continues to increase over time. Most of the deaths resulted from the main group of *certain infectious and parasitic diseases*. The five most common causes of death in 2006 were *tuberculosis, influenza and pneumonia, intestinal infectious diseases, other forms of heart disease* and *cerebrovascular diseases*. *Human immunodeficiency virus [HIV] disease* was the ninth leading cause of death.

The distribution of the ten leading causes of death by sex indicated that nine causes were similar for both sexes and the first five leading causes were similar in ranking. However, *ischaemic heart diseases* were among the ten leading causes only for the males while *hypertensive diseases* were among the ten leading causes only for the females.

Differences of causes of death by age indicated that *intestinal infectious diseases* were the leading causes of death for those aged less than one year, those aged 1–4 years as well as the broad age group of 0–14. *Tuberculosis* was the leading cause of death to those aged 15–49 and those aged 50–64, while *cerebrovascular diseases* were the most common cause of death among those aged 65 and older. For the provinces, it was observed that *tuberculosis* was the leading cause of death in all provinces, except Free State and Limpopo, where *influenza and pneumonia* dominated.

The percentage of deaths due to non–natural causes was observed to decline over time. Generally, the highest percentages of deaths due to non–natural causes were observed for males; for those aged 15–19 years; and for those who died in Western Cape. *Transport accidents* and *assault* were the most common causes of non–natural deaths. Overall, male deaths were mostly affected by *assault* and female deaths by *transport accidents*. Northern Cape, Western Cape and Eastern Cape had the highest percentage of deaths due to *assault* while Limpopo had the highest percentage of deaths due to transport accidents.

Improvements in the completeness of death registration in the country have been observed. However, the analysis of information on mortality and causes of death remains limited. Many variables still had missing or incomplete information and could, therefore, not be included in the analysis. Furthermore, insufficient reporting of causes of death on the death notification forms limits our understanding of non–notifiable diseases and those with many manifestations.

To facilitate further analysis of data on mortality and causes of death, Statistics South Africa provides a data set on a compact disc which includes several variables that are not part of this statistical release. It is expected that further expert analyses of the data will assist to improve the quality of the data, as the statistics produced depend highly on the quality of input data, and the need for enhanced efforts to register deaths and attribute a cause of death.

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## Appendices

### Appendix A: Definitions

**Causes of death** are all those diseases, morbid conditions, or injuries that either resulted in or contributed to death, and the circumstances of the accident or violence which produced any such injuries.

**Contributing causes of death** are morbid conditions, if any, giving rise to the immediate cause of death.

**Death** is a permanent disappearance of all evidence of life at any time after a *live birth* has taken place.

**Human immunodeficiency virus (HIV)** is the pathogenic organism responsible for the acquired immunodeficiency syndrome (AIDS), formally or also known as the lymphadenopathy virus (LAV).

**Immediate cause of death** is the disease or condition directly leading to death.

**Leading underlying causes of death** are the most frequent underlying causes of death in any given population. In this release, the underlying causes of death are ranked according to frequency.

**Live birth** is the complete expulsion or extraction from its mother's womb of a product of conception, irrespective of the duration of the pregnancy, which after such separation, breathes or shows any other evidence of life.

**Multiple causes of death** are all morbid conditions, diseases and injuries entered on the death certificate. These include those involved in the morbid train of events leading to the death which were classified as either the underlying cause, the intermediate cause, or any intervening cause and those conditions which contributed to death but were not related to the disease or condition causing death.

**Neonatal death** is the death of a live-born child during the first 28 completed days of life.

**Population group:** According to the Population Registration Act Repeal Act (No. 114 of 1991), the South African Population Register no longer stores information regarding the population group of individuals whose details are on the register. This Repeal Act is still in place; therefore, the population group used in this report refers to the population group as identified by the certifying physician/professional nurse on the death notification form and is only used for statistical purposes.

**Post-neonatal death** is a live-born infant dying after 28 completed days of birth but before the first year of life is completed.

**Stillbirth** is the intra-uterine death of a foetus of at least 26 weeks of gestation that showed no sign of life after complete birth.

**Underlying cause of death** (previously known as primary cause) is the disease or injury that initiated the sequence of events leading directly to death; or the circumstances of the accident or violence which produced the fatal injury.





**Appendix C: Number of deaths by age and sex, 1997–1999\***

Age group	1997				1998				1999			
	Male	Female	Unsp.	Total	Male	Female	Unsp.	Total	Male	Female	Unsp.	Total
0–4	17 025	15 189	254	32 468	19 780	17 733	410	37 923	19 787	18 084	535	38 406
5–9	1 704	1 252	17	2 973	1 778	1 435	36	3 249	1 891	1 504	34	3 429
10–14	1 546	1 188	19	2 753	1 691	1 284	23	2 998	1 649	1 305	23	2 977
15–19	3 775	2 470	23	6 268	4 101	2 895	61	7 057	4 351	3 311	88	7 750
20–24	8 166	5 403	49	13 618	8 781	6 864	108	15 753	8 632	8 227	104	16 963
25–29	10 908	7 359	41	18 308	13 047	9 755	108	22 910	13 863	12 500	138	26 501
30–34	11 808	7 134	47	18 989	14 339	9 641	125	24 105	16 252	12 172	116	28 540
35–39	11 942	6 813	50	18 805	14 552	8 854	96	23 502	16 400	10 741	106	27 247
40–44	11 742	6 365	36	18 143	13 887	7 884	94	21 865	15 159	8 866	90	24 115
45–49	12 200	6 334	50	18 584	14 143	7 637	87	21 867	14 933	8 483	97	23 513
50–54	11 270	6 225	29	17 524	12 962	7 189	78	20 229	13 830	7 736	79	21 645
55–59	12 616	7 914	44	20 574	13 884	8 860	106	22 850	14 031	8 661	84	22 776
60–64	11 165	9 283	50	20 498	12 399	9 985	59	22 443	12 660	10 027	82	22 769
65–69	12 441	11 032	44	23 517	13 223	12 441	83	25 747	12 799	12 306	91	25 196
70–74	11 272	10 050	48	21 370	12 723	11 785	53	24 561	12 844	12 240	70	25 154
75–79	11 176	12 326	43	23 545	11 401	12 466	87	23 954	10 680	11 577	63	22 320
80–84	6 594	8 772	32	15 398	7 870	11 036	48	18 954	7 591	11 311	73	18 975
85–89	3 949	6 912	25	10 886	4 255	7 800	34	12 089	4 448	7 940	51	12 439
90+	2 024	4 727	13	6 764	2 360	5 560	29	7 949	2 210	5 378	30	7 618
Unspecified	3 108	2 361	105	5 574	2 819	2 090	195	5 104	1 489	1 107	108	2 704
<b>Total</b>	<b>176 431</b>	<b>139 109</b>	<b>1 019</b>	<b>316 559</b>	<b>199 995</b>	<b>163 194</b>	<b>1 920</b>	<b>365 109</b>	<b>205 499</b>	<b>173 476</b>	<b>2 062</b>	<b>381 037</b>

\*Updated data that include late registrations processed in 2007/8.

**Appendix C.1: Number of deaths by age and sex, 2000–2002\***

Age group	2000				2001				2002			
	Male	Female	Unsp.	Total	Male	Female	Unsp.	Total	Male	Female	Unsp.	Total
0–4	20 361	18 429	436	39 226	21 324	19 349	384	41 057	24 150	21 830	424	46 404
5–9	1 996	1 592	29	3 617	2 114	1 703	28	3 845	2 392	1 954	17	4 363
10–14	1 711	1 328	35	3 074	1 743	1 457	22	3 222	1 860	1 480	24	3 364
15–19	4 301	3 454	72	7 827	4 466	3 885	62	8 413	4 723	4 263	56	9 042
20–24	8 834	9 770	78	18 682	8 915	10 821	81	19 817	9 549	12 377	107	22 033
25–29	14 995	15 549	104	30 648	16 791	19 101	106	35 998	18 563	23 074	129	41 766
30–34	18 409	15 677	104	34 190	20 835	18 570	109	39 514	23 769	23 296	143	47 208
35–39	18 474	13 481	93	32 048	20 999	15 741	96	36 836	23 961	19 277	122	43 360
40–44	17 059	10 919	75	28 053	19 242	12 777	89	32 108	21 435	15 378	112	36 925
45–49	16 036	9 510	77	25 623	17 828	10 880	62	28 770	19 191	12 593	110	31 894
50–54	15 216	9 062	64	24 342	16 833	10 091	72	26 996	18 523	11 181	101	29 805
55–59	13 871	8 841	72	22 784	14 500	9 101	65	23 666	15 343	9 966	71	25 380
60–64	14 193	11 228	66	25 487	15 059	12 046	66	27 171	16 118	12 658	79	28 855
65–69	12 558	12 049	52	24 659	12 990	12 771	63	25 824	13 710	13 248	62	27 020
70–74	13 089	14 112	67	27 268	14 015	15 099	60	29 174	13 745	15 444	62	29 251
75–79	10 340	11 516	48	21 904	10 838	12 026	61	22 925	11 071	12 812	70	23 953
80–84	8 472	12 621	31	21 124	9 151	13 891	47	23 089	9 515	14 168	60	23 743
85–89	4 677	8 218	27	12 922	4 577	8 353	31	12 961	4 369	8 303	34	12 706
90+	2 527	6 519	30	9 076	3 021	7 155	27	10 203	3 291	7 656	33	10 980
Unspecified	1 183	888	143	2 214	1 041	781	98	1 920	1 135	783	112	2 030
<b>Total</b>	<b>218 302</b>	<b>194 763</b>	<b>1 703</b>	<b>414 768</b>	<b>236 282</b>	<b>215 598</b>	<b>1 629</b>	<b>453 509</b>	<b>256 413</b>	<b>241 741</b>	<b>1 928</b>	<b>500 082</b>

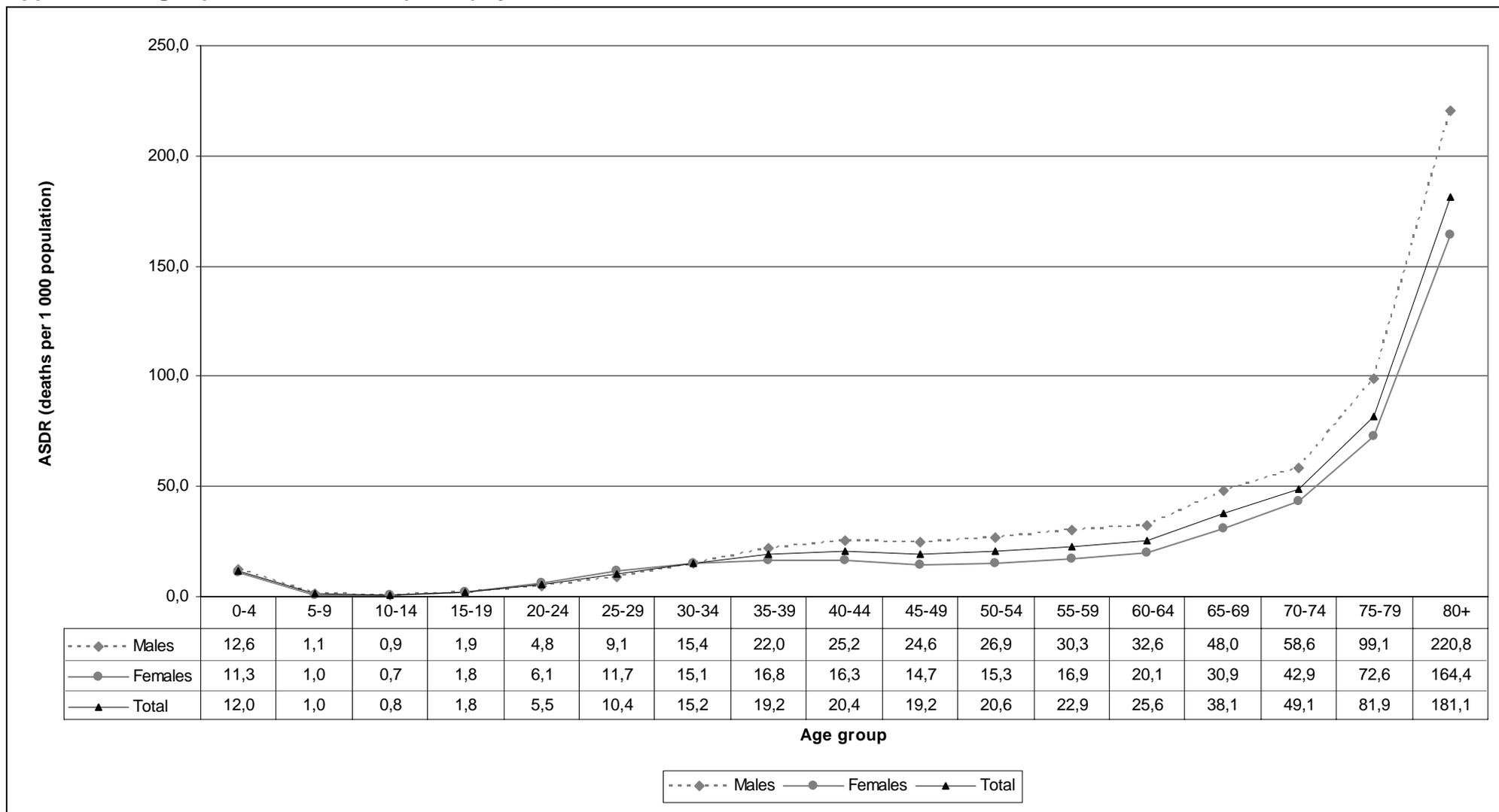
\*Updated data that include late registrations processed in 2007/8.

**Appendix C.2: Number of deaths by age and sex, 2003–2005\***

Age group	2003				2004				2005			
	Male	Female	Unsp.	Total	Male	Female	Unsp.	Total	Male	Female	Unsp.	Total
0–4	26 998	24 222	506	51 726	29 762	26 578	599	56 939	32 003	29 043	550	61 596
5–9	2 765	2 189	28	4 982	3 162	2 784	13	5 959	3 324	2 774	21	6 119
10–14	1 991	1 637	25	3 653	2 118	1 757	12	3 887	2 133	1 839	16	3 988
15–19	4 818	4 523	70	9 411	4 652	4 573	40	9 265	4 718	4 500	52	9 270
20–24	10 283	14 050	102	24 435	10 292	14 887	74	25 253	10 373	14 671	87	25 131
25–29	19 896	25 950	138	45 984	19 654	27 210	107	46 971	19 120	26 907	104	46 131
30–34	27 308	27 856	137	55 301	28 197	30 272	79	58 548	28 539	30 897	102	59 538
35–39	26 273	22 446	112	48 831	27 987	24 847	84	52 918	29 140	25 962	94	55 196
40–44	24 584	18 239	111	42 934	26 236	20 320	67	46 623	27 198	21 256	80	48 534
45–49	21 921	14 363	84	36 368	22 901	16 106	62	39 069	24 225	17 198	75	41 498
50–54	20 471	12 800	66	33 337	20 952	13 980	45	34 977	21 325	14 831	56	36 212
55–59	17 107	10 930	48	28 085	17 908	11 946	32	29 886	19 526	13 205	47	32 778
60–64	17 310	13 242	55	30 607	16 851	13 301	28	30 180	16 705	13 162	34	29 901
65–69	14 609	13 849	53	28 511	15 115	13 712	25	28 852	16 268	15 090	36	31 394
70–74	14 423	16 322	54	30 799	13 376	15 336	25	28 737	12 847	14 993	33	27 873
75–79	12 036	14 068	56	26 160	11 741	14 010	15	25 766	12 128	15 832	35	27 995
80–84	9 415	13 664	39	23 118	8 595	11 901	21	20 517	8 385	11 763	21	20 169
85–89	5 422	10 179	36	15 637	5 010	9 441	19	14 470	5 415	10 269	17	15 701
90+	3 371	8 135	18	11 524	3 269	7 448	13	10 730	3 254	7 810	14	11 078
Unspecified	1 652	938	206	2 796	1 910	922	241	3 073	1 944	1 070	221	3 235
<b>Total</b>	<b>282 653</b>	<b>269 602</b>	<b>1 944</b>	<b>554 199</b>	<b>289 688</b>	<b>281 331</b>	<b>1 601</b>	<b>572 620</b>	<b>298 570</b>	<b>293 072</b>	<b>1 695</b>	<b>593 337</b>

\*Updated data that include late registrations processed in 2007/8.

**Appendix D: Age specific death rates (ASDR) by sex, 2006<sup>2</sup>**



<sup>2</sup> Age specific death rates were calculated by dividing the number of deaths occurring in each age group by the total population for that specific age group, multiplied by 1 000. The mid-year population estimates for 2006 (Stats SA, 2008) were used for these calculations.

**Appendix E: All underlying causes of death, 2006**

<b>Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)</b>	<b>Number</b>	<b>%</b>
<b>All causes</b>	<b>607 184</b>	<b>100,0</b>
Tuberculosis (A15-A19)	76 402	12,6
Ill-defined and unknown causes of mortality (R95-R99)	75 804	12,5
Influenza and pneumonia (J10-J18)	52 791	8,7
Intestinal infectious diseases (A00-A09)	39 239	6,5
Event of undetermined intent (Y10-Y34)	35 133	5,8
Other forms of heart disease (I30-I52)	26 628	4,4
Cerebrovascular diseases (I60-I69)	25 246	4,2
Diabetes mellitus (E10-E14)	19 549	3,2
Chronic lower respiratory diseases (J40-J47)	15 823	2,6
Certain disorders involving the immune mechanism (D80-D89)	15 736	2,6
Human immunodeficiency virus [HIV] disease (B20-B24)	14 783	2,4
Ischaemic heart diseases (I20-I25)	13 025	2,1
Hypertensive diseases (I10-I15)	12 584	2,1
Other viral diseases (B25-B34)	11 304	1,9
Malignant neoplasms of digestive organs (C15-C26)	9 439	1,6
Inflammatory diseases of the central nervous system (G00-G09)	8 959	1,5
Other acute lower respiratory infections (J20-J22)	6 747	1,1
Renal failure (N17-N19)	6 645	1,1
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	6 482	1,1
Transport accidents (V01-V99)	5 683	0,9
Diseases of liver (K70-K77)	5 417	0,9
Assault (X85-Y09)	5 375	0,9
Protozoal diseases (B50-B64)	5 225	0,9
Other bacterial diseases (A30-A49)	5 041	0,8
Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	5 016	0,8
Other diseases of the respiratory system (J95-J99)	4 742	0,8
General symptoms and signs (R50-R69)	4 738	0,8
Metabolic disorders (E70-E90)	4 361	0,7
Noninfective enteritis and colitis (K50-K52)	4 311	0,7
Other external causes of accidental injury (W00-X59)	3 947	0,7
Malignant neoplasms of female genital organs (C51-C58)	3 899	0,6
Episodic and paroxysmal disorders (G40-G47)	3 827	0,6
Mycoses (B35-B49)	3 556	0,6
Other respiratory diseases principally affecting the interstitium (J80-J84)	3 401	0,6
Aplastic and other anaemias (D60-D64)	3 180	0,5
Malignant neoplasms of ill-defined, secondary and unspecified sites (C76-C80)	2 826	0,5
Pulmonary heart disease and diseases of pulmonary circulation (I26-I28)	2 647	0,4
Malnutrition (E40-E46)	2 626	0,4
Diseases of oesophagus, stomach and duodenum (K20-K31)	2 536	0,4
Malignant neoplasm of breast (C50)	2 510	0,4
Malignant neoplasms of lymphoid, haematopoietic and related tissue (C81-C96)	2 332	0,4
Malignant neoplasms of male genital organs (C60-C63)	2 248	0,4
Disorders related to length of gestation and foetal growth (P05-P08)	1 951	0,3
Complications of medical and surgical care (Y40-Y84)	1 871	0,3
Diseases of arteries, arterioles and capillaries (I70-I79)	1 572	0,3
Other disorders of glucose regulation and pancreatic internal secretion (E15-E16)	1 538	0,3
Other diseases of intestines (K55-K63)	1 509	0,2
Infections specific to the perinatal period (P35-P39)	1 413	0,2
Malignant neoplasms of mesothelial and soft tissue (C45-C49)	1 278	0,2
Other disorders originating in the perinatal period (P90-P96)	1 211	0,2
Other disorders of the nervous system (G90-G99)	1 130	0,2

**Appendix E: All underlying causes of death, 2006 (continued)**

<b>Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)</b>	<b>Number</b>	<b>%</b>
Lung diseases due to external agents (J60-J70)	1 086	0,2
Malignant neoplasms of lip, oral cavity and pharynx (C00-C14)	1 083	0,2
Other diseases of the digestive system (K90-K93)	1 083	0,2
Disorders of gallbladder, biliary tract and pancreas (K80-K87)	1 016	0,2
Organic, including symptomatic, mental disorders (F00-F09)	986	0,2
Neoplasms of uncertain or unknown behaviour (D37-D48)	958	0,2
Symptoms and signs involving the circulatory and respiratory systems (R00-R09)	884	0,1
Other degenerative diseases of the nervous system (G30-G32)	842	0,1
Cerebral palsy and other paralytic syndromes (G80-G83)	818	0,1
Malignant neoplasms of urinary tract (C64-C68)	780	0,1
Other diseases of pleura (J90-J94)	758	0,1
Other disorders of the skin and subcutaneous tissue (L80-L99)	673	0,1
Diseases of veins, lymphatic vessels and lymph nodes, not elsewhere classified (I80-I89)	656	0,1
Digestive system disorders of foetus and newborn (P75-P78)	622	0,1
Drug-resistant tuberculosis (U51-U52)	607	0,1
Congenital malformations of the circulatory system (Q20-Q28)	583	0,1
Sequelae of infectious and parasitic diseases (B90-B94)	582	0,1
Inflammatory polyarthropathies (M05-M14)	545	0,1
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	541	0,1
Infections of the skin and subcutaneous tissue (L00-L08)	522	0,1
Intentional self-harm (X60-X84)	517	0,1
Melanoma and other malignant neoplasms of skin (C43-C44)	515	0,1
Chronic rheumatic heart diseases (I05-I09)	496	0,1
Other soft tissue disorders (M70-M79)	470	0,1
Symptoms and signs involving the digestive system and abdomen (R10-R19)	460	0,1
Suppurative and necrotic conditions of lower respiratory tract (J85-J86)	444	0,1
Malignant neoplasms of eye, brain and other parts of central nervous system (C69-C72)	441	0,1
Viral infections characterized by skin and mucous membrane lesions (B00-B09)	395	0,1
Malignant neoplasms of independent (primary) multiple sites (C97)	394	0,1
Coagulation defects, purpura and other haemorrhagic conditions (D65-D69)	379	0,1
Diseases of peritoneum (K65-K67)	377	0,1
Haemorrhagic and haematological disorders of foetus and newborn (P50-P61)	376	0,1
Renal tubulo-interstitial diseases (N10-N16)	359	0,1
Mental and behavioural disorders due to psychoactive substance use (F10-F19)	338	0,1
Other obstetric conditions, not elsewhere classified (O95-O99)	337	0,1
Systemic connective tissue disorders (M30-M36)	333	0,1
Extrapyramidal and movement disorders (G20-G26)	310	0,1
Oedema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium (O10-O16)	303	0,0
Other congenital malformations (Q80-Q89)	300	0,0
Viral hepatitis (B15-B19)	293	0,0
Glomerular diseases (N00-N08)	291	0,0
Other diseases of urinary system (N30-N39)	289	0,0
Viral infections of the central nervous system (A80-A89)	285	0,0
Schizophrenia, schizotypal and delusional disorders (F20-F29)	284	0,0
Acute upper respiratory infections (J00-J06)	279	0,0
Obesity and other hyperalimentation (E65-E68)	277	0,0
Diseases of male genital organs (N40-N51)	263	0,0
Chromosomal abnormalities, not elsewhere classified (Q90-Q99)	235	0,0
Other disorders of kidney and ureter (N25-N29)	217	0,0
Polyneuropathies and other disorders of the peripheral nervous system (G60-G64)	217	0,0

**Appendix E: All underlying causes of death, 2006 (continued)**

<b>Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)</b>	<b>Number</b>	<b>%</b>
Complications predominantly related to the puerperium (O85-O92)	215	0,0
Inflammatory diseases of female pelvic organs (N70-N77)	214	0,0
Disorders of thyroid gland (E00-E07)	199	0,0
Complications of labour and delivery (O60-O75)	197	0,0
Congenital malformations of the nervous system (Q00-Q07)	197	0,0
Pregnancy with abortive outcome (O00-O08)	195	0,0
Hernia (K40-K46)	194	0,0
Benign neoplasms (D10-D36)	188	0,0
Malignant neoplasms of bone and articular cartilage (C40-C41)	179	0,0
Systemic atrophies primarily affecting the central nervous system (G10-G13)	170	0,0
Other joint disorders (M20-M25)	163	0,0
Other congenital malformations of the digestive system (Q38-Q45)	162	0,0
Malignant neoplasms of thyroid and other endocrine glands (C73-C75)	149	0,0
Other diseases of upper respiratory tract (J30-J39)	136	0,0
Arthrosis (M15-M19)	131	0,0
Urticaria and erythema (L50-L54)	125	0,0
Other and unspecified disorders of the circulatory system (I95-I99)	124	0,0
Diseases of appendix (K35-K38)	119	0,0
Noninflammatory disorders of female genital tract (N80-N98)	118	0,0
Other dorsopathies (M50-M54)	117	0,0
Other infectious diseases (B99)	114	0,0
Infections with a predominantly sexual mode of transmission (A50-A64)	112	0,0
Conditions involving the integument and temperature regulation of foetus and newborn (P80-P83)	99	0,0
Diseases of middle ear and mastoid (H65-H75)	95	0,0
Diseases of myoneural junction and muscle (G70-G73)	90	0,0
Transitory endocrine and metabolic disorders specific to foetus and newborn (P70-P74)	90	0,0
Disorders of muscles (M60-M63)	89	0,0
Other osteopathies (M86-M90)	89	0,0
Congenital malformations of the respiratory system (Q30-Q34)	88	0,0
Sequelae of external causes of morbidity and mortality (Y85-Y89)	88	0,0
Diseases of oral cavity, salivary glands and jaws (K00-K14)	79	0,0
Maternal care related to foetus and amniotic cavity and possible delivery problems (O30-O48)	77	0,0
Helminthiases (B65-B83)	76	0,0
Demyelinating diseases of the central nervous system (G35-G37)	72	0,0
Other maternal disorders predominantly related to pregnancy (O20-O29)	69	0,0
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	60	0,0
Nutritional anaemias (D50-D53)	60	0,0
Other nutritional deficiencies (E50-E64)	60	0,0
Disorders of bone density and structure (M80-M85)	59	0,0
Neurotic, stress-related and somatoform disorders (F40-F48)	58	0,0
Dermatitis and eczema (L20-L30)	55	0,0
Congenital malformations of the urinary system (Q60-Q64)	54	0,0
Disorders of other endocrine glands (E20-E35)	54	0,0
Abnormal findings on examination of blood, without diagnosis (R70-R79)	45	0,0
Behavioural syndromes associated with physiological disturbances and physical factors (F50-F59)	42	0,0
Haemolytic anaemias (D55-D59)	41	0,0
Other diseases of blood and blood-forming organs (D70-D77)	40	0,0
Mood [affective] disorders (F30-F39)	39	0,0
Unspecified mental disorder (F99)	39	0,0

**Appendix E: All underlying causes of death, 2006 (concluded)**

<b>Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)</b>	<b>Number</b>	<b>%</b>
Infectious arthropathies (M00-M03)	38	0,0
Acute rheumatic fever (I00-I02)	35	0,0
Symptoms and signs involving cognition, perception, emotional state and behaviour (R40-R46)	35	0,0
Disorders of breast (N60-N64)	28	0,0
Birth trauma (P10-P15)	26	0,0
Abnormal findings on diagnostic imaging and in function studies, without diagnosis (R90-R94)	25	0,0
Bullous disorders (L10-L14)	25	0,0
Deforming dorsopathies (M40-M43)	25	0,0
Nerve, nerve root and plexus disorders (G50-G59)	25	0,0
Arthropod-borne viral fevers and viral haemorrhagic fevers (A90-A99)	23	0,0
Spondylopathies (M45-M49)	19	0,0
Symptoms and signs involving speech and voice (R47-R49)	19	0,0
Cleft lip and cleft palate (Q35-Q37)	18	0,0
Other disorders of eye and adnexa (H55-H59)	18	0,0
Symptoms and signs involving the skin and subcutaneous tissue (R20-R23)	16	0,0
Symptoms and signs involving the nervous and musculoskeletal systems (R25-R29)	14	0,0
Symptoms and signs involving the urinary system (R30-R39)	14	0,0
In situ neoplasms (D00-D09)	12	0,0
Abnormal findings on examination of other body fluids, substances and tissues, without diagnosis (R83-R89)	10	0,0
Papulosquamous disorders (L40-L45)	10	0,0
Urolithiasis (N20-N23)	9	0,0
Disorders of eyelid, lacrimal system and orbit (H00-H06)	8	0,0
Pediculosis, acariasis and other infestations (B85-B89)	8	0,0
Certain zoonotic bacterial diseases (A20-A28)	6	0,0
Chondropathies (M91-M94)	6	0,0
Other disorders of ear (H90-H95)	6	0,0
Disorders of sclera, cornea, iris and ciliary body (H15-H22)	5	0,0
Disorders of conjunctiva (H10-H13)	4	0,0
Disorders of psychological development (F80-F89)	4	0,0
Disorders of vitreous body and globe (H43-H45)	4	0,0
Other disorders of the musculoskeletal system and connective tissue (M95-M99)	4	0,0
Behavioural and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98)	3	0,0
Congenital malformations of eye, ear, face and neck (Q10-Q18)	3	0,0
Disorders of adult personality and behaviour (F60-F69)	3	0,0
Disorders of skin appendages (L60-L75)	3	0,0
Congenital malformations of genital organs (Q50-Q56)	2	0,0
Disorders of ocular muscles, binocular movement, accommodation and refraction (H49-H52)	2	0,0
Other spirochaetal diseases (A65-A69)	2	0,0
Rickettsioses (A75-A79)	2	0,0
Diseases of external ear (H60-H62)	1	0,0
Disorders of lens (H25-H28)	1	0,0
Disorders of synovium and tendon (M65-M68)	1	0,0
Other diseases caused by chlamydiae (A70-A74)	1	0,0
Visual disturbances and blindness (H53-H54)	1	0,0

**Appendix F: Detailed description of the broad groups of natural causes of death which were among the ten leading causes in 2006**

<b>Causes of death (based on the Tenth Revision, International Classification of Disease, 1992)</b>		<b>Number</b>	<b>%</b>
<b>Intestinal infectious diseases (A00–A09)</b>			
A00	Cholera (A00)	9	0,0
A01	Typhoid and paratyphoid fevers (A01)	36	0,1
A02	Other salmonella infections(A02)	40	0,1
A03	Shigellosis (A03)	13	0,0
A04	Other bacterial intestinal infections (A04)	12	0,0
A05	Other bacterial foodborne intoxications (A05)	0	0,0
A06	Amoebiasis (A06)	17	0,0
A07	Other protozoal intestinal diseases (A07)	20	0,1
A08	Viral and other specified intestinal infections (A08)	74	0,2
A09	Diarrhoea and gastroenteritis of presumed infectious origin (A09)	39 018	99,4
<b>Total</b>		<b>39 239</b>	<b>100,0</b>
<b>Tuberculosis (A15–A19)</b>			
A16	Respiratory tuberculosis, not confirmed bacteriologically or histologically (A16)	66 483	86,3
A17	Tuberculosis of nervous system (A17)	3 631	4,7
A18	Tuberculosis of other organs (A18)	1 824	2,4
A19	Miliary tuberculosis (A19)	4 464	5,8
<b>Drug-resistant tuberculosis</b>			
U51	Multidrug-resistant tuberculosis	604	0,8
U52	Extensively drug-resistant tuberculosis	3	0,0
<b>Total</b>		<b>77 009</b>	<b>100,0</b>
<b>Human immunodeficiency virus [HIV] disease (B20-B24)</b>			
Human immunodeficiency virus (HIV) disease resulting in infectious and parasitic diseases (B20)		6 563	44,4
B21	Human immunodeficiency virus (HIV) disease resulting in malignant neoplasms (B21)	220	1,5
Human immunodeficiency virus (HIV) disease resulting in other specified diseases (B22)		5 003	33,8
B23	Human immunodeficiency virus (HIV) disease resulting in other conditions (B23)	781	5,3
B24	Unspecified human immunodeficiency virus (HIV) disease (B24)	2 216	15,0
<b>Total</b>		<b>14 783</b>	<b>100,0</b>
<b>Certain disorders involving the immune mechanism (D80-D89)</b>			
D80	Immunodeficiency with predominantly antibody defects (D80)	4	0,0
D81	Combined immunodeficiencies (D81)	2	0,0
D82	Immunodeficiency associated with other major defects (D82)	2	0,0
D83	Common variable immunodeficiency (D83)	120	0,8
D84	Other immunodeficiencies (D84)	15 523	98,6
D86	Sarcoidosis (D86)	48	0,3
D89	Other disorders involving the immune mechanism, not elsewhere classified (D89)	37	0,2
<b>Total</b>		<b>15 736</b>	<b>100,0</b>
<b>Diabetes mellitus (E10-E14)</b>			
E10	Insulin-dependent diabetes mellitus (E10)	286	1,5
E11	Non-insulin-dependent diabetes mellitus (E11)	1 002	5,1
E12	Malnutrition-related diabetes mellitus (E12)	2	0,0
E13	Other specified diabetes mellitus (E13)	1	0,0
E14	Unspecified diabetes mellitus (E14)	18 258	93,4
<b>Total</b>		<b>19 549</b>	<b>100,0</b>

**Appendix F: Detailed description of the broad groups of natural causes of death which were among the ten leading causes in 2006 (continued)**

Causes of death (based on the Tenth Revision, International Classification of Disease, 1992)	Number	%
<b>Ischaemic heart diseases (I20-I25)</b>		
I20 Angina pectoris (I20)	146	1,1
I21 Acute myocardial infarction (I21)	9 520	73,1
I22 Subsequent myocardial infarction (I22)	14	0,1
I23 Certain current complications following acute myocardial infarction (I23)	0	0,0
I24 Other acute ischaemic heart diseases (I24)	0	0,0
I25 Chronic ischaemic heart disease (I25)	3 345	25,7
<b>Total</b>	<b>13 025</b>	<b>100,0</b>
<b>Other forms of heart disease (I30-I52)</b>		
I30 Acute pericarditis (I30)	10	0,0
I31 Other diseases of pericardium (I31)	243	0,9
I33 Acute and subacute endocarditis (I33)	64	0,2
I34 Nonrheumatic mitral valve disorders (I34)	112	0,4
I35 Nonrheumatic aortic valve disorders (I35)	182	0,7
I36 Nonrheumatic tricuspid valve disorders (I36)	1	0,0
I37 Pulmonary valve disorders (I37)	5	0,0
I38 Endocarditis, valve unspecified (I38)	243	0,9
I40 Acute myocarditis (I40)	37	0,1
I42 Cardiomyopathy (I42)	3 586	13,5
I44 Atrioventricular and left bundle-branch block (I44)	25	0,1
I45 Other conduction disorders (I45)	80	0,3
I46 Cardiac arrest (I46)	3 588	13,5
I47 Paroxysmal tachycardia (I47)	28	0,1
I48 Atrial fibrillation and flutter (I48)	351	1,3
I49 Other cardiac arrhythmias (I49)	205	0,8
I50 Heart failure (I50)	16 977	63,8
I51 Complications and ill-defined descriptions of heart disease (I51)	891	3,3
<b>Total</b>	<b>26 628</b>	<b>100,0</b>
<b>Cerebrovascular diseases (I60-I69)</b>		
I60 Subarachnoid haemorrhage (I60)	369	1,5
I61 Intracerebral haemorrhage (I61)	1 396	5,5
I62 Other nontraumatic intracranial haemorrhage (I62)	552	2,2
I63 Cerebral infarction (I63)	533	2,1
I64 Stroke, not specified as haemorrhage or infarction (I64)	21 521	85,2
I65 Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction (I65)	0	0,0
I66 Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction (I66)	0	0,0
I67 Other cerebrovascular diseases (I67)	607	2,4
I69 Sequelae of cerebrovascular disease (I69)	268	1,1
<b>Total</b>	<b>25 246</b>	<b>100,0</b>
<b>Influenza and pneumonia (J10-J18)</b>		
J10 Influenza due to identified influenza virus (J10)	26	0,0
J11 Influenza, virus not identified (J11)	607	1,1
J12 Viral pneumonia, not elsewhere classified (J12)	42	0,1
J13 Pneumonia due to Streptococcus pneumoniae (J13)	13	0,0
J14 Pneumonia due to Haemophilus influenzae (J14)	4	0,0
J15 Bacterial pneumonia, not elsewhere classified (J15)	441	0,8
J16 Pneumonia due to other infectious organisms, not elsewhere classified (J16)	9	0,0
J18 Pneumonia, organism unspecified (J18)	51 649	97,8
<b>Total</b>	<b>52 791</b>	<b>100,0</b>

**Appendix F: Detailed description of the broad groups of natural causes of death which were among the ten leading causes in 2006 (concluded)**

<b>Causes of death (based on the Tenth Revision, International Classification of Disease, 1992)</b>		<b>Number</b>	<b>%</b>
<b>Chronic lower respiratory diseases (J40-J47)</b>			
J40	Bronchitis, not specified as acute or chronic (J40)	830	5,2
J41	Simple and mucopurulent chronic bronchitis (J41)	4	0,0
J42	Unspecified chronic bronchitis (J42)	761	4,8
J43	Emphysema (J43)	1 007	6,4
J44	Other chronic obstructive pulmonary disease (J44)	6 373	40,3
J45	Asthma (J45)	5 306	33,5
J46	Status asthmaticus (J46)	1 340	8,5
J47	Bronchiectasis (J47)	202	1,3
<b>Total</b>		<b>15 823</b>	<b>100,0</b>

**Appendix G: Number and percentage of neonatal and post-neonatal deaths due to the ten leading underlying natural causes of death, 2006**

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	0–28 days (neonatal)			29 days–11 months (post-neonatal)		
	Rank	Number	%	Rank	Number	%
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	1	6 234	46,5	...	...	...
Disorders related to length of gestation and foetal growth (P05-P08)	2	1 811	13,5	...	...	...
Infections specific to the perinatal period (P35-P39)	3	1 340	10,0	...	...	...
Other disorders originating in the perinatal period (P90-P96)	4	1 136	8,5	...	...	...
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	5	557	4,2	...	...	...
Digestive system disorders of foetus and newborn (P75-P78)	6	529	3,9	...	...	...
Haemorrhagic and haematological disorders of foetus and newborn (P50-P61)	7	355	2,6	...	...	...
Other congenital malformations (Q80-Q89)	8	204	1,5	...	...	...
Congenital malformations of the circulatory system (Q20-Q28)	9	143	1,1	...	...	...
Conditions involving the integument and temperature regulation of foetus and newborn (P80-P83)	10	90	0,7	...	...	...
Intestinal infectious diseases (A00-A09)	...	...	...	1	9 564	27,9
Influenza and pneumonia (J10-J18)	...	...	...	2	7 513	21,9
Protozoal diseases (B50-B64)	...	...	...	3	999	2,9
Malnutrition (E40-E46)	...	...	...	4	974	2,8
Certain disorders involving the immune mechanism (D80-D89)	...	...	...	5	843	2,5
Other acute lower respiratory infections (J20-J22)	...	...	...	6	823	2,4
Tuberculosis (A15-A19)*	...	...	...	7	690	2,0
Other bacterial diseases (A30-A49)	...	...	...	8	640	1,9
Other viral diseases (B25-B34)	...	...	...	9	636	1,9
Human immunodeficiency virus [HIV] disease (B20-B24)	...	...	...	10	598	1,7
Other natural causes		860	6,4		9 872	28,8
Non-natural causes		156	1,2		1 136	3,3
<b>All causes</b>		<b>13 415</b>	<b>100,0</b>		<b>34 288</b>	<b>100,0</b>

\* including 3 cases due to *MDR-TB* ... Category not in top ten leading underlying natural causes of death

**Appendix H: The ten leading underlying natural causes of death by age and sex: South Africa, 2006\***

All provinces, both sexes, all ages			All provinces, males, all ages			All provinces, females, all ages		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	76 621	12.7	1 Tuberculosis (A15-A19)**	41 809	13.7	1 Tuberculosis (A15-A19)**	34 812	11.7
2 Influenza and pneumonia (J10-J18)	52 512	8.7	2 Influenza and pneumonia (J10-J18)	25 108	8.2	2 Influenza and pneumonia (J10-J18)	27 404	9.2
3 Intestinal infectious diseases (A00-A09)	39 006	6.5	3 Intestinal infectious diseases (A00-A09)	17 778	5.8	3 Intestinal infectious diseases (A00-A09)	21 228	7.1
4 Other forms of heart disease (I30-I52)	26 565	4.4	4 Other forms of heart disease (I30-I52)	11 741	3.8	4 Other forms of heart disease (I30-I52)	14 824	5.0
5 Cerebrovascular diseases (I60-I69)	25 178	4.2	5 Cerebrovascular diseases (I60-I69)	10 450	3.4	5 Cerebrovascular diseases (I60-I69)	14 728	4.9
6 Diabetes mellitus (E10-E14)	19 515	3.2	6 Chronic lower respiratory diseases (J40-J47)	9 246	3.0	6 Diabetes mellitus (E10-E14)	11 906	4.0
7 Chronic lower respiratory diseases (J40-J47)	15 792	2.6	7 Diabetes mellitus (E10-E14)	7 609	2.5	7 Certain disorders involving the immune mechanism (D80-D89)	8 730	2.9
8 Certain disorders involving the immune mechanism (D80-D89)	15 669	2.6	8 Ischaemic heart diseases (I20-I25)	7 587	2.5	8 Human immunodeficiency virus [HIV] disease (B20-B24)	7 872	2.6
9 Human immunodeficiency virus [HIV] disease (B20-B24)	14 695	2.4	9 Certain disorders involving the immune mechanism (D80-D89)	6 939	2.3	9 Hypertensive diseases (I10-I15)	7 827	2.6
10 Ischaemic heart diseases (I20-I25)	12 997	2.2	10 Human immunodeficiency virus [HIV] disease (B20-B24)	6 822	2.2	10 Chronic lower respiratory diseases (J40-J47)	6 546	2.2
...Other natural causes	253 116	41.9	...Other natural causes	120 875	39.6	...Other natural causes	129 825	43.5
...Non-natural causes	52 138	8.6	...Non-natural causes	39 577	13.0	...Non-natural causes	12 561	4.2
...All causes	603 804	100.0	...All causes	305 541	100.0	...All causes	298 263	100.0
All provinces, both sexes, 0-14			All provinces, males, 0-14			All provinces, females, 0-14		
No.	%		No.	%		No.	%	
1 Intestinal infectious diseases (A00-A09)	14 245	19.6	1 Intestinal infectious diseases (A00-A09)	7 534	19.4	1 Intestinal infectious diseases (A00-A09)	6 711	19.9
2 Influenza and pneumonia (J10-J18)	10 351	14.3	2 Influenza and pneumonia (J10-J18)	5 216	13.4	2 Influenza and pneumonia (J10-J18)	5 135	15.2
3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	6 311	8.7	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	3 678	9.5	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	2 633	7.8
4 Tuberculosis (A15-A19)**	2 626	3.6	4 Tuberculosis (A15-A19)**	1 401	3.6	4 Tuberculosis (A15-A19)**	1 225	3.6
5 Malnutrition (E40-E46)	2 168	3.0	5 Malnutrition (E40-E46)	1 154	3.0	5 Malnutrition (E40-E46)	1 014	3.0
6 Disorders related to length of gestation and foetal growth (P05-P08)	1 901	2.6	6 Disorders related to length of gestation and foetal growth (P05-P08)	1 032	2.7	6 Disorders related to length of gestation and foetal growth (P05-P08)	869	2.6
7 Certain disorders involving the immune mechanism (D80-D89)	1 512	2.1	7 Infections specific to the perinatal period (P35-P39)	807	2.1	7 Certain disorders involving the immune mechanism (D80-D89)	706	2.1
8 Infections specific to the perinatal period (P35-P39)	1 375	1.9	8 Certain disorders involving the immune mechanism (D80-D89)	806	2.1	8 Protozoal diseases (B50-B64)	650	1.9
9 Human immunodeficiency virus [HIV] disease (B20-B24)	1 223	1.7	9 Other disorders originating in the perinatal period (P90-P96)	677	1.7	9 Human immunodeficiency virus [HIV] disease (B20-B24)	603	1.8
10 Protozoal diseases (B50-B64)	1 192	1.6	10 Human immunodeficiency virus [HIV] disease (B20-B24)	620	1.6	10 Other viral diseases (B25-B34)	579	1.7
...Other natural causes	24 325	33.5	...Other natural causes	12 766	32.9	...Other natural causes	11 413	33.9
...Non-natural causes	5 312	7.3	...Non-natural causes	3 142	8.1	...Non-natural causes	2 170	6.4
...All causes	72 541	100.0	...All causes	38 833	100.0	...All causes	33 708	100.0
All provinces, both sexes, 15-49			All provinces, males, 15-49			All provinces, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	57 546	20.2	1 Tuberculosis (A15-A19)**	29 534	20.4	1 Tuberculosis (A15-A19)**	28 012	19.9
2 Influenza and pneumonia (J10-J18)	28 170	9.9	2 Influenza and pneumonia (J10-J18)	12 479	8.6	2 Influenza and pneumonia (J10-J18)	15 691	11.1
3 Intestinal infectious diseases (A00-A09)	17 781	6.2	3 Intestinal infectious diseases (A00-A09)	7 113	4.9	3 Intestinal infectious diseases (A00-A09)	10 668	7.6
4 Certain disorders involving the immune mechanism (D80-D89)	12 277	4.3	4 Human immunodeficiency virus [HIV] disease (B20-B24)	5 354	3.7	4 Certain disorders involving the immune mechanism (D80-D89)	7 189	5.1
5 Human immunodeficiency virus [HIV] disease (B20-B24)	11 948	4.2	5 Certain disorders involving the immune mechanism (D80-D89)	5 088	3.5	5 Human immunodeficiency virus [HIV] disease (B20-B24)	6 594	4.7
6 Other viral diseases (B25-B34)	8 910	3.1	6 Other viral diseases (B25-B34)	3 485	2.4	6 Other viral diseases (B25-B34)	5 425	3.9
7 Inflammatory diseases of the central nervous system (G00-G09)	6 669	2.3	7 Other forms of heart disease (I30-I52)	3 044	2.1	7 Inflammatory diseases of the central nervous system (G00-G09)	3 659	2.6
8 Other forms of heart disease (I30-I52)	6 593	2.3	8 Inflammatory diseases of the central nervous system (G00-G09)	3 010	2.1	8 Other forms of heart disease (I30-I52)	3 549	2.5
9 Cerebrovascular diseases (I60-I69)	4 160	1.5	9 Cerebrovascular diseases (I60-I69)	2 003	1.4	9 Protozoal diseases (B50-B64)	2 192	1.6
10 Other acute lower respiratory infections (J20-J22)	3 672	1.3	10 Chronic lower respiratory diseases (J40-J47)	1 844	1.3	10 Cerebrovascular diseases (I60-I69)	2 157	1.5
...Other natural causes	90 375	31.7	...Other natural causes	41 452	28.7	...Other natural causes	48 559	34.5
...Non-natural causes	37 391	13.1	...Non-natural causes	30 227	20.9	...Non-natural causes	7 164	5.1
...All causes	285 492	100.0	...All causes	144 633	100.0	...All causes	140 859	100.0
All provinces, both sexes, 50-64			All provinces, males, 50-64			All provinces, females, 50-64		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	11 859	11.6	1 Tuberculosis (A15-A19)**	7 970	13.3	1 Tuberculosis (A15-A19)**	3 889	9.1
2 Influenza and pneumonia (J10-J18)	6 594	6.4	2 Influenza and pneumonia (J10-J18)	4 011	6.7	2 Diabetes mellitus (E10-E14)	3 473	8.1
3 Cerebrovascular diseases (I60-I69)	6 207	6.0	3 Cerebrovascular diseases (I60-I69)	3 143	5.2	3 Cerebrovascular diseases (I60-I69)	3 064	7.2
4 Diabetes mellitus (E10-E14)	6 196	6.0	4 Other forms of heart disease (I30-I52)	3 044	5.1	4 Influenza and pneumonia (J10-J18)	2 583	6.0
5 Other forms of heart disease (I30-I52)	5 613	5.5	5 Chronic lower respiratory diseases (J40-J47)	3 023	5.0	5 Other forms of heart disease (I30-I52)	2 569	6.0
6 Chronic lower respiratory diseases (J40-J47)	4 531	4.4	6 Diabetes mellitus (E10-E14)	2 723	4.5	6 Intestinal infectious diseases (A00-A09)	1 885	4.4
7 Ischaemic heart diseases (I20-I25)	3 830	3.7	7 Ischaemic heart diseases (I20-I25)	2 605	4.4	7 Hypertensive diseases (I10-I15)	1 824	4.3
8 Intestinal infectious diseases (A00-A09)	3 723	3.6	8 Malignant neoplasms of digestive organs (C15-C26)	1 996	3.3	8 Chronic lower respiratory diseases (J40-J47)	1 508	3.5
9 Hypertensive diseases (I10-I15)	3 410	3.3	9 Intestinal infectious diseases (A00-A09)	1 838	3.1	9 Malignant neoplasms of female genital organs (C51-C58)	1 296	3.0
10 Malignant neoplasms of digestive organs (C15-C26)	3 158	3.1	10 Hypertensive diseases (I10-I15)	1 586	2.6	10 Ischaemic heart diseases (I20-I25)	1 225	2.9
...Other natural causes	41 849	40.8	...Other natural causes	23 728	39.6	...Other natural causes	17 987	42.1
...Non-natural causes	5 640	5.5	...Non-natural causes	4 210	7.0	...Non-natural causes	1 430	3.3
...All causes	102 610	100.0	...All causes	59 877	100.0	...All causes	42 733	100.0
All provinces, both sexes, 65+			All provinces, males, 65+			All provinces, females, 65+		
No.	%		No.	%		No.	%	
1 Cerebrovascular diseases (I60-I69)	14 703	10.3	1 Other forms of heart disease (I30-I52)	5 326	8.6	1 Cerebrovascular diseases (I60-I69)	9 458	11.7
2 Other forms of heart disease (I30-I52)	13 715	9.6	2 Cerebrovascular diseases (I60-I69)	5 245	8.4	2 Other forms of heart disease (I30-I52)	8 389	10.4
3 Diabetes mellitus (E10-E14)	10 426	7.3	3 Chronic lower respiratory diseases (J40-J47)	4 215	6.8	3 Diabetes mellitus (E10-E14)	6 836	8.4
4 Ischaemic heart diseases (I20-I25)	7 497	5.2	4 Ischaemic heart diseases (I20-I25)	3 827	6.2	4 Hypertensive diseases (I10-I15)	4 989	6.2
5 Influenza and pneumonia (J10-J18)	7 397	5.2	5 Diabetes mellitus (E10-E14)	3 590	5.8	5 Influenza and pneumonia (J10-J18)	3 995	4.9
6 Chronic lower respiratory diseases (J40-J47)	7 396	5.2	6 Influenza and pneumonia (J10-J18)	3 402	5.5	6 Ischaemic heart diseases (I20-I25)	3 670	4.5
7 Hypertensive diseases (I10-I15)	7 345	5.1	7 Tuberculosis (A15-A19)**	2 904	4.7	7 Chronic lower respiratory diseases (J40-J47)	3 181	3.9
8 Malignant neoplasms of digestive organs (C15-C26)	4 701	3.3	8 Malignant neoplasms of digestive organs (C15-C26)	2 413	3.9	8 Malignant neoplasms of digestive organs (C15-C26)	2 288	2.8
9 Tuberculosis (A15-A19)**	4 590	3.2	9 Hypertensive diseases (I10-I15)	2 356	3.8	9 Intestinal infectious diseases (A00-A09)	1 964	2.4
10 Intestinal infectious diseases (A00-A09)	3 257	2.3	10 Malignant neoplasms of male genital organs (C60-C63)	1 767	2.8	10 Tuberculosis (A15-A19)**	1 686	2.1
...Other natural causes	58 339	40.8	...Other natural causes	25 155	40.4	...Other natural causes	32 710	40.4
...Non-natural causes	3 795	2.7	...Non-natural causes	1 998	3.2	...Non-natural causes	1 797	2.2
...All causes	143 161	100.0	...All causes	62 198	100.0	...All causes	80 963	100.0

\*Excluding a total of 3 380 cases with unknown sex and unknown age; known sex and unknown age; known age and unknown sex; and deaths that occurred outside South Africa.

\*\*Including deaths due to MDR-TB and XDR-TB

**Appendix H.1: The ten leading underlying natural causes of death by age and sex: Western Cape, 2006\***

Western Cape, both sexes, all ages			Western Cape, males, all ages			Western Cape, females, all ages		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	4 041	9,1	1 Tuberculosis (A15-A19)**	2 454	10,1	1 Tuberculosis (A15-A19)**	1 587	8,0
2 Ischaemic heart diseases (I20-I25)	2 841	6,4	2 Ischaemic heart diseases (I20-I25)	1 644	6,7	2 Diabetes mellitus (E10-E14)	1 531	7,7
3 Diabetes mellitus (E10-E14)	2 546	5,8	3 Chronic lower respiratory diseases (J40-J47)	1 151	4,7	3 Cerebrovascular diseases (I60-I69)	1 363	6,9
4 Cerebrovascular diseases (I60-I69)	2 380	5,4	4 Cerebrovascular diseases (I60-I69)	1 017	4,2	4 Ischaemic heart diseases (I20-I25)	1 197	6,0
5 Chronic lower respiratory diseases (J40-J47)	1 874	4,2	5 Diabetes mellitus (E10-E14)	1 015	4,2	5 Human immunodeficiency virus [HIV] disease (B20-B24)	953	4,8
6 Malignant neoplasms of digestive organs (C15-C26)	1 706	3,9	6 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	1 003	4,1	6 Other forms of heart disease (I30-I52)	851	4,3
7 Human immunodeficiency virus [HIV] disease (B20-B24)	1 697	3,8	7 Malignant neoplasms of digestive organs (C15-C26)	961	3,9	7 Malignant neoplasms of digestive organs (C15-C26)	745	3,8
8 Other forms of heart disease (I30-I52)	1 626	3,7	8 Other forms of heart disease (I30-I52)	775	3,2	8 Chronic lower respiratory diseases (J40-J47)	723	3,6
9 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	1 517	3,4	9 Human immunodeficiency virus [HIV] disease (B20-B24)	744	3,0	9 Hypertensive diseases (I10-I15)	696	3,5
10 Hypertensive diseases (I10-I15)	1 149	2,6	10 Influenza and pneumonia (J10-J18)	553	2,3	10 Influenza and pneumonia (J10-J18)	595	3,0
...Other natural causes	16 747	37,9	...Other natural causes	8 241	33,8	...Other natural causes	8 325	42,0
...Non-natural causes	6 116	13,8	...Non-natural causes	4 853	19,9	...Non-natural causes	1 263	6,4
...All causes	44 240	100,0	...All causes	24 411	100,0	...All causes	19 829	100,0
Western Cape, both sexes, 0-14			Western Cape, males, 0-14			Western Cape, females, 0-14		
No.	%		No.	%		No.	%	
1 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	382	11,2	1 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	210	11,2	1 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	172	11,1
2 Intestinal infectious diseases (A00-A09)	334	9,8	2 Intestinal infectious diseases (A00-A09)	171	9,1	2 Intestinal infectious diseases (A00-A09)	163	10,5
3 Influenza and pneumonia (J10-J18)	222	6,5	3 Influenza and pneumonia (J10-J18)	112	6,0	3 Influenza and pneumonia (J10-J18)	110	7,1
4 Disorders related to length of gestation and foetal growth (P05-P08)	167	4,9	4 Disorders related to length of gestation and foetal growth (P05-P08)	94	5,0	4 Disorders related to length of gestation and foetal growth (P05-P08)	73	4,7
5 Other disorders originating in the perinatal period (P90-P96)	121	3,5	5 Other disorders originating in the perinatal period (P90-P96)	74	4,0	5 Human immunodeficiency virus [HIV] disease (B20-B24)	51	3,3
6 Human immunodeficiency virus [HIV] disease (B20-B24)	104	3,0	6 Infections specific to the perinatal period (P35-P39)	60	3,2	6 Other disorders originating in the perinatal period (P90-P96)	47	3,0
7 Infections specific to the perinatal period (P35-P39)	100	2,9	7 Human immunodeficiency virus [HIV] disease (B20-B24)	53	2,8	7 Tuberculosis (A15-A19)**	44	2,8
8 Tuberculosis (A15-A19)**	93	2,7	8 Tuberculosis (A15-A19)**	49	2,6	8 Infections specific to the perinatal period (P35-P39)	40	2,6
9 Congenital malformations of the circulatory system (Q20-Q28)	75	2,2	9 Congenital malformations of the circulatory system (Q20-Q28)	37	2,0	9 Congenital malformations of the circulatory system (Q20-Q28)	38	2,5
10 Malnutrition (E40-E46)	60	1,8	10 Malnutrition (E40-E46)	33	1,8	10 Certain disorders involving the immune mechanism (D80-D89)	30	1,9
...Other natural causes	1 301	38,0	...Other natural causes	702	37,5	...Other natural causes	596	38,5
...Non-natural causes	462	13,5	...Non-natural causes	277	14,8	...Non-natural causes	185	11,9
...All causes	3 421	100,0	...All causes	1 872	100,0	...All causes	1 549	100,0
Western Cape, both sexes, 15-49			Western Cape, males, 15-49			Western Cape, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	2 764	17,5	1 Tuberculosis (A15-A19)**	1 603	16,4	1 Tuberculosis (A15-A19)**	1 161	19,4
2 Human immunodeficiency virus [HIV] disease (B20-B24)	1 394	8,8	2 Human immunodeficiency virus [HIV] disease (B20-B24)	580	5,9	2 Human immunodeficiency virus [HIV] disease (B20-B24)	814	13,6
3 Other viral diseases (B25-B34)	465	2,9	3 Chronic lower respiratory diseases (J40-J47)	203	2,1	3 Other viral diseases (B25-B34)	284	4,7
4 Influenza and pneumonia (J10-J18)	345	2,2	4 Ischaemic heart diseases (I20-I25)	202	2,1	4 Certain disorders involving the immune mechanism (D80-D89)	188	3,1
5 Certain disorders involving the immune mechanism (D80-D89)	314	2,0	5 Other viral diseases (B25-B34)	181	1,8	5 Influenza and pneumonia (J10-J18)	170	2,8
6 Chronic lower respiratory diseases (J40-J47)	308	2,0	6 Influenza and pneumonia (J10-J18)	175	1,8	6 Diabetes mellitus (E10-E14)	151	2,5
7 Ischaemic heart diseases (I20-I25)	283	1,8	7 Other forms of heart disease (I30-I52)	170	1,7	7 Cerebrovascular diseases (I60-I69)	138	2,3
8 Cerebrovascular diseases (I60-I69)	282	1,8	8 Malignant neoplasms of digestive organs (C15-C26)	155	1,6	8 Malignant neoplasms of female genital organs (C51-C58)	126	2,1
9 Diabetes mellitus (E10-E14)	279	1,8	9 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	152	1,6	9 Malignant neoplasm of breast (C50)	115	1,9
10 Other forms of heart disease (I30-I52)	270	1,7	10 Cerebrovascular diseases (I60-I69)	145	1,5	10 Malignant neoplasms of digestive organs (C15-C26)	106	1,8
...Other natural causes	4 397	27,8	...Other natural causes	2 310	23,6	...Other natural causes	1 972	32,9
...Non-natural causes	4 691	29,7	Non-natural causes	3 928	40,1	...Non-natural causes	763	12,7
...All causes	15 792	100,0	All causes	9 804	100,0	...All causes	5 988	100,0
Western Cape, both sexes, 50-64			Western Cape, males, 50-64			Western Cape, females, 50-64		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	851	8,9	1 Tuberculosis (A15-A19)**	574	10,3	1 Diabetes mellitus (E10-E14)	451	11,4
2 Diabetes mellitus (E10-E14)	803	8,4	2 Ischaemic heart diseases (I20-I25)	537	9,6	2 Cerebrovascular diseases (I60-I69)	277	7,0
3 Ischaemic heart diseases (I20-I25)	784	8,2	3 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	415	7,4	2 Tuberculosis (A15-A19)**	277	7,0
4 Chronic lower respiratory diseases (J40-J47)	622	6,5	4 Chronic lower respiratory diseases (J40-J47)	393	7,0	4 Ischaemic heart diseases (I20-I25)	247	6,2
5 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	611	6,4	5 Malignant neoplasms of digestive organs (C15-C26)	356	6,4	5 Malignant neoplasms of digestive organs (C15-C26)	230	5,8
6 Malignant neoplasms of digestive organs (C15-C26)	586	6,1	6 Diabetes mellitus (E10-E14)	352	6,3	6 Chronic lower respiratory diseases (J40-J47)	229	5,8
7 Cerebrovascular diseases (I60-I69)	565	5,9	7 Cerebrovascular diseases (I60-I69)	288	5,1	7 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	196	4,9
8 Other forms of heart disease (I30-I52)	325	3,4	8 Other forms of heart disease (I30-I52)	277	5,1	8 Malignant neoplasm of breast (C50)	188	4,7
9 Hypertensive diseases (I10-I15)	274	2,9	9 Hypertensive diseases (I10-I15)	125	2,2	9 Malignant neoplasms of female genital organs (C51-C58)	156	3,9
10 Malignant neoplasms of ill-defined, secondary and unspecified sites (C76-C80)	209	2,2	10 Malignant neoplasms of ill-defined, secondary and unspecified sites (C76-C80)	119	2,1	10 Hypertensive diseases (I10-I15)	149	3,8
Other natural causes	3 329	34,8	...Other natural causes	1 813	32,4	...Other natural causes	1 410	35,6
Non-natural causes	599	6,3	...Non-natural causes	449	8,0	...Non-natural causes	150	3,8
All causes	9 558	100,0	...All causes	5 598	100,0	...All causes	3 960	100,0
Western Cape, both sexes, 65+			Western Cape, males, 65+			Western Cape, females, 65+		
No.	%		No.	%		No.	%	
1 Ischaemic heart diseases (I20-I25)	1 772	11,5	1 Ischaemic heart diseases (I20-I25)	905	12,7	1 Cerebrovascular diseases (I60-I69)	948	11,4
2 Cerebrovascular diseases (I60-I69)	1 526	9,9	2 Cerebrovascular diseases (I60-I69)	578	8,1	2 Diabetes mellitus (E10-E14)	929	11,1
3 Diabetes mellitus (E10-E14)	1 462	9,5	3 Chronic lower respiratory diseases (J40-J47)	544	7,6	3 Ischaemic heart diseases (I20-I25)	867	10,4
4 Other forms of heart disease (I30-I52)	990	6,4	4 Diabetes mellitus (E10-E14)	533	7,5	4 Other forms of heart disease (I30-I52)	584	7,0
5 Chronic lower respiratory diseases (J40-J47)	927	6,0	5 Malignant neoplasms of digestive organs (C15-C26)	450	6,3	5 Hypertensive diseases (I10-I15)	483	5,8
6 Malignant neoplasms of digestive organs (C15-C26)	859	5,6	6 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	436	6,1	6 Malignant neoplasms of digestive organs (C15-C26)	409	4,9
7 Hypertensive diseases (I10-I15)	747	4,8	7 Other forms of heart disease (I30-I52)	406	5,7	7 Chronic lower respiratory diseases (J40-J47)	383	4,6
8 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	689	4,5	8 Malignant neoplasms of male genital organs (C60-C63)	318	4,5	8 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	253	3,0
9 Influenza and pneumonia (J10-J18)	417	2,7	9 Hypertensive diseases (I10-I15)	264	3,7	9 Influenza and pneumonia (J10-J18)	243	2,9
10 Tuberculosis (A15-A19)**	333	2,2	10 Tuberculosis (A15-A19)**	228	3,2	10 Malignant neoplasm of breast (C50)	206	2,5
Other natural causes	5 383	34,8	...Other natural causes	2 276	31,9	Other natural causes	2 862	34,3
Non-natural causes	364	2,4	...Non-natural causes	199	2,8	Non-natural causes	165	2,0
All causes	15 469	100,0	...All causes	7 137	100,0	All causes	8 332	100,0

\*Excluding a total of 204 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex. \*\*Including deaths due to MDR-TB and XDR-TB

**Appendix H.2: The ten leading underlying natural causes of death by age and sex: Eastern Cape, 2006\***

Eastern Cape, both sexes, all ages			Eastern Cape, males, all ages			Eastern Cape, females, all ages		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	12 366	13,4	1 Tuberculosis (A15-A19)	6 604	14,6	1 Tuberculosis (A15-A19)**	5 762	12,2
2 Influenza and pneumonia (J10-J18)	4 890	5,3	2 Influenza and pneumonia (J10-J18)	2 276	5,0	2 Influenza and pneumonia (J10-J18)	2 614	5,6
3 Intestinal infectious diseases (A00-A09)	4 186	4,5	3 Chronic lower respiratory diseases (J40-J47)	2 144	4,7	3 Intestinal infectious diseases (A00-A09)	2 394	5,1
4 Chronic lower respiratory diseases (J40-J47)	3 901	4,2	4 Intestinal infectious diseases (A00-A09)	1 792	4,0	4 Cerebrovascular diseases (I60-I69)	2 130	4,5
5 Cerebrovascular diseases (I60-I69)	3 606	3,9	5 Cerebrovascular diseases (I60-I69)	1 476	3,3	5 Other forms of heart disease (I30-I52)	1 962	4,2
6 Other forms of heart disease (I30-I52)	3 388	3,7	6 Other forms of heart disease (I30-I52)	1 426	3,2	6 Chronic lower respiratory diseases (J40-J47)	1 757	3,7
7 Diabetes mellitus (E10-E14)	2 677	2,9	7 Human immunodeficiency virus [HIV] disease (B20-B24)	1 029	2,3	7 Diabetes mellitus (E10-E14)	1 654	3,5
8 Human immunodeficiency virus [HIV] disease (B20-B24)	2 404	2,6	8 Diabetes mellitus (E10-E14)	1 023	2,3	8 Certain disorders involving the immune mechanism (D80-D89)	1 429	3,0
9 Certain disorders involving the immune mechanism (D80-D89)	2 250	2,4	9 Malignant neoplasms of digestive organs (C15-C26)	970	2,1	9 Other viral diseases (B25-B34)	1 387	2,9
10 Other viral diseases (B25-B34)	2 086	2,3	10 Certain disorders involving the immune mechanism (D80-D89)	821	1,8	10 Human immunodeficiency virus [HIV] disease (B20-B24)	1 375	2,9
...Other natural causes	42 197	45,8	...Other natural causes	19 426	43,0	...Other natural causes	22 500	47,8
...Non-natural causes	8 256	9,0	...Non-natural causes	6 168	13,7	...Non-natural causes	2 088	4,4
...All causes	92 207	100,0	...All causes	45 155	100,0	...All causes	47 052	100,0
Eastern Cape, both sexes, 0-14			Eastern Cape, males, 0-14			Eastern Cape, females, 0-14		
No.	%		No.	%		No.	%	
1 Intestinal infectious diseases (A00-A09)	1 280	16,8	1 Intestinal infectious diseases (A00-A09)	691	17,0	1 Intestinal infectious diseases (A00-A09)	589	16,5
2 Influenza and pneumonia (J10-J18)	846	11,1	2 Influenza and pneumonia (J10-J18)	441	10,9	2 Influenza and pneumonia (J10-J18)	405	11,3
3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	488	6,4	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	281	6,9	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	207	5,8
4 Tuberculosis (A15-A19)**	323	4,2	4 Tuberculosis (A15-A19)**	154	3,8	4 Tuberculosis (A15-A19)	169	4,7
5 Malnutrition (E40-E46)	211	2,8	5 Malnutrition (E40-E46)	110	2,7	5 Malnutrition (E40-E46)	101	2,8
6 Certain disorders involving the immune mechanism (D80-D89)	187	2,4	6 Certain disorders involving the immune mechanism (D80-D89)	95	2,3	6 Human immunodeficiency virus [HIV] disease (B20-B24)	97	2,7
7 Human immunodeficiency virus [HIV] disease (B20-B24)	184	2,4	7 Human immunodeficiency virus [HIV] disease (B20-B24)	87	2,1	7 Certain disorders involving the immune mechanism (D80-D89)	92	2,6
8 Other viral diseases (B25-B34)	140	1,8	8 Infections specific to the perinatal period (P35-P39)	84	2,1	8 Other viral diseases (B25-B34)	69	1,9
9 Infections specific to the perinatal period (P35-P39)	140	1,8	9 Other viral diseases (B25-B34)	71	1,7	9 Other bacterial diseases (A30-A49)	59	1,6
10 Inflammatory diseases of the central nervous system (G00-G09)	114	1,5	10 Other disorders originating in the perinatal period (P90-P96)	67	1,7	10 Infections specific to the perinatal period (P35-P39)	56	1,6
...Other natural causes	2 928	38,3	...Other natural causes	1 493	36,8	...Other natural causes	1 423	39,8
...Non-natural causes	797	10,4	...Non-natural causes	485	11,9	...Non-natural causes	312	8,7
...All causes	7 638	100,0	...All causes	4 059	100,0	...All causes	3 579	100,0
Eastern Cape, both sexes, 15-49			Eastern Cape, males, 15-49			Eastern Cape, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	8 505	20,0	1 Tuberculosis (A15-A19)**	4 192	20,4	1 Tuberculosis (A15-A19)	4 313	19,7
2 Influenza and pneumonia (J10-J18)	2 247	5,3	2 Influenza and pneumonia (J10-J18)	911	4,4	2 Intestinal infectious diseases (A00-A09)	1 361	6,2
3 Intestinal infectious diseases (A00-A09)	2 119	5,0	3 Human immunodeficiency virus [HIV] disease (B20-B24)	813	4,0	3 Influenza and pneumonia (J10-J18)	1 336	6,1
4 Human immunodeficiency virus [HIV] disease (B20-B24)	1 976	4,7	4 Intestinal infectious diseases (A00-A09)	758	3,7	4 Certain disorders involving the immune mechanism (D80-D89)	1 212	5,5
5 Certain disorders involving the immune mechanism (D80-D89)	1 805	4,2	5 Certain disorders involving the immune mechanism (D80-D89)	593	2,9	5 Other viral diseases (B25-B34)	1 209	5,5
6 Other viral diseases (B25-B34)	1 746	4,1	6 Other viral diseases (B25-B34)	537	2,6	6 Human immunodeficiency virus [HIV] disease (B20-B24)	1 163	5,3
7 Inflammatory diseases of the central nervous system (G00-G09)	891	2,1	7 Chronic lower respiratory diseases (J40-J47)	437	2,1	7 Inflammatory diseases of the central nervous system (G00-G09)	486	2,2
8 Chronic lower respiratory diseases (J40-J47)	834	2,0	8 Inflammatory diseases of the central nervous system (G00-G09)	405	2,0	8 Other forms of heart disease (I30-I52)	417	1,9
9 Other forms of heart disease (I30-I52)	759	1,8	9 Other forms of heart disease (I30-I52)	342	1,7	9 Chronic lower respiratory diseases (J40-J47)	397	1,8
10 Other diseases of the respiratory system (J95-J99)	554	1,3	10 Episodic and paroxysmal disorders (G40-G47)	311	1,5	10 Other diseases of the respiratory system (J95-J99)	316	1,4
...Other natural causes	15 221	35,8	...Other natural causes	6 562	31,9	...Other natural causes	8 586	39,2
...Non-natural causes	5 820	13,7	...Non-natural causes	4 707	22,9	...Non-natural causes	1 113	5,1
...All causes	42 477	100,0	...All causes	20 568	100,0	...All causes	21 909	100,0
Eastern Cape, both sexes, 50-64			Eastern Cape, males, 50-64			Eastern Cape, females, 50-64		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	2 137	13,3	1 Tuberculosis (A15-A19)**	1 435	15,7	1 Tuberculosis (A15-A19)**	702	10,2
2 Chronic lower respiratory diseases (J40-J47)	1 046	6,5	2 Chronic lower respiratory diseases (J40-J47)	680	7,4	2 Diabetes mellitus (E10-E14)	481	7,0
3 Cerebrovascular diseases (I60-I69)	866	5,4	3 Cerebrovascular diseases (I60-I69)	401	4,4	3 Cerebrovascular diseases (I60-I69)	465	6,8
4 Diabetes mellitus (E10-E14)	822	5,1	4 Influenza and pneumonia (J10-J18)	387	4,2	4 Chronic lower respiratory diseases (J40-J47)	366	5,3
5 Other forms of heart disease (I30-I52)	721	4,5	5 Other forms of heart disease (I30-I52)	358	3,9	5 Other forms of heart disease (I30-I52)	363	5,3
6 Influenza and pneumonia (J10-J18)	635	4,0	6 Diabetes mellitus (E10-E14)	341	3,7	6 Hypertensive diseases (I10-I15)	269	3,9
7 Malignant neoplasms of digestive organs (C15-C26)	548	3,4	7 Malignant neoplasms of digestive organs (C15-C26)	322	3,5	7 Influenza and pneumonia (J10-J18)	248	3,6
8 Hypertensive diseases (I10-I15)	487	3,0	8 Hypertensive diseases (I10-I15)	218	2,4	8 Malignant neoplasms of digestive organs (C15-C26)	226	3,3
9 Intestinal infectious diseases (A00-A09)	383	2,4	9 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	216	2,4	9 Intestinal infectious diseases (A00-A09)	189	2,8
10 Ischaemic heart diseases (I20-I25)	361	2,3	10 Ischaemic heart diseases (I20-I25)	215	2,3	10 Malignant neoplasms of female genital organs (C51-C58)	176	2,6
...Other natural causes	7 114	44,4	...Other natural causes	3 964	43,3	...Other natural causes	3 098	45,1
...Non-natural causes	907	5,7	...Non-natural causes	620	6,8	...Non-natural causes	287	4,2
...All causes	16 027	100,0	...All causes	9 157	100,0	...All causes	6 870	100,0
Eastern Cape, both sexes, 65+			Eastern Cape, males, 65+			Eastern Cape, females, 65+		
No.	%		No.	%		No.	%	
1 Cerebrovascular diseases (I60-I69)	2 212	8,5	1 Chronic lower respiratory diseases (J40-J47)	988	8,7	1 Cerebrovascular diseases (I60-I69)	1 374	9,4
2 Chronic lower respiratory diseases (J40-J47)	1 942	7,5	2 Cerebrovascular diseases (I60-I69)	838	7,4	2 Other forms of heart disease (I30-I52)	1 158	7,9
3 Other forms of heart disease (I30-I52)	1 853	7,1	3 Tuberculosis (A15-A19)**	823	7,2	3 Chronic lower respiratory diseases (J40-J47)	954	6,5
4 Diabetes mellitus (E10-E14)	1 474	5,7	4 Other forms of heart disease (I30-I52)	695	6,1	4 Diabetes mellitus (E10-E14)	941	6,4
5 Tuberculosis (A15-A19)**	1 401	5,4	5 Influenza and pneumonia (J10-J18)	537	4,7	5 Hypertensive diseases (I10-I15)	851	5,8
6 Hypertensive diseases (I10-I15)	1 200	4,6	6 Diabetes mellitus (E10-E14)	533	4,7	6 Influenza and pneumonia (J10-J18)	625	4,3
7 Influenza and pneumonia (J10-J18)	1 162	4,5	7 Malignant neoplasms of digestive organs (C15-C26)	482	4,2	7 Tuberculosis (A15-A19)	578	3,9
8 Malignant neoplasms of digestive organs (C15-C26)	1 038	4,0	8 Ischaemic heart diseases (I20-I25)	390	3,4	8 Malignant neoplasms of digestive organs (C15-C26)	556	3,8
9 Ischaemic heart diseases (I20-I25)	817	3,1	9 Hypertensive diseases (I10-I15)	349	3,1	9 Ischaemic heart diseases (I20-I25)	427	2,9
10 Other diseases of the respiratory system (J95-J99)	434	1,7	10 Malignant neoplasms of male genital organs (C60-C63)	241	2,1	10 Intestinal infectious diseases (A00-A09)	255	1,7
...Other natural causes	11 800	45,3	...Other natural causes	5 139	45,2	...Other natural causes	6 599	44,9
...Non-natural causes	732	2,8	...Non-natural causes	356	3,1	...Non-natural causes	376	2,6
...All causes	26 065	100,0	...All causes	11 371	100,0	...All causes	14 694	100,0

\*Excluding a total of 443 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex.

\*\*Including deaths due to *MDR-TB* and *XDR-TB*

**Appendix H.3: The ten leading underlying natural causes of death by age and sex: Northern Cape, 2006\***

Northern Cape, both sexes, all ages			Northern Cape, males, all ages			Northern Cape, females, all ages		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	1 678	13,2	1 Tuberculosis (A15-A19)**	986	14,7	1 Tuberculosis (A15-A19)**	692	11,6
2 Influenza and pneumonia (J10-J18)	806	6,4	2 Influenza and pneumonia (J10-J18)	399	5,9	2 Influenza and pneumonia (J10-J18)	407	6,8
3 Cerebrovascular diseases (I60-I69)	683	5,4	3 Chronic lower respiratory diseases (J40-J47)	371	5,5	3 Cerebrovascular diseases (I60-I69)	394	6,6
4 Chronic lower respiratory diseases (J40-J47)	576	4,5	4 Cerebrovascular diseases (I60-I69)	289	4,3	4 Intestinal infectious diseases (A00-A09)	312	5,2
5 Intestinal infectious diseases (A00-A09)	555	4,4	5 Ischaemic heart diseases (I20-I25)	255	3,8	5 Other forms of heart disease (I30-I52)	295	5,0
6 Other forms of heart disease (I30-I52)	529	4,2	6 Intestinal infectious diseases (A00-A09)	243	3,6	6 Certain disorders involving the immune mechanism (D80-D89)	274	4,6
7 Certain disorders involving the immune mechanism (D80-D89)	463	3,7	7 Other forms of heart disease (I30-I52)	234	3,5	7 Diabetes mellitus (E10-E14)	228	3,8
8 Ischaemic heart diseases (I20-I25)	424	3,3	8 Certain disorders involving the immune mechanism (D80-D89)	189	2,8	8 Chronic lower respiratory diseases (J40-J47)	205	3,4
9 Diabetes mellitus (E10-E14)	371	2,9	9 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	150	2,2	9 Hypertensive diseases (I10-I15)	198	3,3
10 Human immunodeficiency virus [HIV] disease (B20-B24)	324	2,6	10 Human immunodeficiency virus [HIV] disease (B20-B24)	149	2,2	10 Human immunodeficiency virus [HIV] disease (B20-B24)	175	2,9
...Other natural causes	5 047	39,8	...Other natural causes	2 527	37,6	...Other natural causes	2 484	41,7
...Non-natural causes	1 212	9,6	...Non-natural causes	922	13,7	...Non-natural causes	290	4,9
...All causes	12 668	100,0	...All causes	6 714	100,0	...All causes	5 954	100,0
Northern Cape, both sexes, 0-14			Northern Cape, males, 0-14			Northern Cape, females, 0-14		
No.	%		No.	%		No.	%	
1 Intestinal infectious diseases (A00-A09)	261	18,9	1 Intestinal infectious diseases (A00-A09)	139	18,7	1 Intestinal infectious diseases (A00-A09)	122	19,2
2 Influenza and pneumonia (J10-J18)	138	10,0	2 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	80	10,7	2 Influenza and pneumonia (J10-J18)	72	11,4
3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	131	9,5	3 Influenza and pneumonia (J10-J18)	66	8,9	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	44	6,9
4 Malnutrition (E40-E46)	67	4,9	4 Malnutrition (E40-E46)	40	5,4	4 Disorders related to length of gestation and fetal growth (P05-P08)	29	4,6
5 Disorders related to length of gestation and fetal growth (P05-P08)	64	4,6	5 Disorders related to length of gestation and fetal growth (P05-P08)	35	4,7	5 Tuberculosis (A15-A19)**	29	4,6
6 Tuberculosis (A15-A19)**	57	4,1	6 Human immunodeficiency virus [HIV] disease (B20-B24)	29	3,9	6 Malnutrition (E40-E46)	27	4,3
7 Human immunodeficiency virus [HIV] disease (B20-B24)	43	3,1	7 Tuberculosis (A15-A19)**	28	3,8	7 Certain disorders involving the immune mechanism (D80-D89)	16	2,5
8 Certain disorders involving the immune mechanism (D80-D89)	35	2,5	8 Certain disorders involving the immune mechanism (D80-D89)	19	2,6	8 Human immunodeficiency virus [HIV] disease (B20-B24)	14	2,2
9 Other bacterial diseases (A30-A49)	27	2,0	9 Other bacterial diseases (A30-A49)	19	2,6	9 Protozoal diseases (B50-B64)	13	2,1
10 Other viral diseases (B25-B34)	26	1,9	10 Other viral diseases (B25-B34)	15	2,0	10 Inflammatory diseases of the central nervous system (G00-G09)	12	1,9
...Other natural causes	404	29,3	...Other natural causes	206	27,7	...Other natural causes	187	29,5
...Non-natural causes	126	9,1	...Non-natural causes	69	9,3	...Non-natural causes	57	9,0
...All causes	1 379	100,0	...All causes	745	100,0	...All causes	634	100,0
Northern Cape, both sexes, 15-49			Northern Cape, males, 15-49			Northern Cape, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	1 237	23,3	1 Tuberculosis (A15-A19)**	693	23,8	1 Tuberculosis (A15-A19)**	544	22,6
2 Certain disorders involving the immune mechanism (D80-D89)	365	6,9	2 Influenza and pneumonia (J10-J18)	170	5,8	2 Certain disorders involving the immune mechanism (D80-D89)	222	9,2
3 Influenza and pneumonia (J10-J18)	363	6,8	3 Certain disorders involving the immune mechanism (D80-D89)	143	4,9	3 Influenza and pneumonia (J10-J18)	193	8,0
4 Human immunodeficiency virus [HIV] disease (B20-B24)	249	4,7	4 Human immunodeficiency virus [HIV] disease (B20-B24)	105	3,6	4 Human immunodeficiency virus [HIV] disease (B20-B24)	144	6,0
5 Other viral diseases (B25-B34)	210	3,9	5 Other viral diseases (B25-B34)	95	3,3	5 Intestinal infectious diseases (A00-A09)	124	5,1
6 Intestinal infectious diseases (A00-A09)	190	3,6	6 Other forms of heart disease (I30-I52)	77	2,6	6 Other viral diseases (B25-B34)	115	4,8
7 Other forms of heart disease (I30-I52)	135	2,5	7 Intestinal infectious diseases (A00-A09)	66	2,3	7 Other forms of heart disease (I30-I52)	58	2,4
8 Cerebrovascular diseases (I60-I69)	99	1,9	8 Chronic lower respiratory diseases (J40-J47)	62	2,1	8 Cerebrovascular diseases (I60-I69)	47	1,9
9 Chronic lower respiratory diseases (J40-J47)	98	1,8	9 Cerebrovascular diseases (I60-I69)	52	1,8	9 Diseases of liver (K70-K77)	38	1,6
10 Diseases of liver (K70-K77)	71	1,3	10 Ischaemic heart diseases (I20-I25)	40	1,4	10 Chronic lower respiratory diseases (J40-J47)	36	1,5
...Other natural causes	1 427	26,8	...Other natural causes	693	23,8	...Other natural causes	727	30,1
...Non-natural causes	874	16,4	...Non-natural causes	710	24,4	...Non-natural causes	164	6,8
...All causes	5 318	100,0	...All causes	2 906	100,0	...All causes	2 412	100,0
Northern Cape, both sexes, 50-64			Northern Cape, males, 50-64			Northern Cape, females, 50-64		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	286	10,8	1 Tuberculosis (A15-A19)**	195	13,0	1 Cerebrovascular diseases (I60-I69)	102	8,9
2 Chronic lower respiratory diseases (J40-J47)	211	8,0	2 Chronic lower respiratory diseases (J40-J47)	139	9,2	2 Tuberculosis (A15-A19)**	91	7,9
3 Cerebrovascular diseases (I60-I69)	191	7,2	3 Ischaemic heart diseases (I20-I25)	99	6,6	3 Other forms of heart disease (I30-I52)	75	6,5
4 Influenza and pneumonia (J10-J18)	161	6,1	4 Influenza and pneumonia (J10-J18)	93	6,2	4 Chronic lower respiratory diseases (J40-J47)	72	6,3
5 Ischaemic heart diseases (I20-I25)	144	5,4	5 Cerebrovascular diseases (I60-I69)	89	5,9	5 Influenza and pneumonia (J10-J18)	68	5,9
6 Other forms of heart disease (I30-I52)	125	4,7	6 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	77	5,1	6 Diabetes mellitus (E10-E14)	64	5,6
7 Diabetes mellitus (E10-E14)	117	4,4	7 Malignant neoplasms of digestive organs (C15-C26)	54	3,6	7 Hypertensive diseases (I10-I15)	55	4,8
8 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	100	3,8	8 Diabetes mellitus (E10-E14)	53	3,5	8 Ischaemic heart diseases (I20-I25)	45	3,9
9 Malignant neoplasms of digestive organs (C15-C26)	98	3,7	9 Other forms of heart disease (I30-I52)	50	3,3	9 Malignant neoplasms of digestive organs (C15-C26)	44	3,8
10 Hypertensive diseases (I10-I15)	87	3,3	10 Hypertensive diseases (I10-I15)	32	2,1	10 Malignant neoplasms of female genital organs (C51-C58)	44	3,8
...Other natural causes	1 004	37,9	...Other natural causes	522	34,7	...Other natural causes	461	40,1
...Non-natural causes	128	4,8	...Non-natural causes	100	6,7	...Non-natural causes	28	2,4
...All causes	2 652	100,0	...All causes	1 503	100,0	...All causes	1 149	100,0
Northern Cape, both sexes, 65+			Northern Cape, males, 65+			Northern Cape, females, 65+		
No.	%		No.	%		No.	%	
1 Cerebrovascular diseases (I60-I69)	391	11,8	1 Chronic lower respiratory diseases (J40-J47)	170	10,9	1 Cerebrovascular diseases (I60-I69)	244	13,9
2 Chronic lower respiratory diseases (J40-J47)	264	8,0	2 Cerebrovascular diseases (I60-I69)	147	9,4	2 Other forms of heart disease (I30-I52)	155	8,8
3 Other forms of heart disease (I30-I52)	255	7,7	3 Ischaemic heart diseases (I20-I25)	116	7,4	3 Diabetes mellitus (E10-E14)	130	7,4
4 Ischaemic heart diseases (I20-I25)	228	6,9	4 Other forms of heart disease (I30-I52)	100	6,4	4 Hypertensive diseases (I10-I15)	129	7,3
5 Hypertensive diseases (I10-I15)	199	6,0	5 Malignant neoplasms of male genital organs (C60-C63)	71	4,6	5 Ischaemic heart diseases (I20-I25)	112	6,4
6 Diabetes mellitus (E10-E14)	194	5,8	6 Hypertensive diseases (I10-I15)	70	4,5	6 Chronic lower respiratory diseases (J40-J47)	94	5,3
7 Influenza and pneumonia (J10-J18)	144	4,3	7 Influenza and pneumonia (J10-J18)	70	4,5	7 Influenza and pneumonia (J10-J18)	74	4,2
8 Malignant neoplasms of digestive organs (C15-C26)	136	4,1	8 Tuberculosis (A15-A19)**	70	4,5	8 Malignant neoplasms of digestive organs (C15-C26)	67	3,8
9 Tuberculosis (A15-A19)**	98	3,0	9 Malignant neoplasms of digestive organs (C15-C26)	69	4,4	9 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	37	2,1
10 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	87	2,6	10 Diabetes mellitus (E10-E14)	64	4,1	10 Malignant neoplasms of female genital organs (C51-C58)	36	2,0
...Other natural causes	1 239	37,3	...Other natural causes	570	36,5	...Other natural causes	640	36,4
...Non-natural causes	84	2,5	...Non-natural causes	43	2,8	...Non-natural causes	41	2,3
...All causes	3 319	100,0	...All causes	1 560	100,0	...All causes	1 759	100,0

\*Excluding a total of 55 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex.

\*\*Including deaths due to MDR-TB and XDR-TB

**Appendix H.4: The ten leading underlying natural causes of death by age and sex: Free State, 2006\***

Free State, both sexes, all ages			Free State, males, all ages			Free State, females, all ages		
No.	%		No.	%		No.	%	
1 Influenza and pneumonia (J10-J18)	7 838	15,1	1 Influenza and pneumonia (J10-J18)	3 815	14,7	1 Influenza and pneumonia (J10-J18)	4 023	15,4
2 Tuberculosis (A15-A19)**	6 343	12,2	2 Tuberculosis (A15-A19)**	3 528	13,6	2 Tuberculosis (A15-A19)**	2 815	10,8
3 Intestinal infectious diseases (A00-A09)	4 084	7,8	3 Intestinal infectious diseases (A00-A09)	1 857	7,1	3 Intestinal infectious diseases (A00-A09)	2 227	8,5
4 Other forms of heart disease (I30-I52)	2 468	4,7	4 Other forms of heart disease (I30-I52)	1 081	4,2	4 Other forms of heart disease (I30-I52)	1 387	5,3
5 Certain disorders involving the immune mechanism (D80-D89)	2 035	3,9	5 Certain disorders involving the immune mechanism (D80-D89)	925	3,6	5 Cerebrovascular diseases (I60-I69)	1 131	4,3
6 Cerebrovascular diseases (I60-I69)	1 892	3,6	6 Cerebrovascular diseases (I60-I69)	761	2,9	6 Certain disorders involving the immune mechanism (D80-D89)	1 110	4,3
7 Diabetes mellitus (E10-E14)	1 196	2,3	7 Chronic lower respiratory diseases (J40-J47)	657	2,5	7 Diabetes mellitus (E10-E14)	752	2,9
8 Chronic lower respiratory diseases (J40-J47)	1 148	2,2	8 Diabetes mellitus (E10-E14)	444	1,7	8 Hypertensive diseases (I10-I15)	731	2,8
9 Hypertensive diseases (I10-I15)	1 118	2,1	9 Ischaemic heart diseases (I20-I25)	437	1,7	9 Chronic lower respiratory diseases (J40-J47)	491	1,9
10 Human immunodeficiency virus [HIV] disease (B20-B24)	758	1,5	10 Human immunodeficiency virus [HIV] disease (B20-B24)	429	1,6	10 Inflammatory diseases of the central nervous system (G00-G09)	397	1,5
...Other natural causes	19 894	38,2	...Other natural causes	9 641	37,1	...Other natural causes	10 135	38,9
...Non-natural causes	3 284	6,3	...Non-natural causes	2 427	9,3	...Non-natural causes	857	3,3
...All causes	52 058	100,0	...All causes	26 002	100,0	...All causes	26 056	100,0
Free State, both sexes, 0-14			Free State, males, 0-14			Free State, females, 0-14		
No.	%		No.	%		No.	%	
1 Influenza and pneumonia (J10-J18)	1 575	21,8	1 Intestinal infectious diseases (A00-A09)	799	20,5	1 Influenza and pneumonia (J10-J18)	801	23,9
2 Intestinal infectious diseases (A00-A09)	1 459	20,2	2 Influenza and pneumonia (J10-J18)	774	19,9	2 Intestinal infectious diseases (A00-A09)	660	19,7
3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	609	8,4	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	367	9,4	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	242	7,2
4 Malnutrition (E40-E46)	331	4,6	4 Malnutrition (E40-E46)	174	4,5	4 Malnutrition (E40-E46)	157	4,7
5 Disorders related to length of gestation and fetal growth (P05-P08)	219	3,0	5 Tuberculosis (A15-A19)	117	3,0	5 Disorders related to length of gestation and fetal growth (P05-P08)	113	3,4
6 Tuberculosis (A15-A19)	203	2,8	6 Disorders related to length of gestation and fetal growth (P05-P08)	106	2,7	6 Tuberculosis (A15-A19)	86	2,6
7 Certain disorders involving the immune mechanism (D80-D89)	154	2,1	7 Certain disorders involving the immune mechanism (D80-D89)	100	2,6	7 Protozoal diseases (B50-B64)	76	2,3
8 Protozoal diseases (B50-B64)	150	2,1	8 Protozoal diseases (B50-B64)	74	1,9	8 Other acute lower respiratory infections (J20-J22)	56	1,7
9 Other acute lower respiratory infections (J20-J22)	122	1,7	9 Other acute lower respiratory infections (J20-J22)	66	1,7	9 Certain disorders involving the immune mechanism (D80-D89)	54	1,6
10 Inflammatory diseases of the central nervous system (G00-G09)	101	1,4	10 Other disorders originating in the perinatal period (P90-P96)	64	1,6	10 Other bacterial diseases (A30-A49)	42	1,3
...Other natural causes	1 952	27,0	...Other natural causes	1 048	26,9	...Other natural causes	899	26,9
...Non-natural causes	362	5,0	...Non-natural causes	201	5,2	...Non-natural causes	161	4,8
...All causes	7 237	100,0	...All causes	3 890	100,0	...All causes	3 347	100,0
Free State, both sexes, 15-49			Free State, males, 15-49			Free State, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	4 880	18,7	1 Tuberculosis (A15-A19)**	2 570	20,2	1 Influenza and pneumonia (J10-J18)	2 401	18,0
2 Influenza and pneumonia (J10-J18)	4 422	17,0	2 Influenza and pneumonia (J10-J18)	2 021	15,9	2 Tuberculosis (A15-A19)**	2 310	17,3
3 Intestinal infectious diseases (A00-A09)	1 916	7,4	3 Intestinal infectious diseases (A00-A09)	724	5,7	3 Intestinal infectious diseases (A00-A09)	1 192	8,9
4 Certain disorders involving the immune mechanism (D80-D89)	1 626	6,2	4 Certain disorders involving the immune mechanism (D80-D89)	681	5,4	4 Certain disorders involving the immune mechanism (D80-D89)	945	7,1
5 Other forms of heart disease (I30-I52)	747	2,9	5 Human immunodeficiency virus [HIV] disease (B20-B24)	343	2,7	5 Other forms of heart disease (I30-I52)	427	3,2
6 Human immunodeficiency virus [HIV] disease (B20-B24)	619	2,4	6 Other forms of heart disease (I30-I52)	320	2,5	6 Inflammatory diseases of the central nervous system (G00-G09)	302	2,3
7 Inflammatory diseases of the central nervous system (G00-G09)	543	2,1	7 Inflammatory diseases of the central nervous system (G00-G09)	241	1,9	7 Aplastic and other anaemias (D60-D64)	295	2,2
8 Other viral diseases (B25-B34)	471	1,8	8 Cerebrovascular diseases (I60-I69)	181	1,4	8 Other viral diseases (B25-B34)	294	2,2
9 Aplastic and other anaemias (D60-D64)	445	1,7	9 Other viral diseases (B25-B34)	177	1,4	9 Human immunodeficiency virus [HIV] disease (B20-B24)	276	2,1
10 Cerebrovascular diseases (I60-I69)	373	1,4	10 Aplastic and other anaemias (D60-D64)	150	1,2	10 Protozoal diseases (B50-B64)	207	1,5
...Other natural causes	7 733	29,7	...Other natural causes	3 504	27,6	...Other natural causes	4 214	31,5
...Non-natural causes	2 281	8,8	...Non-natural causes	1 785	14,1	...Non-natural causes	496	3,7
...All causes	26 056	100,0	...All causes	12 697	100,0	...All causes	13 359	100,0
Free State, both sexes, 50-64			Free State, males, 50-64			Free State, females, 50-64		
No.	%		No.	%		No.	%	
1 Influenza and pneumonia (J10-J18)	1 102	12,2	1 Tuberculosis (A15-A19)	674	13,0	1 Influenza and pneumonia (J10-J18)	443	11,6
2 Tuberculosis (A15-A19)	1 012	11,2	2 Influenza and pneumonia (J10-J18)	659	12,7	2 Tuberculosis (A15-A19)	338	8,8
3 Other forms of heart disease (I30-I52)	592	6,6	3 Other forms of heart disease (I30-I52)	331	6,4	3 Cerebrovascular diseases (I60-I69)	261	6,8
4 Cerebrovascular diseases (I60-I69)	522	5,8	4 Cerebrovascular diseases (I60-I69)	261	5,0	3 Other forms of heart disease (I30-I52)	261	6,8
5 Intestinal infectious diseases (A00-A09)	400	4,4	5 Chronic lower respiratory diseases (J40-J47)	250	4,8	5 Diabetes mellitus (E10-E14)	232	6,1
6 Diabetes mellitus (E10-E14)	396	4,4	6 Intestinal infectious diseases (A00-A09)	181	3,5	6 Intestinal infectious diseases (A00-A09)	219	5,7
7 Chronic lower respiratory diseases (J40-J47)	380	4,2	7 Diabetes mellitus (E10-E14)	164	3,2	7 Hypertensive diseases (I10-I15)	191	5,0
8 Hypertensive diseases (I10-I15)	326	3,6	8 Ischaemic heart diseases (I20-I25)	158	3,0	8 Chronic lower respiratory diseases (J40-J47)	130	3,4
9 Ischaemic heart diseases (I20-I25)	228	2,5	9 Hypertensive diseases (I10-I15)	135	2,6	9 Malignant neoplasms of female genital organs (C51-C58)	120	3,1
10 Certain disorders involving the immune mechanism (D80-D89)	219	2,4	10 Malignant neoplasms of digestive organs (C15-C26)	129	2,5	10 Certain disorders involving the immune mechanism (D80-D89)	92	2,4
...Other natural causes	3 428	38,0	...Other natural causes	1 941	37,4	...Other natural causes	1 435	37,5
...Non-natural causes	414	4,6	...Non-natural causes	313	6,0	...Non-natural causes	101	2,6
...All causes	9 019	100,0	...All causes	5 196	100,0	...All causes	3 823	100,0
Free State, both sexes, 65+			Free State, males, 65+			Free State, females, 65+		
No.	%		No.	%		No.	%	
1 Other forms of heart disease (I30-I52)	1 076	11,0	1 Other forms of heart disease (I30-I52)	398	9,4	1 Other forms of heart disease (I30-I52)	678	12,3
2 Cerebrovascular diseases (I60-I69)	993	10,2	2 Influenza and pneumonia (J10-J18)	361	8,6	2 Cerebrovascular diseases (I60-I69)	675	12,2
3 Influenza and pneumonia (J10-J18)	739	7,6	3 Cerebrovascular diseases (I60-I69)	318	7,5	3 Hypertensive diseases (I10-I15)	441	8,0
4 Hypertensive diseases (I10-I15)	628	6,4	4 Chronic lower respiratory diseases (J40-J47)	257	6,1	4 Diabetes mellitus (E10-E14)	402	7,3
5 Diabetes mellitus (E10-E14)	596	6,1	5 Ischaemic heart diseases (I20-I25)	223	5,3	5 Influenza and pneumonia (J10-J18)	378	6,8
6 Chronic lower respiratory diseases (J40-J47)	447	4,6	6 Diabetes mellitus (E10-E14)	194	4,6	6 Ischaemic heart diseases (I20-I25)	193	3,5
7 Ischaemic heart diseases (I20-I25)	416	4,3	7 Hypertensive diseases (I10-I15)	187	4,4	7 Chronic lower respiratory diseases (J40-J47)	190	3,4
8 Intestinal infectious diseases (A00-A09)	309	3,2	8 Tuberculosis (A15-A19)	167	4,0	8 Intestinal infectious diseases (A00-A09)	156	2,8
9 Malignant neoplasms of digestive organs (C15-C26)	265	2,7	9 Intestinal infectious diseases (A00-A09)	153	3,6	9 Malignant neoplasms of digestive organs (C15-C26)	135	2,4
10 Tuberculosis (A15-A19)	248	2,5	10 Malignant neoplasms of digestive organs (C15-C26)	130	3,1	10 Malignant neoplasms of female genital organs (C51-C58)	105	1,9
...Other natural causes	3 802	39,0	...Other natural causes	1 703	40,4	...Other natural causes	2 075	37,5
...Non-natural causes	227	2,3	...Non-natural causes	128	3,0	...Non-natural causes	99	1,8
...All causes	9 746	100,0	...All causes	4 219	100,0	...All causes	5 527	100,0

\*Excluding a total of 145 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex.

\*\*Including deaths due to MDR-TB and XDR-TB

**Appendix H.5: The ten leading underlying natural causes of death by age and sex: KwaZulu–Natal, 2006\***

KwaZulu-Natal, both sexes, all ages			KwaZulu-Natal, males, all ages			KwaZulu-Natal, females, all ages		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	24 007	17,2	1 Tuberculosis (A15-A19)**	12 789	18,4	1 Tuberculosis (A15-A19)**	11 218	15,9
2 Intestinal infectious diseases (A00-A09)	10 288	7,4	2 Influenza and pneumonia (J10-J18)	4 697	6,8	2 Intestinal infectious diseases (A00-A09)	5 676	8,0
3 Influenza and pneumonia (J10-J18)	9 999	7,1	3 Intestinal infectious diseases (A00-A09)	4 612	6,6	3 Influenza and pneumonia (J10-J18)	5 302	7,5
4 Cerebrovascular diseases (I60-I69)	6 419	4,6	4 Cerebrovascular diseases (I60-I69)	2 570	3,7	4 Cerebrovascular diseases (I60-I69)	3 849	5,5
5 Other forms of heart disease (I30-I52)	5 350	3,8	5 Other forms of heart disease (I30-I52)	2 319	3,3	5 Diabetes mellitus (E10-E14)	3 226	4,6
6 Diabetes mellitus (E10-E14)	5 084	3,6	6 Diabetes mellitus (E10-E14)	1 858	2,7	6 Other forms of heart disease (I30-I52)	3 031	4,3
7 Human immunodeficiency virus [HIV] disease (B20-B24)	3 927	2,8	7 Human immunodeficiency virus [HIV] disease (B20-B24)	1 810	2,6	7 Human immunodeficiency virus [HIV] disease (B20-B24)	2 117	3,0
8 Other viral diseases (B25-B34)	3 091	2,2	8 Ischaemic heart diseases (I20-I25)	1 604	2,3	8 Other viral diseases (B25-B34)	1 831	2,6
9 Ischaemic heart diseases (I20-I25)	2 844	2,0	9 Chronic lower respiratory diseases (J40-J47)	1 531	2,2	9 Certain disorders involving the immune mechanism (D80-D89)	1 504	2,1
10 Inflammatory diseases of the central nervous system (G00-G09)	2 670	1,9	10 Other viral diseases (B25-B34)	1 260	1,8	10 Hypertensive diseases (I10-I15)	1 460	2,1
...Other natural causes	54 741	39,1	...Other natural causes	25 514	36,8	...Other natural causes	28 642	40,6
...Non-natural causes	11 537	8,2	...Non-natural causes	8 803	12,7	...Non-natural causes	2 734	3,9
...All causes	139 957	100,0	...All causes	69 367	100,0	...All causes	70 590	100,0
KwaZulu-Natal, both sexes, 0-14			KwaZulu-Natal, males, 0-14			KwaZulu-Natal, females, 0-14		
No.	%		No.	%		No.	%	
1 Intestinal infectious diseases (A00-A09)	3 575	21,7	1 Intestinal infectious diseases (A00-A09)	1 893	21,7	1 Intestinal infectious diseases (A00-A09)	1 682	21,8
2 Influenza and pneumonia (J10-J18)	1 838	11,2	2 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	900	10,2	2 Influenza and pneumonia (J10-J18)	948	12,3
3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	1 552	9,4	3 Influenza and pneumonia (J10-J18)	890	10,3	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	652	8,4
4 Tuberculosis (A15-A19)**	890	5,4	4 Tuberculosis (A15-A19)**	479	5,5	4 Tuberculosis (A15-A19)**	411	5,3
5 Disorders related to length of gestation and fetal growth (P05-P08)	492	3,0	5 Disorders related to length of gestation and fetal growth (P05-P08)	256	2,9	5 Disorders related to length of gestation and fetal growth (P05-P08)	236	3,1
6 Malnutrition (E40-E46)	375	2,3	6 Malnutrition (E40-E46)	208	2,4	6 Human immunodeficiency virus [HIV] disease (B20-B24)	176	2,3
7 Human immunodeficiency virus [HIV] disease (B20-B24)	354	2,2	7 Human immunodeficiency virus [HIV] disease (B20-B24)	178	2,0	7 Malnutrition (E40-E46)	167	2,2
8 Other acute lower respiratory infections (J20-J22)	316	1,9	8 Infections specific to the perinatal period (P35-P39)	170	1,9	8 Protozoal diseases (B50-B64)	167	2,2
9 Protozoal diseases (B50-B64)	311	1,9	9 Other acute lower respiratory infections (J20-J22)	160	1,8	9 Other acute lower respiratory infections (J20-J22)	156	2,0
10 Infections specific to the perinatal period (P35-P39)	310	1,9	10 Protozoal diseases (B50-B64)	144	1,7	10 Other viral diseases (B25-B34)	150	1,9
...Other natural causes	5 172	31,4	...Other natural causes	2 714	31,1	...Other natural causes	2 448	31,7
...Non-natural causes	1 262	7,7	...Non-natural causes	726	8,3	...Non-natural causes	536	6,9
...All causes	16 447	100,0	...All causes	8 718	100,0	...All causes	7 729	100,0
KwaZulu-Natal, both sexes, 15-49			KwaZulu-Natal, males, 15-49			KwaZulu-Natal, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	18 915	25,6	1 Tuberculosis (A15-A19)**	9 564	25,9	1 Tuberculosis (A15-A19)**	9 351	25,4
2 Influenza and pneumonia (J10-J18)	5 897	8,0	2 Influenza and pneumonia (J10-J18)	2 607	7,1	2 Influenza and pneumonia (J10-J18)	3 290	8,9
3 Intestinal infectious diseases (A00-A09)	5 037	6,8	3 Intestinal infectious diseases (A00-A09)	2 006	5,4	3 Intestinal infectious diseases (A00-A09)	3 031	8,2
4 Human immunodeficiency virus [HIV] disease (B20-B24)	3 226	4,4	4 Human immunodeficiency virus [HIV] disease (B20-B24)	1 449	3,9	4 Human immunodeficiency virus [HIV] disease (B20-B24)	1 777	4,8
5 Other viral diseases (B25-B34)	2 523	3,4	5 Other viral diseases (B25-B34)	975	2,6	5 Other viral diseases (B25-B34)	1 548	4,2
6 Inflammatory diseases of the central nervous system (G00-G09)	2 145	2,9	6 Inflammatory diseases of the central nervous system (G00-G09)	958	2,6	6 Certain disorders involving the immune mechanism (D80-D89)	1 257	3,4
7 Certain disorders involving the immune mechanism (D80-D89)	2 118	2,9	7 Certain disorders involving the immune mechanism (D80-D89)	861	2,3	7 Inflammatory diseases of the central nervous system (G00-G09)	1 187	3,2
8 Other acute lower respiratory infections (J20-J22)	1 471	2,0	8 Other acute lower respiratory infections (J20-J22)	657	1,8	8 Other acute lower respiratory infections (J20-J22)	814	2,2
9 Other forms of heart disease (I30-I52)	1 157	1,6	9 Cerebrovascular diseases (I60-I69)	563	1,5	9 Protozoal diseases (B50-B64)	736	2,0
10 Protozoal diseases (B50-B64)	1 148	1,6	10 Other forms of heart disease (I30-I52)	555	1,5	10 Other forms of heart disease (I30-I52)	602	1,6
...Other natural causes	21 827	29,6	...Other natural causes	9 919	26,9	...Other natural causes	11 757	31,9
...Non-natural causes	8 311	11,3	...Non-natural causes	6 809	18,4	...Non-natural causes	1 502	4,1
...All causes	73 775	100,0	...All causes	36 923	100,0	...All causes	36 852	100,0
KwaZulu-Natal, both sexes, 50-64			KwaZulu-Natal, males, 50-64			KwaZulu-Natal, females, 50-64		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	3 170	14,6	1 Tuberculosis (A15-A19)**	2 122	16,8	1 Tuberculosis (A15-A19)**	1 048	11,6
2 Diabetes mellitus (E10-E14)	1 714	7,9	2 Cerebrovascular diseases (I60-I69)	830	6,6	2 Diabetes mellitus (E10-E14)	989	11,0
3 Cerebrovascular diseases (I60-I69)	1 606	7,4	3 Diabetes mellitus (E10-E14)	725	5,7	3 Cerebrovascular diseases (I60-I69)	776	8,6
4 Other forms of heart disease (I30-I52)	1 153	5,3	4 Influenza and pneumonia (J10-J18)	673	5,3	4 Other forms of heart disease (I30-I52)	495	5,5
5 Influenza and pneumonia (J10-J18)	1 066	4,9	5 Other forms of heart disease (I30-I52)	658	5,2	5 Intestinal infectious diseases (A00-A09)	469	5,2
6 Intestinal infectious diseases (A00-A09)	915	4,2	6 Ischaemic heart diseases (I20-I25)	603	4,8	6 Influenza and pneumonia (J10-J18)	393	4,4
7 Ischaemic heart diseases (I20-I25)	914	4,2	7 Chronic lower respiratory diseases (J40-J47)	507	4,0	7 Ischaemic heart diseases (I20-I25)	311	3,4
8 Chronic lower respiratory diseases (J40-J47)	685	3,2	8 Intestinal infectious diseases (A00-A09)	446	3,5	8 Hypertensive diseases (I10-I15)	309	3,4
9 Hypertensive diseases (I10-I15)	545	2,5	9 Malignant neoplasms of digestive organs (C15-C26)	337	2,7	9 Malignant neoplasms of female genital organs (C51-C58)	237	2,6
10 Malignant neoplasms of digestive organs (C15-C26)	524	2,4	10 Other acute lower respiratory infections (J20-J22)	245	1,9	10 Malignant neoplasms of digestive organs (C15-C26)	187	2,1
...Other natural causes	8 237	38,0	...Other natural causes	4 655	36,8	...Other natural causes	3 514	38,9
...Non-natural causes	1 156	5,3	...Non-natural causes	858	6,8	...Non-natural causes	298	3,3
...All causes	21 685	100,0	...All causes	12 659	100,0	...All causes	9 026	100,0
KwaZulu-Natal, both sexes, 65+			KwaZulu-Natal, males, 65+			KwaZulu-Natal, females, 65+		
No.	%		No.	%		No.	%	
1 Cerebrovascular diseases (I60-I69)	3 623	12,9	1 Cerebrovascular diseases (I60-I69)	1 150	10,4	1 Cerebrovascular diseases (I60-I69)	2 473	14,6
2 Other forms of heart disease (I30-I52)	2 904	10,4	2 Other forms of heart disease (I30-I52)	1 032	9,3	2 Diabetes mellitus (E10-E14)	1 888	11,1
3 Diabetes mellitus (E10-E14)	2 697	9,6	3 Diabetes mellitus (E10-E14)	809	7,3	3 Other forms of heart disease (I30-I52)	1 872	11,0
4 Ischaemic heart diseases (I20-I25)	1 502	5,4	4 Ischaemic heart diseases (I20-I25)	714	6,5	4 Hypertensive diseases (I10-I15)	946	5,6
5 Hypertensive diseases (I10-I15)	1 342	4,8	5 Chronic lower respiratory diseases (J40-J47)	627	5,7	5 Ischaemic heart diseases (I20-I25)	788	4,6
6 Influenza and pneumonia (J10-J18)	1 198	4,3	6 Tuberculosis (A15-A19)**	624	5,6	6 Influenza and pneumonia (J10-J18)	671	4,0
7 Chronic lower respiratory diseases (J40-J47)	1 123	4,0	7 Influenza and pneumonia (J10-J18)	527	4,8	7 Chronic lower respiratory diseases (J40-J47)	496	2,9
8 Tuberculosis (A15-A19)**	1 032	3,7	8 Hypertensive diseases (I10-I15)	396	3,6	8 Intestinal infectious diseases (A00-A09)	494	2,9
9 Intestinal infectious diseases (A00-A09)	761	2,7	9 Malignant neoplasms of digestive organs (C15-C26)	355	3,2	9 Tuberculosis (A15-A19)**	408	2,4
10 Malignant neoplasms of digestive organs (C15-C26)	684	2,4	10 Intestinal infectious diseases (A00-A09)	267	2,4	10 Malignant neoplasms of digestive organs (C15-C26)	329	1,9
...Other natural causes	10 376	37,0	...Other natural causes	4 156	37,6	...Other natural causes	6 220	36,6
...Non-natural causes	808	2,9	...Non-natural causes	410	3,7	...Non-natural causes	398	2,3
...All causes	28 050	100,0	...All causes	11 067	100,0	...All causes	16 983	100,0

\*Excluding a total of 835 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex.

\*\*Including deaths due to MDR-TB and XDR-TB

**Appendix H.6: The ten leading underlying natural causes of death by age and sex: North West, 2006\***

North West, both sexes, all ages			North West, males, all ages			North West, females, all ages		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	6 071	12,1	1 Tuberculosis (A15-A19)**	3 321	13,0	1 Influenza and pneumonia (J10-J18)	2 998	12,1
2 Influenza and pneumonia (J10-J18)	5 954	11,8	2 Influenza and pneumonia (J10-J18)	2 956	11,6	2 Tuberculosis (A15-A19)**	2 750	11,1
3 Intestinal infectious diseases (A00-A09)	3 806	7,6	3 Intestinal infectious diseases (A00-A09)	1 779	7,0	3 Intestinal infectious diseases (A00-A09)	2 027	8,2
4 Other forms of heart disease (I30-I52)	3 147	6,3	4 Other forms of heart disease (I30-I52)	1 454	5,7	4 Other forms of heart disease (I30-I52)	1 693	6,8
5 Cerebrovascular diseases (I60-I69)	1 875	3,7	5 Cerebrovascular diseases (I60-I69)	837	3,3	5 Cerebrovascular diseases (I60-I69)	1 038	4,2
6 Certain disorders involving the immune mechanism (D80-D89)	1 540	3,1	6 Chronic lower respiratory diseases (J40-J47)	757	3,0	6 Hypertensive diseases (I10-I15)	922	3,7
7 Hypertensive diseases (I10-I15)	1 425	2,8	7 Certain disorders involving the immune mechanism (D80-D89)	744	2,9	7 Certain disorders involving the immune mechanism (D80-D89)	796	3,2
8 Chronic lower respiratory diseases (J40-J47)	1 230	2,4	8 Human immunodeficiency virus [HIV] disease (B20-B24)	542	2,1	8 Diabetes mellitus (E10-E14)	716	2,9
9 Diabetes mellitus (E10-E14)	1 179	2,3	9 Hypertensive diseases (I10-I15)	503	2,0	9 Human immunodeficiency virus [HIV] disease (B20-B24)	553	2,2
10 Human immunodeficiency virus [HIV] disease (B20-B24)	1 095	2,2	10 Other viral diseases (B25-B34)	464	1,8	10 Other viral diseases (B25-B34)	513	2,1
...Other natural causes	19 712	39,2	...Other natural causes	9 765	38,2	...Other natural causes	9 906	40,0
...Non-natural causes	3 310	6,6	...Non-natural causes	2 471	9,7	...Non-natural causes	839	3,4
...All causes	50 344	100,0	...All causes	25 593	100,0	...All causes	24 751	100,0
North West, both sexes, 0-14			North West, males, 0-14			North West, females, 0-14		
No.	%		No.	%		No.	%	
1 Intestinal infectious diseases (A00-A09)	1 802	21,8	1 Intestinal infectious diseases (A00-A09)	937	21,1	1 Intestinal infectious diseases (A00-A09)	865	22,7
2 Influenza and pneumonia (J10-J18)	1 522	18,4	2 Influenza and pneumonia (J10-J18)	812	18,3	2 Influenza and pneumonia (J10-J18)	710	18,6
3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	646	7,8	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	382	8,6	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	264	6,9
4 Malnutrition (E40-E46)	352	4,3	4 Malnutrition (E40-E46)	181	4,1	4 Malnutrition (E40-E46)	171	4,5
5 Tuberculosis (A15-A19)**	303	3,7	5 Tuberculosis (A15-A19)**	170	3,8	5 Tuberculosis (A15-A19)**	133	3,5
6 Disorders related to length of gestation and fetal growth (P05-P08)	282	3,4	6 Disorders related to length of gestation and fetal growth (P05-P08)	168	3,8	6 Disorders related to length of gestation and fetal growth (P05-P08)	114	3,0
7 Certain disorders involving the immune mechanism (D80-D89)	219	2,7	7 Certain disorders involving the immune mechanism (D80-D89)	119	2,7	7 Certain disorders involving the immune mechanism (D80-D89)	100	2,6
8 Other acute lower respiratory infections (J20-J22)	202	2,4	8 Other acute lower respiratory infections (J20-J22)	108	2,4	8 Other acute lower respiratory infections (J20-J22)	94	2,5
9 Metabolic disorders (E70-E90)	147	1,8	9 Metabolic disorders (E70-E90)	75	1,7	9 Metabolic disorders (E70-E90)	72	1,9
10 Infections specific to the perinatal period (P35-P39)	141	1,7	10 Infections specific to the perinatal period (P35-P39)	73	1,6	10 Infections specific to the perinatal period (P35-P39)	68	1,8
...Other natural causes	2 265	27,5	...Other natural causes	1 195	26,9	...Other natural causes	1 070	28,1
...Non-natural causes	369	4,5	...Non-natural causes	221	5,0	...Non-natural causes	148	3,9
...All causes	8 250	100,0	...All causes	4 441	100,0	...All causes	3 809	100,0
North West, both sexes, 15-49			North West, males, 15-49			North West, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	4 462	19,2	1 Tuberculosis (A15-A19)**	2 265	19,7	1 Tuberculosis (A15-A19)**	2 197	18,7
2 Influenza and pneumonia (J10-J18)	3 130	13,5	2 Influenza and pneumonia (J10-J18)	1 394	12,1	2 Influenza and pneumonia (J10-J18)	1 736	14,8
3 Intestinal infectious diseases (A00-A09)	1 440	6,2	3 Intestinal infectious diseases (A00-A09)	568	4,9	3 Intestinal infectious diseases (A00-A09)	872	7,4
4 Certain disorders involving the immune mechanism (D80-D89)	1 131	4,9	4 Certain disorders involving the immune mechanism (D80-D89)	519	4,5	4 Certain disorders involving the immune mechanism (D80-D89)	612	5,2
5 Other forms of heart disease (I30-I52)	963	4,1	5 Other forms of heart disease (I30-I52)	454	4,0	5 Other forms of heart disease (I30-I52)	509	4,3
6 Human immunodeficiency virus [HIV] disease (B20-B24)	885	3,8	6 Human immunodeficiency virus [HIV] disease (B20-B24)	424	3,7	6 Human immunodeficiency virus [HIV] disease (B20-B24)	461	3,9
7 Other viral diseases (B25-B34)	784	3,4	7 Other viral diseases (B25-B34)	355	3,1	7 Other viral diseases (B25-B34)	429	3,7
8 Inflammatory diseases of the central nervous system (G00-G09)	481	2,1	8 Inflammatory diseases of the central nervous system (G00-G09)	210	1,8	8 Inflammatory diseases of the central nervous system (G00-G09)	271	2,3
9 Other acute lower respiratory infections (J20-J22)	419	1,8	9 Other diseases of the respiratory system (J95-J99)	190	1,7	9 Other acute lower respiratory infections (J20-J22)	237	2,0
10 Other diseases of the respiratory system (J95-J99)	373	1,6	10 Other acute lower respiratory infections (J20-J22)	182	1,6	10 Other diseases of the respiratory system (J95-J99)	183	1,6
...Other natural causes	6 828	29,4	...Other natural causes	3 087	26,9	...Other natural causes	3 741	31,9
...Non-natural causes	2 319	10,0	...Non-natural causes	1 833	16,0	...Non-natural causes	486	4,1
...All causes	23 215	100,0	...All causes	11 481	100,0	...All causes	11 734	100,0
North West, both sexes, 50-64			North West, males, 50-64			North West, females, 50-64		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	988	12,2	1 Tuberculosis (A15-A19)**	663	14,0	1 Tuberculosis (A15-A19)**	325	9,6
2 Influenza and pneumonia (J10-J18)	710	8,8	2 Influenza and pneumonia (J10-J18)	435	9,2	2 Other forms of heart disease (I30-I52)	302	9,0
3 Other forms of heart disease (I30-I52)	662	8,2	3 Other forms of heart disease (I30-I52)	360	7,6	3 Influenza and pneumonia (J10-J18)	275	8,2
4 Cerebrovascular diseases (I60-I69)	513	6,3	4 Cerebrovascular diseases (I60-I69)	269	5,7	4 Cerebrovascular diseases (I60-I69)	244	7,2
5 Chronic lower respiratory diseases (J40-J47)	366	4,5	5 Chronic lower respiratory diseases (J40-J47)	248	5,2	5 Hypertensive diseases (I10-I15)	211	6,3
6 Hypertensive diseases (I10-I15)	357	4,4	6 Intestinal infectious diseases (A00-A09)	163	3,4	6 Diabetes mellitus (E10-E14)	204	6,0
7 Diabetes mellitus (E10-E14)	354	4,4	7 Diabetes mellitus (E10-E14)	150	3,2	7 Intestinal infectious diseases (A00-A09)	142	4,2
8 Intestinal infectious diseases (A00-A09)	305	3,8	8 Hypertensive diseases (I10-I15)	146	3,1	8 Chronic lower respiratory diseases (J40-J47)	118	3,5
9 Malignant neoplasms of digestive organs (C15-C26)	196	2,4	9 Malignant neoplasms of digestive organs (C15-C26)	133	2,8	9 Malignant neoplasms of female genital organs (C51-C58)	89	2,6
10 Certain disorders involving the immune mechanism (D80-D89)	166	2,0	10 Ischaemic heart diseases (I20-I25)	97	2,1	10 Certain disorders involving the immune mechanism (D80-D89)	71	2,1
...Other natural causes	3 105	38,3	...Other natural causes	1 785	37,7	...Other natural causes	1 292	38,3
...Non-natural causes	383	4,7	...Non-natural causes	282	6,0	...Non-natural causes	101	3,0
...All causes	8 105	100,0	...All causes	4 731	100,0	...All causes	3 374	100,0
North West, both sexes, 65+			North West, males, 65+			North West, females, 65+		
No.	%		No.	%		No.	%	
1 Other forms of heart disease (I30-I52)	1 452	13,5	1 Other forms of heart disease (I30-I52)	611	12,4	1 Other forms of heart disease (I30-I52)	841	14,4
2 Cerebrovascular diseases (I60-I69)	1 086	10,1	2 Cerebrovascular diseases (I60-I69)	432	8,7	2 Cerebrovascular diseases (I60-I69)	654	11,2
3 Hypertensive diseases (I10-I15)	899	8,3	3 Chronic lower respiratory diseases (J40-J47)	348	7,0	3 Hypertensive diseases (I10-I15)	609	10,4
4 Diabetes mellitus (E10-E14)	620	5,8	4 Influenza and pneumonia (J10-J18)	315	6,4	4 Diabetes mellitus (E10-E14)	402	6,9
5 Influenza and pneumonia (J10-J18)	592	5,5	5 Hypertensive diseases (I10-I15)	290	5,9	5 Influenza and pneumonia (J10-J18)	277	4,7
6 Chronic lower respiratory diseases (J40-J47)	514	4,8	6 Tuberculosis (A15-A19)**	223	4,5	6 Chronic lower respiratory diseases (J40-J47)	166	2,8
7 Ischaemic heart diseases (I20-I25)	337	3,1	7 Diabetes mellitus (E10-E14)	218	4,4	7 Ischaemic heart diseases (I20-I25)	160	2,7
8 Tuberculosis (A15-A19)**	318	3,0	8 Ischaemic heart diseases (I20-I25)	177	3,6	8 Intestinal infectious diseases (A00-A09)	148	2,5
9 Intestinal infectious diseases (A00-A09)	259	2,4	9 Malignant neoplasms of digestive organs (C15-C26)	139	2,8	9 Malignant neoplasms of digestive organs (C15-C26)	114	2,0
10 Malignant neoplasms of digestive organs (C15-C26)	253	2,3	10 Malignant neoplasms of male genital organs (C60-C63)	117	2,4	10 Malignant neoplasms of female genital organs (C51-C58)	98	1,7
...Other natural causes	4 205	39,0	...Other natural causes	1 935	39,2	...Other natural causes	2 261	38,8
...Non-natural causes	239	2,2	...Non-natural causes	135	2,7	...Non-natural causes	104	1,8
...All causes	10 774	100,0	...All causes	4 940	100,0	...All causes	5 834	100,0

\*Excluding a total of 164 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex.

\*\*Including deaths due to MDR-TB and XDR-TB

**Appendix H.7: The ten leading underlying natural causes of death by age and sex: Gauteng, 2006\***

Gauteng, both sexes, all ages			Gauteng, males, all ages			Gauteng, females, all ages		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	10 692	9,6	1 Tuberculosis (A15-A19)**	6 012	10,3	1 Influenza and pneumonia (J10-J18)	5 135	9,8
2 Influenza and pneumonia (J10-J18)	10 183	9,2	2 Influenza and pneumonia (J10-J18)	5 048	8,6	2 Tuberculosis (A15-A19)**	4 680	8,9
3 Other forms of heart disease (I30-I52)	5 555	5,0	3 Intestinal infectious diseases (A00-A09)	2 738	4,7	3 Other forms of heart disease (I30-I52)	3 056	5,8
4 Intestinal infectious diseases (A00-A09)	5 504	5,0	4 Other forms of heart disease (I30-I52)	2 499	4,3	4 Intestinal infectious diseases (A00-A09)	2 766	5,3
5 Cerebrovascular diseases (I60-I69)	3 969	3,6	5 Ischaemic heart diseases (I20-I25)	1 886	3,2	5 Cerebrovascular diseases (I60-I69)	2 283	4,4
6 Diabetes mellitus (E10-E14)	3 464	3,1	6 Cerebrovascular diseases (I60-I69)	1 686	2,9	6 Diabetes mellitus (E10-E14)	2 012	3,8
7 Ischaemic heart diseases (I20-I25)	3 090	2,8	7 Diabetes mellitus (E10-E14)	1 452	2,5	7 Human immunodeficiency virus [HIV] disease (B20-B24)	1 578	3,0
8 Human immunodeficiency virus [HIV] disease (B20-B24)	2 998	2,7	8 Human immunodeficiency virus [HIV] disease (B20-B24)	1 420	2,4	8 Certain disorders involving the immune mechanism (D80-D89)	1 457	2,8
9 Certain disorders involving the immune mechanism (D80-D89)	2 794	2,5	9 Chronic lower respiratory diseases (J40-J47)	1 392	2,4	9 Other viral diseases (B25-B34)	1 328	2,5
10 Other viral diseases (B25-B34)	2 528	2,3	10 Certain disorders involving the immune mechanism (D80-D89)	1 337	2,3	10 Hypertensive diseases (I10-I15)	1 234	2,4
...Other natural causes	48 959	44,1	...Other natural causes	24 408	41,7	...Other natural causes	24 331	46,4
...Non-natural causes	11 159	10,1	...Non-natural causes	8 595	14,7	...Non-natural causes	2 562	4,9
...All causes	110 895	100,0	...All causes	58 473	100,0	...All causes	52 422	100,0
Gauteng, both sexes, 0-14			Gauteng, males, 0-14			Gauteng, females, 0-14		
No.	%		No.	%		No.	%	
1 Intestinal infectious diseases (A00-A09)	2 184	14,9	1 Intestinal infectious diseases (A00-A09)	1 158	14,6	1 Intestinal infectious diseases (A00-A09)	1 026	15,3
2 Influenza and pneumonia (J10-J18)	1 900	13,0	2 Influenza and pneumonia (J10-J18)	955	12,1	2 Influenza and pneumonia (J10-J18)	945	14,1
3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	1 619	11,1	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	937	11,8	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	682	10,1
4 Infections specific to the perinatal period (P35-P39)	442	3,0	4 Infections specific to the perinatal period (P35-P39)	274	3,5	4 Other viral diseases (B25-B34)	202	3,0
5 Other viral diseases (B25-B34)	429	2,9	5 Other viral diseases (B25-B34)	227	2,9	5 Protozoal diseases (B50-B64)	171	2,5
6 Malnutrition (E40-E46)	373	2,5	6 Malnutrition (E40-E46)	209	2,6	6 Infections specific to the perinatal period (P35-P39)	166	2,5
7 Other disorders originating in the perinatal period (P90-P96)	346	2,4	7 Other disorders originating in the perinatal period (P90-P96)	198	2,5	7 Malnutrition (E40-E46)	168	2,5
8 Tuberculosis (A15-A19)**	322	2,2	8 Disorders related to length of gestation and fetal growth (P05-P08)	171	2,2	8 Tuberculosis (A15-A19)**	154	2,3
9 Protozoal diseases (B50-B64)	320	2,2	9 Tuberculosis (A15-A19)**	168	2,1	9 Certain disorders involving the immune mechanism (D80-D89)	137	2,0
10 Disorders related to length of gestation and fetal growth (P05-P08)	288	2,0	10 Protozoal diseases (B50-B64)	149	1,9	10 Other disorders originating in the perinatal period (P90-P96)	135	2,0
...Other natural causes	5 476	37,4	...Other natural causes	2 904	36,6	...Other natural causes	2 563	38,1
...Non-natural causes	945	6,5	...Non-natural causes	574	7,2	...Non-natural causes	371	5,5
...All causes	14 644	100,0	...All causes	7 924	100,0	...All causes	6 720	100,0
Gauteng, both sexes, 15-49			Gauteng, males, 15-49			Gauteng, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	8 279	16,3	1 Tuberculosis (A15-A19)**	4 451	16,2	1 Tuberculosis (A15-A19)**	3 828	16,5
2 Influenza and pneumonia (J10-J18)	5 443	10,7	2 Influenza and pneumonia (J10-J18)	2 596	9,5	2 Influenza and pneumonia (J10-J18)	2 847	12,2
3 Human immunodeficiency virus [HIV] disease (B20-B24)	2 388	4,7	3 Intestinal infectious diseases (A00-A09)	1 100	4,0	3 Human immunodeficiency virus [HIV] disease (B20-B24)	1 288	5,5
4 Intestinal infectious diseases (A00-A09)	2 305	4,5	4 Human immunodeficiency virus [HIV] disease (B20-B24)	1 100	4,0	4 Intestinal infectious diseases (A00-A09)	1 205	5,2
5 Certain disorders involving the immune mechanism (D80-D89)	2 169	4,3	5 Certain disorders involving the immune mechanism (D80-D89)	993	3,6	5 Certain disorders involving the immune mechanism (D80-D89)	1 176	5,1
6 Other viral diseases (B25-B34)	1 841	3,6	6 Other viral diseases (B25-B34)	834	3,0	6 Other viral diseases (B25-B34)	1 007	4,3
7 Other forms of heart disease (I30-I52)	1 587	3,1	7 Other forms of heart disease (I30-I52)	727	2,6	7 Other forms of heart disease (I30-I52)	860	3,7
8 Inflammatory diseases of the central nervous system (G00-G09)	1 246	2,5	8 Inflammatory diseases of the central nervous system (G00-G09)	602	2,2	8 Inflammatory diseases of the central nervous system (G00-G09)	644	2,8
9 Cerebrovascular diseases (I60-I69)	730	1,4	9 Cerebrovascular diseases (I60-I69)	355	1,3	9 Protozoal diseases (B50-B64)	411	1,8
10 Protozoal diseases (B50-B64)	667	1,3	10 Renal failure (N17-N19)	286	1,0	10 Cerebrovascular diseases (I60-I69)	375	1,6
...Other natural causes	15 812	31,2	...Other natural causes	7 772	28,3	...Other natural causes	8 010	34,5
...Non-natural causes	8 242	16,3	...Non-natural causes	6 645	24,2	...Non-natural causes	1 597	6,9
...All causes	50 709	100,0	...All causes	27 461	100,0	...All causes	23 248	100,0
Gauteng, both sexes, 50-64			Gauteng, males, 50-64			Gauteng, females, 50-64		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	1 644	8,4	1 Tuberculosis (A15-A19)**	1 105	9,6	1 Diabetes mellitus (E10-E14)	590	7,4
2 Influenza and pneumonia (J10-J18)	1 344	6,9	2 Influenza and pneumonia (J10-J18)	803	7,0	2 Influenza and pneumonia (J10-J18)	541	6,8
3 Other forms of heart disease (I30-I52)	1 200	6,1	3 Other forms of heart disease (I30-I52)	668	5,8	3 Tuberculosis (A15-A19)**	539	6,7
4 Diabetes mellitus (E10-E14)	1 110	5,7	4 Ischaemic heart diseases (I20-I25)	647	5,6	4 Other forms of heart disease (I30-I52)	532	6,6
5 Cerebrovascular diseases (I60-I69)	985	5,0	5 Diabetes mellitus (E10-E14)	520	4,5	5 Cerebrovascular diseases (I60-I69)	480	6,0
6 Ischaemic heart diseases (I20-I25)	872	4,5	6 Cerebrovascular diseases (I60-I69)	505	4,4	6 Hypertensive diseases (I10-I15)	276	3,4
7 Chronic lower respiratory diseases (J40-J47)	699	3,6	7 Chronic lower respiratory diseases (J40-J47)	434	3,8	7 Intestinal infectious diseases (A00-A09)	272	3,4
8 Malignant neoplasms of digestive organs (C15-C26)	649	3,3	8 Malignant neoplasms of digestive organs (C15-C26)	423	3,7	8 Malignant neoplasms of female genital organs (C51-C58)	271	3,4
9 Intestinal infectious diseases (A00-A09)	581	3,0	9 Intestinal infectious diseases (A00-A09)	309	2,7	9 Chronic lower respiratory diseases (J40-J47)	265	3,3
10 Hypertensive diseases (I10-I15)	570	2,9	10 Hypertensive diseases (I10-I15)	294	2,6	10 Malignant neoplasms of digestive organs (C15-C26)	226	2,8
...Other natural causes	8 614	44,1	...Other natural causes	4 819	41,9	...Other natural causes	3 749	46,8
...Non-natural causes	1 246	6,4	...Non-natural causes	973	8,5	...Non-natural causes	273	3,4
...All causes	19 514	100,0	...All causes	11 500	100,0	...All causes	8 014	100,0
Gauteng, both sexes, 65+			Gauteng, males, 65+			Gauteng, females, 65+		
No.	%		No.	%		No.	%	
1 Other forms of heart disease (I30-I52)	2 588	9,9	1 Other forms of heart disease (I30-I52)	1 018	8,8	1 Other forms of heart disease (I30-I52)	1 570	10,9
2 Cerebrovascular diseases (I60-I69)	2 227	8,6	2 Ischaemic heart diseases (I20-I25)	964	8,3	2 Cerebrovascular diseases (I60-I69)	1 413	9,8
3 Ischaemic heart diseases (I20-I25)	1 824	7,0	3 Cerebrovascular diseases (I60-I69)	814	7,0	3 Diabetes mellitus (E10-E14)	1 126	7,8
4 Diabetes mellitus (E10-E14)	1 805	6,9	4 Chronic lower respiratory diseases (J40-J47)	734	6,3	4 Ischaemic heart diseases (I20-I25)	860	6,0
5 Influenza and pneumonia (J10-J18)	1 496	5,7	5 Influenza and pneumonia (J10-J18)	694	6,0	5 Influenza and pneumonia (J10-J18)	802	5,6
6 Chronic lower respiratory diseases (J40-J47)	1 302	5,0	6 Diabetes mellitus (E10-E14)	679	5,9	6 Hypertensive diseases (I10-I15)	788	5,5
7 Hypertensive diseases (I10-I15)	1 173	4,5	7 Malignant neoplasms of digestive organs (C15-C26)	518	4,5	7 Chronic lower respiratory diseases (J40-J47)	568	3,9
8 Malignant neoplasms of digestive organs (C15-C26)	995	3,8	8 Malignant neoplasms of male genital organs (C60-C63)	418	3,6	8 Malignant neoplasms of digestive organs (C15-C26)	477	3,3
9 Renal failure (N17-N19)	631	2,4	9 Hypertensive diseases (I10-I15)	385	3,3	9 Renal failure (N17-N19)	295	2,0
10 Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	509	2,0	10 Renal failure (N17-N19)	336	2,9	10 Malignant neoplasms of female genital organs (C51-C58)	279	1,9
...Other natural causes	10 752	41,3	...Other natural causes	4 625	39,9	...Other natural causes	5 939	41,1
...Non-natural causes	726	2,8	...Non-natural causes	403	3,5	...Non-natural causes	323	2,2
...All causes	26 028	100,0	...All causes	11 588	100,0	...All causes	14 440	100,0

\*Excluding a total of 637 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex.

\*\*Including deaths due to *MDR-TB* and *XDR-TB*

**Appendix H.8: The ten leading underlying natural causes of death by age and sex: Mpumalanga, 2006\***

Mpumalanga, both sexes, all ages			Mpumalanga, males, all ages			Mpumalanga, females, all ages		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	6 514	13.7	1 Tuberculosis (A15-A19)**	3 463	14.6	1 Tuberculosis (A15-A19)**	3 051	12.8
2 Influenza and pneumonia (J10-J18)	5 199	10.9	2 Influenza and pneumonia (J10-J18)	2 470	10.4	2 Influenza and pneumonia (J10-J18)	2 729	11.4
3 Intestinal infectious diseases (A00-A09)	4 424	9.3	3 Intestinal infectious diseases (A00-A09)	2 028	8.5	3 Intestinal infectious diseases (A00-A09)	2 396	10.0
4 Certain disorders involving the immune mechanism (D80-D89)	2 308	4.8	4 Certain disorders involving the immune mechanism (D80-D89)	1 094	4.6	4 Other forms of heart disease (I30-I52)	1 268	5.3
5 Other forms of heart disease (I30-I52)	2 216	4.7	5 Other forms of heart disease (I30-I52)	948	4.0	5 Cerebrovascular diseases (I60-I69)	1 227	5.1
6 Cerebrovascular diseases (I60-I69)	2 159	4.5	6 Cerebrovascular diseases (I60-I69)	932	3.9	6 Certain disorders involving the immune mechanism (D80-D89)	1 214	5.1
7 Diabetes mellitus (E10-E14)	1 427	3.0	7 Chronic lower respiratory diseases (J40-J47)	639	2.7	7 Diabetes mellitus (E10-E14)	865	3.6
8 Human immunodeficiency virus [HIV] disease (B20-B24)	1 091	2.3	8 Diabetes mellitus (E10-E14)	562	2.4	8 Hypertensive diseases (I10-I15)	652	2.7
9 Chronic lower respiratory diseases (J40-J47)	1 079	2.3	9 Human immunodeficiency virus [HIV] disease (B20-B24)	501	2.1	9 Human immunodeficiency virus [HIV] disease (B20-B24)	590	2.5
10 Hypertensive diseases (I10-I15)	1 055	2.2	10 Inflammatory diseases of the central nervous system (G00-G09)	419	1.8	10 Inflammatory diseases of the central nervous system (G00-G09)	510	2.1
...Other natural causes	16 524	34.7	...Other natural causes	7 973	33.6	...Other natural causes	8 465	35.4
...Non-natural causes	3 647	7.7	...Non-natural causes	2 715	11.4	...Non-natural causes	932	3.9
...All causes	47 643	100.0	...All causes	23 744	100.0	...All causes	23 899	100.0
Mpumalanga, both sexes, 0-14			Mpumalanga, males, 0-14			Mpumalanga, females, 0-14		
No.	%		No.	%		No.	%	
1 Intestinal infectious diseases (A00-A09)	1 682	26.6	1 Intestinal infectious diseases (A00-A09)	883	26.4	1 Intestinal infectious diseases (A00-A09)	799	26.8
2 Influenza and pneumonia (J10-J18)	1 090	17.2	2 Influenza and pneumonia (J10-J18)	548	16.4	2 Influenza and pneumonia (J10-J18)	542	18.2
3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	436	6.9	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	240	7.2	3 Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	196	6.6
4 Tuberculosis (A15-A19)	230	3.6	4 Tuberculosis (A15-A19)	126	3.8	4 Tuberculosis (A15-A19)	104	3.5
5 Certain disorders involving the immune mechanism (D80-D89)	204	3.2	5 Certain disorders involving the immune mechanism (D80-D89)	115	3.4	5 Malnutrition (E40-E46)	99	3.3
6 Malnutrition (E40-E46)	182	2.9	6 Malnutrition (E40-E46)	83	2.5	6 Certain disorders involving the immune mechanism (D80-D89)	89	3.0
7 Disorders related to length of gestation and fetal growth (P05-P08)	148	2.3	7 Disorders related to length of gestation and fetal growth (P05-P08)	71	2.1	7 Disorders related to length of gestation and fetal growth (P05-P08)	77	2.6
8 Protozoal diseases (B50-B64)	135	2.1	8 Inflammatory diseases of the central nervous system (G00-G09)	63	1.9	8 Protozoal diseases (B50-B64)	76	2.6
9 Inflammatory diseases of the central nervous system (G00-G09)	115	1.8	9 Protozoal diseases (B50-B64)	59	1.8	9 Other acute lower respiratory infections (J20-J22)	61	2.0
9 Other acute lower respiratory infections (J20-J22)	115	1.8	10 Other acute lower respiratory infections (J20-J22)	54	1.6	10 Inflammatory diseases of the central nervous system (G00-G09)	52	1.7
...Other natural causes	1 528	24.1	...Other natural causes	832	24.8	...Other natural causes	696	23.4
...Non-natural causes	463	7.3	...Non-natural causes	276	8.2	...Non-natural causes	187	6.3
...All causes	6 328	100.0	...All causes	3 350	100.0	...All causes	2 978	100.0
Mpumalanga, both sexes, 15-49			Mpumalanga, males, 15-49			Mpumalanga, females, 15-49		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	4 985	20.2	1 Tuberculosis (A15-A19)	2 467	20.8	1 Tuberculosis (A15-A19)**	2 518	19.7
2 Influenza and pneumonia (J10-J18)	2 887	11.7	2 Influenza and pneumonia (J10-J18)	1 247	10.5	2 Influenza and pneumonia (J10-J18)	1 640	12.8
3 Intestinal infectious diseases (A00-A09)	1 960	7.9	3 Certain disorders involving the immune mechanism (D80-D89)	796	6.7	3 Intestinal infectious diseases (A00-A09)	1 170	9.1
4 Certain disorders involving the immune mechanism (D80-D89)	1 805	7.3	4 Intestinal infectious diseases (A00-A09)	790	6.7	4 Certain disorders involving the immune mechanism (D80-D89)	1 009	7.9
5 Human immunodeficiency virus [HIV] disease (B20-B24)	929	3.8	5 Human immunodeficiency virus [HIV] disease (B20-B24)	412	3.5	5 Human immunodeficiency virus [HIV] disease (B20-B24)	517	4.0
6 Inflammatory diseases of the central nervous system (G00-G09)	698	2.8	6 Inflammatory diseases of the central nervous system (G00-G09)	288	2.4	6 Inflammatory diseases of the central nervous system (G00-G09)	410	3.2
7 Noninfective enteritis and colitis (K50-K52)	580	2.4	7 Noninfective enteritis and colitis (K50-K52)	240	2.0	7 Noninfective enteritis and colitis (K50-K52)	340	2.7
8 Other viral diseases (B25-B34)	507	2.1	8 Cerebrovascular diseases (I60-I69)	218	1.8	8 Other viral diseases (B25-B34)	311	2.4
9 Cerebrovascular diseases (I60-I69)	482	2.0	9 Other respiratory diseases principally affecting the interstitium (J80-J84)	205	1.7	9 Other forms of heart disease (I30-I52)	270	2.1
10 Other respiratory diseases principally affecting the interstitium (J80-J84)	471	1.9	10 Other viral diseases (B25-B34)	196	1.7	10 Other respiratory diseases principally affecting the interstitium (J80-J84)	266	2.1
...Other natural causes	6 830	27.7	...Other natural causes	3 027	25.5	...Other natural causes	3 797	29.7
...Non-natural causes	2 535	10.3	...Non-natural causes	1 990	16.8	...Non-natural causes	545	4.3
...All causes	24 669	100.0	...All causes	11 876	100.0	...All causes	12 793	100.0
Mpumalanga, both sexes, 50-64			Mpumalanga, males, 50-64			Mpumalanga, females, 50-64		
No.	%		No.	%		No.	%	
1 Tuberculosis (A15-A19)**	969	12.6	1 Tuberculosis (A15-A19)**	645	14.5	1 Tuberculosis (A15-A19)	324	10.0
2 Influenza and pneumonia (J10-J18)	635	8.3	2 Influenza and pneumonia (J10-J18)	384	8.6	2 Cerebrovascular diseases (I60-I69)	277	8.6
3 Cerebrovascular diseases (I60-I69)	535	7.0	3 Cerebrovascular diseases (I60-I69)	258	5.8	3 Influenza and pneumonia (J10-J18)	251	7.8
4 Diabetes mellitus (E10-E14)	437	5.7	4 Other forms of heart disease (I30-I52)	216	4.8	4 Diabetes mellitus (E10-E14)	235	7.3
5 Other forms of heart disease (I30-I52)	436	5.7	5 Intestinal infectious diseases (A00-A09)	203	4.6	5 Other forms of heart disease (I30-I52)	220	6.8
6 Intestinal infectious diseases (A00-A09)	420	5.5	6 Diabetes mellitus (E10-E14)	202	4.5	6 Intestinal infectious diseases (A00-A09)	217	6.7
7 Hypertensive diseases (I10-I15)	300	3.9	7 Chronic lower respiratory diseases (J40-J47)	185	4.2	7 Hypertensive diseases (I10-I15)	168	5.2
8 Chronic lower respiratory diseases (J40-J47)	281	3.7	8 Certain disorders involving the immune mechanism (D80-D89)	156	3.5	8 Certain disorders involving the immune mechanism (D80-D89)	99	3.1
9 Certain disorders involving the immune mechanism (D80-D89)	255	3.3	9 Hypertensive diseases (I10-I15)	132	3.0	9 Chronic lower respiratory diseases (J40-J47)	96	3.0
10 Ischaemic heart diseases (I20-I25)	181	2.4	10 Ischaemic heart diseases (I20-I25)	127	2.9	9 Malignant neoplasms of female genital organs (C51-C58)	96	3.0
...Other natural causes	2 818	36.7	...Other natural causes	1 631	36.6	...Other natural causes	1 145	35.5
...Non-natural causes	413	5.4	...Non-natural causes	317	7.1	...Non-natural causes	96	3.0
...All causes	7 680	100.0	...All causes	4 456	100.0	...All causes	3 224	100.0
Mpumalanga, both sexes, 65+			Mpumalanga, males, 65+			Mpumalanga, females, 65+		
No.	%		No.	%		No.	%	
1 Other forms of heart disease (I30-I52)	1 284	14.3	1 Other forms of heart disease (I30-I52)	523	12.9	1 Other forms of heart disease (I30-I52)	761	15.5
2 Cerebrovascular diseases (I60-I69)	1 135	12.7	2 Cerebrovascular diseases (I60-I69)	452	11.1	2 Cerebrovascular diseases (I60-I69)	683	13.9
3 Diabetes mellitus (E10-E14)	705	7.9	3 Influenza and pneumonia (J10-J18)	291	7.2	3 Diabetes mellitus (E10-E14)	473	9.6
4 Hypertensive diseases (I10-I15)	622	6.9	4 Chronic lower respiratory diseases (J40-J47)	265	6.5	4 Hypertensive diseases (I10-I15)	404	8.2
5 Influenza and pneumonia (J10-J18)	587	6.5	5 Diabetes mellitus (E10-E14)	232	5.7	5 Influenza and pneumonia (J10-J18)	296	6.0
6 Chronic lower respiratory diseases (J40-J47)	434	4.8	6 Tuberculosis (A15-A19)	225	5.5	6 Intestinal infectious diseases (A00-A09)	210	4.3
7 Intestinal infectious diseases (A00-A09)	362	4.0	7 Hypertensive diseases (I10-I15)	218	5.4	7 Chronic lower respiratory diseases (J40-J47)	169	3.4
8 Tuberculosis (A15-A19)**	330	3.7	8 Ischaemic heart diseases (I20-I25)	154	3.8	8 Ischaemic heart diseases (I20-I25)	113	2.3
9 Ischaemic heart diseases (I20-I25)	267	3.0	9 Intestinal infectious diseases (A00-A09)	152	3.7	9 Tuberculosis (A15-A19)**	105	2.1
10 Malignant neoplasms of digestive organs (C15-C26)	209	2.3	10 Malignant neoplasms of male genital organs (C60-C63)	152	3.7	10 Malignant neoplasms of digestive organs (C15-C26)	0	0.0
...Other natural causes	2 795	31.2	...Other natural causes	1 418	34.9	...Other natural causes	1 586	32.3
...Non-natural causes	236	2.6	...Non-natural causes	132	3.2	...Non-natural causes	104	2.1
...All causes	8 966	100.0	...All causes	4 062	100.0	...All causes	4 904	100.0

\*Excluding a total of 225 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex.

\*\*Including deaths due to MDR-TB and XDR-TB

**Appendix H.9: The ten leading underlying natural causes of death by age and sex: Limpopo, 2006\***

Limpopo, both sexes, all ages			Limpopo, males, all ages			Limpopo, females, all ages		
No.	%		No.	%		No.	%	
1	6 495	12,1	1	2 894	11,1	1	3 601	13,0
2	5 486	10,2	2	2 652	10,2	2	3 069	11,1
3	4 909	9,1	3	2 417	9,3	3	2 257	8,1
4	2 286	4,2	4	1 005	3,9	4	1 313	4,7
5	2 195	4,1	5	882	3,4	5	1 281	4,6
6	1 571	2,9	6	649	2,5	6	922	3,3
7	1 248	2,3	7	604	2,3	7	698	2,5
8	1 218	2,3	8	581	2,2	8	667	2,4
9	941	1,7	9	520	2,0	9	455	1,6
10	823	1,5	10	418	1,6	10	405	1,5
...Other natural causes	23 003	42,8	...Other natural causes	10 837	41,5	...Other natural causes	12 048	43,5
...Non-natural causes	3 617	6,7	...Non-natural causes	2 623	10,1	...Non-natural causes	994	3,6
...All causes	53 792	100,0	...All causes	26 082	100,0	...All causes	27 710	100,0
Limpopo, both sexes, 0-14			Limpopo, males, 0-14			Limpopo, females, 0-14		
No.	%		No.	%		No.	%	
1	1 668	23,2	1	863	22,5	1	805	23,9
2	1 220	17,0	2	617	16,1	2	602	17,9
3	448	6,2	3	275	7,2	3	173	5,1
4	217	3,0	4	116	3,0	4	101	3,0
5	205	2,8	5	110	2,9	5	95	2,8
6	145	2,0	6	79	2,1	6	70	2,1
7	139	1,9	7	75	2,0	7	66	2,0
8	129	1,8	8	63	1,6	8	60	1,8
9	88	1,2	9	54	1,4	9	45	1,3
10	83	1,2	10	43	1,1	10	41	1,2
...Other natural causes	2 329	32,4	...Other natural causes	1 226	32,0	...Other natural causes	1 092	32,5
...Non-natural causes	526	7,3	...Non-natural causes	313	8,2	...Non-natural causes	213	6,3
...All causes	7 197	100,0	...All causes	3 834	100,0	...All causes	3 363	100,0
Limpopo, both sexes, 15-49			Limpopo, males, 15-49			Limpopo, females, 15-49		
No.	%		No.	%		No.	%	
1	3 519	15,0	1	1 729	15,8	1	2 078	16,5
2	3 436	14,6	2	1 358	12,4	2	1 790	14,2
3	2 641	11,2	3	1 023	9,4	3	1 618	12,9
4	944	4,0	4	376	3,4	4	568	4,5
5	523	2,2	5	214	2,0	5	321	2,6
6	518	2,2	6	212	1,9	6	306	2,4
7	489	2,1	7	202	1,9	7	275	2,2
8	363	1,5	8	161	1,5	8	228	1,8
9	343	1,5	9	140	1,3	9	203	1,6
10	324	1,4	10	135	1,2	10	167	1,3
...Other natural causes	8 063	34,3	...Other natural causes	3 547	32,5	...Other natural causes	4 512	35,9
...Non-natural causes	2 318	9,9	...Non-natural causes	1 820	16,7	...Non-natural causes	498	4,0
...All causes	23 481	100,0	...All causes	10 917	100,0	...All causes	12 564	100,0
Limpopo, both sexes, 50-64			Limpopo, males, 50-64			Limpopo, females, 50-64		
No.	%		No.	%		No.	%	
1	802	9,6	1	557	11,0	1	308	9,4
2	777	9,3	2	485	9,6	2	292	8,9
3	609	7,3	3	301	5,9	3	245	7,4
4	464	5,5	4	268	5,3	4	227	6,9
5	443	5,3	5	242	4,8	5	196	6,0
6	424	5,1	6	226	4,5	6	182	5,5
7	399	4,8	7	216	4,3	7	173	5,3
8	241	2,9	8	187	3,7	8	107	3,2
9	195	2,3	9	128	2,5	9	73	2,2
10	183	2,2	10	126	2,5	10	69	2,1
...Other natural causes	3 439	41,1	...Other natural causes	2 043	40,2	...Other natural causes	1 325	40,2
...Non-natural causes	394	4,7	...Non-natural causes	298	5,9	...Non-natural causes	96	2,9
...All causes	8 370	100,0	...All causes	5 077	100,0	...All causes	3 293	100,0
Limpopo, both sexes, 65+			Limpopo, males, 65+			Limpopo, females, 65+		
No.	%		No.	%		No.	%	
1	1 510	10,2	1	543	8,7	1	994	11,7
2	1 313	8,9	2	516	8,3	2	770	9,1
3	1 062	7,2	3	433	6,9	3	629	7,4
4	873	5,9	4	328	5,2	4	545	6,4
5	568	3,9	5	282	4,5	5	338	4,0
6	535	3,6	6	256	4,1	6	338	4,0
7	443	3,0	7	230	3,7	7	161	1,9
8	383	2,6	8	197	3,1	8	158	1,9
9	354	2,3	9	184	2,9	9	150	1,8
10	295	2,0	10	154	2,5	10	138	1,6
...Other natural causes	7 049	47,8	...Other natural causes	2 939	47,0	...Other natural causes	4 082	48,1
...Non-natural causes	379	2,6	...Non-natural causes	192	3,1	...Non-natural causes	187	2,2
...All causes	14 744	100,0	...All causes	6 254	100,0	...All causes	8 490	100,0

\*Excluding a total of 150 cases with unknown sex and unknown age; known sex and unknown age; and known age and unknown sex.

\*\*Including deaths due to *MDR-TB* and *XDR-TB*.

## Appendix I: Population group differences

Due to a large proportion (25,9%) of death notification forms that did not specify population group, readers are advised to treat the breakdowns of deaths by population group with caution as they may not be very accurate.

Appendix I.1 provides the breakdown of the ten leading causes of death by population group (including cases where population group was reported as unknown, unspecified or 'other') for 2006 deaths.

Six of the ten leading causes of death were common to all population groups: *influenza and pneumonia*, *other forms of heart disease*, *cerebrovascular diseases*, *diabetes mellitus*, *chronic lower respiratory diseases* and *hypertensive diseases*. However, these common causes of death had different ranks and different contributions to the overall number of deaths among population groups. For example, *diabetes mellitus* was the second leading cause of death among the Indian/Asians, contributing 13,4% of the deaths in this group, while it was the seventh leading cause of death among the black African population group, contributing 2,9% of the deaths in this group.

*Tuberculosis* was the leading underlying natural cause of death for black African and coloured population groups, accounting for 14,7% and 9,8%, respectively, of all deaths in these groups. It is worth noting that about 60% of the deaths due to *multi-drug resistant tuberculosis (MDR-TB)* and *extensively drug-resistant tuberculosis (XDR-TB)* were for the black African population group. The leading underlying natural cause of death for the Indian/Asian and white population groups was *ischaemic heart diseases*, contributing 13,1% of deaths for the white population group and 13,9% of deaths for the Indian/Asian population group.

On one hand, *influenza and pneumonia*, *certain disorders involving the immune mechanism*, and *human immunodeficiency virus [HIV] disease* were among the ten leading causes of natural deaths only for the black African population group. On the other hand, *ischaemic heart diseases* and *malignant neoplasms of digestive organs* were among the ten leading underlying causes of natural deaths for all population groups, except the black African population group. Furthermore, *tuberculosis* was the leading underlying natural cause of death for all population groups, except the white population group. *Malignant neoplasms of respiratory and intrathoracic organs* were among the ten leading underlying causes of death only for the white population group while *renal failure* was among the ten leading underlying causes of death only for the Indian/Asians and white population group.

The percentages of deaths due to non-natural causes were highest among the coloured population group (12,7%) and the Indian/Asians (11,3%). The lowest was among the black African population group (9,1%).

**Appendix I.1: The ten leading underlying natural causes of death by population group, 2006**

Causes of death (Based on the Tenth Revision, International Classification of Disease, 1992)	Black African			White			Indian/Asian			Coloured			Other/Unspecified		
	Rank	Number	%	Rank	Number	%	Rank	Number	%	Rank	Number	%	Rank	Number	%
Tuberculosis (A15-A19)*	1	55 858	14,7	...	...	...	6	242	3,0	1	2 496	9,8	1	18 160	11,5
Influenza and pneumonia (J10-J18)	2	38 626	10,1	6	1 552	4,4	9	227	2,9	8	878	3,4	2	11 508	7,3
Intestinal infectious diseases (A00-A09)	3	29 584	7,8	...	...	...	...	...	...	...	...	...	3	8 806	5,6
Other forms of heart disease (I30-I52)	4	16 645	4,4	2	2 447	6,9	3	612	7,7	6	1 033	4,0	4	5 891	3,7
Cerebrovascular diseases (I60-I69)	5	15 523	4,1	3	2 276	6,4	4	444	5,6	3	1 468	5,8	5	5 535	3,5
Certain disorders involving the immune mechanism (D80-D89)	6	11 425	3,0	...	...	...	...	...	...	...	...	...	7	3 880	2,5
Diabetes mellitus (E10-E14)	7	11 017	2,9	7	1 491	4,2	2	1 066	13,4	2	1 569	6,2	6	4 406	2,8
Human immunodeficiency virus [HIV] disease (B20-B24)	8	10 984	2,9	...	...	...	...	...	...	...	...	...	10	3 130	2,0
Chronic lower respiratory diseases (J40-J47)	9	8 537	2,2	4	1 912	5,4	5	257	3,2	4	1 454	5,7	8	3 663	2,3
Hypertensive diseases (I10-I15)	10	8 150	2,1	10	820	2,3	7	231	2,9	10	750	2,9	...	...	...
Ischaemic heart diseases (I20-I25)	...	...	...	1	4 657	13,1	1	1 103	13,9	5	1 445	5,7	...	...	...
Malignant neoplasms of digestive organs (C15-C26)	...	...	...	5	1 839	5,2	8	228	2,9	9	841	3,3	...	...	...
Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	...	...	...	8	1 265	3,6	...	...	...	7	893	3,5	...	...	...
Renal failure (N17-N19)	...	...	...	9	885	2,5	10	196	2,5	...	...	...	...	...	...
Other viral diseases (B25-B34)	...	...	...	...	...	...	...	...	...	...	...	...	9	3 253	2,1
Other natural causes	...	140 003	36,8	...	12 956	36,5	...	2 448	30,8	...	9 453	37,1	...	78 552	49,9
Non-natural causes	...	34 534	9,1	...	3 364	9,5	...	898	11,3	...	3 231	12,7	...	10 587	6,7
<b>All causes</b>	...	<b>380 886</b>	<b>100,0</b>	...	<b>35 464</b>	<b>100,0</b>	...	<b>7 952</b>	<b>100,0</b>	...	<b>25 511</b>	<b>100,0</b>	...	<b>157 371</b>	<b>100,0</b>

\*Including deaths due to *MDR-TB* and *XDR-TB* (Black Africa = 363; White = 2; Indian/Asian = 3; Coloured = 66; Other/unspecified = 173)

... Category not in top ten leading underlying natural causes of death