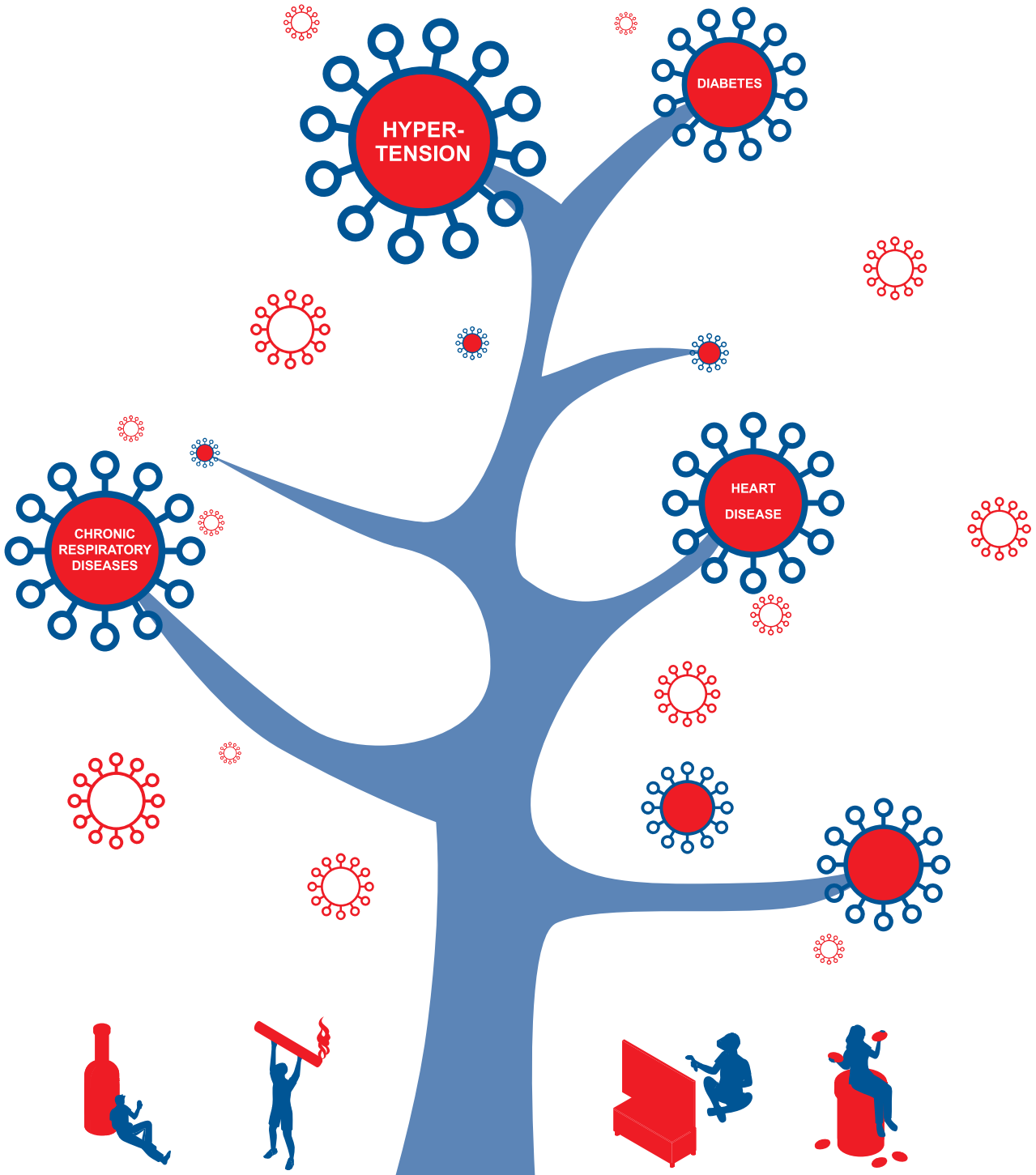
# Non-communicable diseases

## in South Africa: Findings from death notifications, 2008 – 2018

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# Non-communicable diseases in South Africa: Findings from death notifications

# 2008 − 2018

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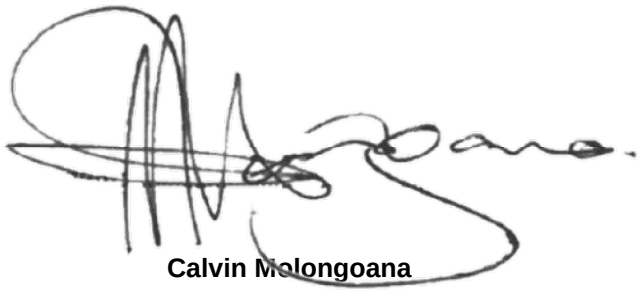
## Preface

Thematic health reports are compiled by the Health component of the Health and Vital Statistics division. This report focuses on deaths due to key non-communicable diseases in South Africa, and is an annex to an earlier report on cancer in South Africa (Report No. 03-08-00, 2023).

Information used to compile this report was obtained from the StatsSA Mortality and causes of death: Findings from death notifications release.

The thematic report on non-communicable diseases in South Africa covers the number of people who died from major non-communicable diseases, which include cardiovascular diseases, diabetes and chronic lower respiratory diseases between 2008 and 2018. Their distribution by agegroup, sex, population group and province is described.

The information will enable formulation of targeted interventions to address the increasing burden of non-communicable diseases, allocate resources appropriately and implement health promotion programmes to create awareness about the risk factors associated with non-communicable diseases such as smoking, physical inactivity, consumption of highly refined foods and saturated fats, harmful use of alcohol, and inadequate intake of vegetables and fruit.



**Calvin Molongoana**

**Acting Statistician-General**

## Results

Deaths due to non-communicable diseases (NCD), comprising cardiovascular diseases, cancer, diabetes and chronic lower respiratory diseases increased by 58,7% over 20 years, from 103 428 in 1997 to 164 205 in 2018.

The highest Age Standardised Mortality Rates (ASMR) were observed for cardiovascular diseases followed by cancer, diabetes and chronic lower respiratory diseases.

Males had higher ASMR than females for all the non-communicable diseases. There were noticeable differences by population group, which may be due to access to health care, aging, genetic predisposition to certain diseases or behavioural factors that put some individuals at higher risk.

The median age at death in years was 65 for males and 69 for females.

The ASMR for cardiovascular diseases decreased slightly from 183,2/100 000 in 2008 to 177,4/100 000 in 2018. For males it was as high as 190,6/100 000 in 2018, while for females it was 158,7/100 000. Indian/Asian and black African males had the highest ASMR at 221,9/100 000 and 220,9/100 000 respectively. Among females, black African women had the highest ASMR at 189,3/100 000 in 2018.

For diabetes, the ASMR was 62,9/100 000 in 2018, a steady increase from 58,5/100 000 in 2008. Males had an ASMR of 60,3/100 000 in 2018, while females had a slightly higher ASMR at 64,3/100 000. For both males and females, the Indian/Asian population group had consistently higher ASMR than other population groups at 91,4/100 000 for males and 72,5/100 000 for females in 2018. The White population group had the lowest ASMR at 25,6/100 000 and 15,9/100 000 for males and for females respectively, in 2018.

The ASMR for chronic lower respiratory diseases declined steadily from 41,4/100 000 in 2008 to 31,4/100 000 in 2018. The coloured population group, both males and females had the highest ASMRs at 79,5/100 000 and 37,4/100 000 for males and females respectively, in 2018. White males had the lowest ASMR at 28,5/100 000 in 2018, while Indian/Asian females had the lowest ASMR at 7,9/100 000.

Age standardised Mortality Rates from NCDs appear stagnant, and suggest that greater and concerted effort is required to reach the United Nations Sustainable Development Goal (SDG) 3.4, namely, to reduce by one-third, premature mortality from NCDs by 2030. Strategies aimed at health promotion and modification of risk factors for NCDs need to be continually evaluated and appropriate, targeted interventions be formulated for groups at risk.

There are substantial differences between provinces in terms of burden of NCDs and mortality rates. KwaZulu-Natal, Gauteng, Western Cape and Eastern Cape provinces have some of the highest number of deaths due to NCDs, which may be a reflection of their large populations as they host almost two-thirds of the population of South Africa. But their age-standardised mortality rates are substantially different, and this may be due to differences in access to health services or quality of the services provided. Free State has one of the lowest number of NCD-related deaths in absolute numbers, but some of the highest mortality rates. Best practices in management of NCDs by health facilities need to be documented and shared.

In line with the World Health Assembly global strategy and the South African national strategic plan for the prevention and control on non-communicable diseases, recommendations for a comprehensive surveillance and monitoring system for NCDs need to be implemented to establish baselines and monitor the 90-60-50 target cascade for non-communicable diseases.

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## Abbreviations

| | |
|---|---|
| ASMR / 100 000 | Age-standardised mortality rate per 100 000 mid-year population |
| CDC | Centers for Disease Control |
| CHD | Coronary Heart Disease |
| CLRD | Chronic lower respiratory diseases |
| COPD | Chronic obstructive pulmonary diseases |
| CPT | Cotrimoxazole preventive therapy |
| CVD | Cardio-vascular diseases |
| HAART | Highly Active Anti-retroviral Therapy |
| HIV | Human immunodeficiency virus |
| IDF | International Diabetes Federation |
| IPT | Isoniazid preventive therapy |
| KFF | Kaiser Family Foundation |
| NAPHISA (Act) | National Public Health Institute of South Africa. Act 1 of 2020 |
| NCD | Non-Communicable Diseases |
| NDoH | National Department of Health |
| PAHO | Pan-American Health Organisation |
| SADHS | South African Demographic and Health Survey |
| Stats-SA | Statistics South Africa |
| TB | Tuberculosis |
| WHO | World Health Organization |

# 1. Purpose of the report

The purpose of this report is to describe trends in mortality due to the major non-communicable diseases, i.e. cardiovascular diseases, diabetes and chronic lower respiratory diseases (CLRD). The report complements the one published in March 2023, which focused on the incidence and mortality rates of cancer in South Africa from 2008 to 2019 (Report No. 03-08-00, 2023).

## 1.1 Data sources and methods

Data for this study will be based on deaths registered with the Department of Home affairs and published in the Stats_SA *Mortality and causes of death releases*. Where available, incidence and prevalence rates on non-communicable diseases published in the South African Demographic and Health Survey or other surveys will be included to complement information on mortality.

Data analysis will describe trends in NCD mortality from 2008 to 2018, broken down by sex, age and population group. Age Standardised Mortality Rates (ASMR) will be calculated for each year, sex, province and population group. The World Standard Population (WHO 2000−2025) will be used to create the age-adjusted mortality rates. (NCI. SEER datasets, 2013).

## 2. Background

Non-communicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are a result of a combination of genetic, physiological, environmental and behavioural factors (WHO, 2022). In 2000, the World Health Organization (WHO) recognised non-communicable diseases as the greatest cause of premature death and morbidity and called for comprehensive and integrated action to stop this global epidemic (WHO, 2000).

As stated in a WHO report, non-communicable diseases are not a new problem, having long been of concern in developed countries (World Health report, 2002). They are however, of increasing concern in developing countries because of their transition from low-income to middle-income status, the influence of globalization on consumption patterns and the aging of populations (KFF, 2019).

According to the World Health Organization (WHO, 2021), non-communicable diseases are comprised of four main types, namely: cardiovascular diseases (like heart attacks and stroke), cancer, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes. Together these diseases kill an estimated 41 million people between the ages of 30 and 69 years each year and account for 80% of all premature deaths, 85% of which occur in low and middle income countries. NCDs threaten progress towards the 2030 Agenda for Sustainable Development Goals, which includes a target of reducing premature deaths from NCDs by one-third by 2030 (WHO, 2021). Tobacco use, sedentary lifestyles, the harmful use of alcohol and unhealthy diets such as excess salt, high sugar intake and fatty foods all increase the risk of dying from NCDs. Detection, screening and treatment of NCDs are key components of the response to NCDs (WHO, 2022). The South African Demographic and Health Survey of 2016 reported that 61% of men and 26% of women had ever consumed alcohol, and 26% of men and 5% of women exhibited risky drinking (SADHS, 2016).

South Africa faces a quadruple burden of disease resulting from maternal and child mortality; communicable diseases such as HIV/AIDS and Tuberculosis (TB); NCDs such as hypertension and cardiovascular diseases, diabetes, cancer, mental illnesses and chronic lung diseases like asthma; as well as injury and trauma. (WHO, 2018).

However, chronic diseases have not received priority attention in public health policies and programmes in line with their disease burden (Luna et al, 2020). There are cost-effective interventions available to prevent premature deaths from chronic disease and action is required to prevent further loss of lives (WHO, 2022). A strategy is required to address the increasing prevalence of chronic diseases, with the majority occurring in developing countries. Significant socioeconomic inequities in South Africa result in a higher chronic disease burden and mortality among poorer people (NDoH, 2020).

### 2.1 Cardiovascular diseases

The British Heart Foundation defines cardiovascular disease (CVD) as several types of disease that involve the heart and blood vessels. Cardiovascular diseases include coronary heart diseases (CHD), cerebrovascular disease or stroke, heart failure and other conditions affecting the heart and blood vessels (BHF, 2021). A leading risk factor for CVD is hypertension, or high blood pressure, according to the Centers for Diseases Control (CDC), and causes over 10 million deaths worldwide each year (CDC, 2021).

According to the World Heart Federation, cardiovascular disease is the most common non-communicable disease globally, responsible for nearly 18,6 million deaths, of which more than three quarters occur in low- and middle-income countries (Tromp et al. World Heart Federation, 2022). The heart and stroke foundation reports that heart disease and stroke are South Africa's biggest killers after HIV/AIDS (Heart and stroke foundation, 2016). It is reported that South Africa has one of the highest levels of overweight and obesity in the world, which is a contributing factor for heart disease. The World Obesity Federation reports that in South Africa, 41% of women have a Body Mass Index (BMI) greater than 30kg/$m^2$, the highest in the WHO African region, while 16% of men have a BMI greater than 30kg/$m^2$, second only after Algeria (World Obesity Federation, 2020).

The South African Demographic and Health Survey (SADHS, 2016) reported that in South Africa, 46% of women and 44% of men aged 15 years and older had hypertension. Nine percent of women and 6% of men had normal blood pressure and were taking medication to control blood pressure. The SADHS reported that the prevalence of hypertension was highest for whites (60% for women and 66% for men, respectively), followed by coloureds (57% and 58% for women and men, respectively). Black African women and men had the lowest prevalence of hypertension (44% and 41%, respectively).

The prevalence of hypertension was found particularly high in the Western Cape (52% of women and 59% of men), Northern Cape (53% of women and 52% of men), and Free State (54% of women and 48% of men); and it was lowest in Limpopo (34% of women and 29% of men).

According to Johns Hopkins Medicine (Johns Hopkins University, 2023), when unmanaged, hypertension can lead to heart attack, stroke, heart and kidney failure.

## 2.2 Diabetes

The Centers for Disease Control (CDC) defines diabetes as a chronic (long-lasting) health condition that affects how the body turns food into energy (CDC, 2023). Diabetes occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. This causes elevated levels of blood sugar in the bloodstream, and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels, causing heart disease, vision loss, and kidney disease (WHO, 2021). A 2021 study on the prevalence of vision loss and associated factors in South Africa reported that vision loss was more than four times higher in participants who were diagnosed with diabetes than those who were not diagnosed with diabetes (Addo et al, 2021).

According to the International Diabetes Federation (IDF, 2021), 537 million adults are now living with diabetes worldwide - a rise of 16% (74 million) since the previous IDF estimates in 2019. These findings report that 4,2 million adults in South Africa are living with diabetes – one in nine adults. According to the report, just under half of people living with diabetes in South Africa are undiagnosed. The 2016 SADHS reported that 13% of women and 8% of men age 15 years and older were diabetic, while higher percentages (64% females and 66% males) were pre-diabetic. Of concern was that 67% of both women and men who reported that they were never diagnosed with diabetes were pre-diabetic based on their haemoglobin A1C test (HbA1c) results, suggesting a low level of awareness of diabetes risk (SADHS, 2016).

Based on the Stats SA *Mortality and causes of death 2018* release (Statistical release P0309.3), diabetes was the second leading cause of natural death in 2018, accounting for 5,9% of deaths due to natural causes.

## 2.3 Chronic lower respiratory diseases

Chronic lower respiratory diseases (CLRD) are defined by the Centers for Disease Control and Prevention (CDC) and the World Health Organization as encompassing four major diseases: chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema, and asthma. The two most common are COPD and asthma. The diseases are characterised by restricted airflow and breathing problems (WHO, 2023; CDC, 2023).

COPD is more common in individuals with a history of tobacco smoking (Lancet, 2007). A wide range of risk factors are associated with the disease, including genetics, smoking, infections, malnutrition, ageing, occupational exposures, indoor and outdoor air pollutants, asthma, and low socioeconomic status (Lancet, 2007). A history of Tuberculosis (TB) has also been shown to be a risk factor for COPD (Yakar et al, 2017). A study done on black South African gold miners also showed that tuberculosis can cause chronic impairment of lung function, and the risk increases with the number of episodes of TB (Hnizdo et al, 2000). The study underscores the importance of reducing risk factors for TB such as HIV, silica dust exposure, silicosis and socioeconomic status (Hnizdo et al, 2000).

In Africa, indoor smoke from solid fuels has been identified among the leading risks for disease, including chronic respiratory diseases (World Health Report, 2002). It is reported that solid fuel use is most firmly associated with acute lower respiratory infections (including pneumonia) in young children, and chronic obstructive pulmonary disease and lung cancer in women (Desai et al, 2004). A study on the burden of diseases attributable to indoor pollution in South Africa estimated that 20% of households were exposed to indoor smoke from solid fuels, with marked variation by population group (Norman et al, 2007).

## 2.4 South African National Strategic Plan for the Prevention and Control of Non-Communicable Diseases, 2022–2027

The national strategic plan aims to strengthen health systems to accelerate the prevention and control of non-communicable diseases. The plan acknowledges the need to raise the profile of NCDs to the level of other priority programmes like TB and HIV/Aids. Among strategies mentioned to combat NCDs are increased collaboration with stakeholders, strengthening capacity for implementation of NCD programmes, reducing the levels of modifiable risk factors such as tobacco use and unhealthy diets through health promotion, and supporting research for the prevention and control of NCDs (NDoH, 2022). The national strategic plan has also adopted a 90-60-50 cascade for diabetes and hypertension, which aims to ensure that 90% of all people over 18 will know whether they have raised blood pressure and/or raised blood glucose, 60% of people with raised blood pressure or blood glucose will receive treatment, and 50% or people receiving interventions are controlled (NDoH, 2022).

## 3. Overview of mortality trends due to Non-Communicable diseases: 1997−2018

The chart and table below show the number of deaths due to the four non-communicable diseases (NCDs), cardiovascular diseases, cancer, diabetes and chronic lower respiratory diseases (CLRD), from 1997 to 2018. Over all years in the series, cardiovascular diseases accounted for half of all the NCD-related deaths while chronic lower respiratory diseases accounted for the lowest, at 10% or less. With the exception of deaths due to chronic lower respiratory diseases, which increased steadily from 1997 to 2006, and declined thereafter, all other deaths due to non-communicable diseases showed an increasing trend. The highest increase was for diabetes-related deaths, which more than doubled, increasing from 10 846 in 1997 to 26 880 in 2018. They were followed by cancer-related deaths, which increased by 60%, from 27 052 in 1997 to 43 613 in 2018. Deaths due to cardiovascular diseases increased by 46,5%, from 54 701 in 1997 to 80 133 in 2018. Deaths due to CLRD increased by 47,5% between 1997 and 2006, from 10 829 to 15 971, followed by a 12% drop between 2007 and 2018, from 15 433 in 2007 to 13 579 in 2018. As elaborated in a later chapter, this change may be due to changes in mortality due to TB, a risk factor for CLRD, which dropped significantly following the roll-out of ARVs in 2006, and implementation of WHO-recommended guidelines for integrated management of TB and HIV.

**Figure 3: Deaths due to non-communicable diseases: 1997−2018**

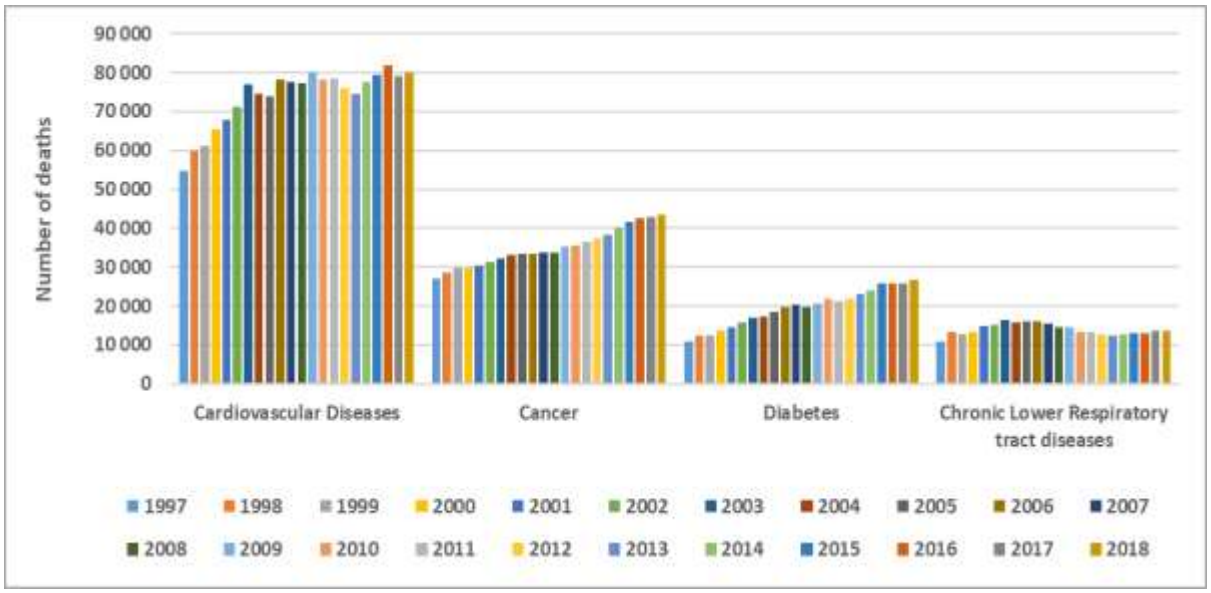


**Table 3: Deaths due to non-communicable diseases: 1997−2018**

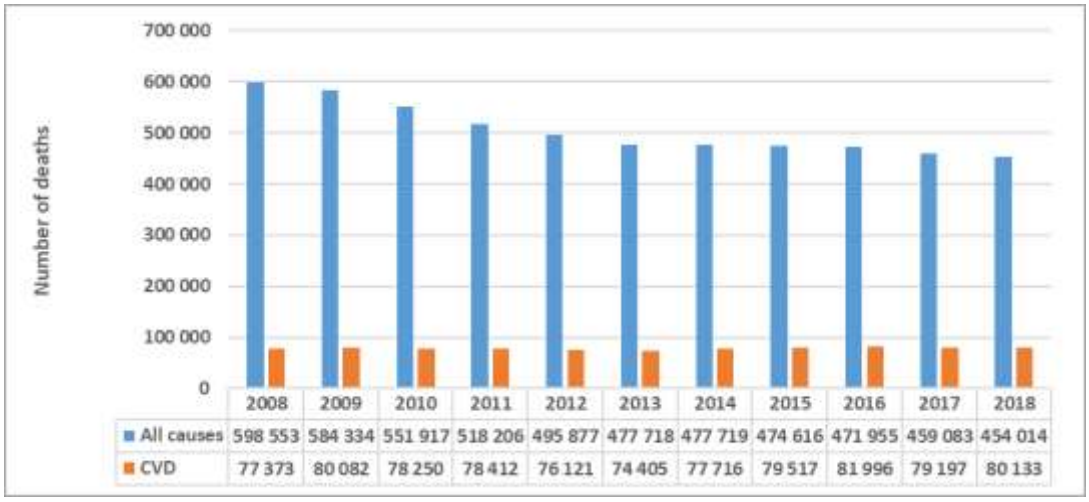
| | Total | CVD | Cancer | Diabetes | CLRD |
|---|---|---|---|---|---|
| **Total** | **3 131 199** | **1 624 801** | **770 856** | **429 578** | **305 964** |
| 1997 | **103 428** | 54 701 | 27 052 | 10 846 | 10 829 |
| 1998 | **114 087** | 59 962 | 28 614 | 12 294 | 13 217 |
| 1999 | **115 950** | 61 043 | 29 715 | 12 558 | 12 634 |
| 2000 | **122 357** | 65 504 | 29 880 | 13 612 | 13 361 |
| 2001 | **127 786** | 67 947 | 30 371 | 14 619 | 14 849 |
| 2002 | **133 509** | 71 323 | 31 272 | 15 809 | 15 105 |
| 2003 | **142 197** | 76 871 | 32 198 | 16 852 | 16 276 |
| 2004 | **140 655** | 74 609 | 33 228 | 17 155 | 15 663 |
| 2005 | **141 843** | 73 875 | 33 408 | 18 607 | 15 953 |
| 2006 | **147 143** | 78 074 | 33 413 | 19 685 | 15 971 |
| 2007 | **147 264** | 77 690 | 33 881 | 20 260 | 15 433 |
| 2008 | **145 188** | 77 373 | 33 720 | 19 692 | 14 403 |
| 2009 | **150 460** | 80 082 | 35 138 | 20 787 | 14 453 |
| 2010 | **148 767** | 78 250 | 35 519 | 21 724 | 13 274 |
| 2011 | **149 677** | 78 412 | 36 520 | 21 325 | 13 420 |
| 2012 | **148 122** | 76 121 | 37 397 | 21 975 | 12 629 |
| 2013 | **148 493** | 74 405 | 38 414 | 23 211 | 12 463 |
| 2014 | **154 867** | 77 716 | 40 227 | 24 114 | 12 810 |
| 2015 | **160 173** | 79 517 | 41 800 | 25 820 | 13 036 |
| 2016 | **163 569** | 81 996 | 42 619 | 25 857 | 13 097 |
| 2017 | **161 459** | 79 197 | 42 857 | 25 896 | 13 509 |
| 2018 | **164 205** | 80 133 | 43 613 | 26 880 | 13 579 |

The following chapters discuss trends in non-communicable diseases in detail. Cancer has been excluded as it was covered in a prior report.

## 4. Cardiovascular diseases mortality

Deaths due to cardiovascular diseases (CVD) have steadily increased between 2008 to 2018. In 2008, CVD deaths accounted for 12,9% (77 373) of all deaths, and increased to 17,6% (80 133) of all reported deaths in 2018 (StatsSA report. P0309. 2020).

**Figure 4.1: Cardiovascular diseases deaths, 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| All causes | 598 553 | 584 334 | 551 917 | 518 206 | 495 877 | 477 718 | 477 719 | 474 616 | 471 955 | 459 083 | 454 014 |
| CVD | 77 373 | 80 082 | 78 250 | 78 412 | 76 121 | 74 405 | 77 716 | 79 517 | 81 996 | 79 197 | 80 133 |

In 2018, the majority of cardiovascular diseases, 90% were hypertensive diseases (ICD 10 codes I10 - I15), ischaemic heart disease (ICD codes I20 - I25), other forms of heart disease (ICD codes I30 - I52) and cerebrovascular diseases (ICD codes I60 - I69).

Figure 4.2 and table 4.2 show deaths due to cardiovascular diseases broken down by sex and disease type in 2018. At 56,6% (13 016), 62,4% (12 846) and 53,2% (12 218), females accounted for a higher percentage of deaths due to cerebrovascular diseases, hypertensive diseases and other forms of heart diseases, respectively. Males accounted for a higher percentage, 56,3% (7 652) of deaths due to ischaemic heart disease while females accounted for 43,6% (5 926).

**Figure 4.2: Cardiovascular diseases deaths, by disease type and sex. 2018**

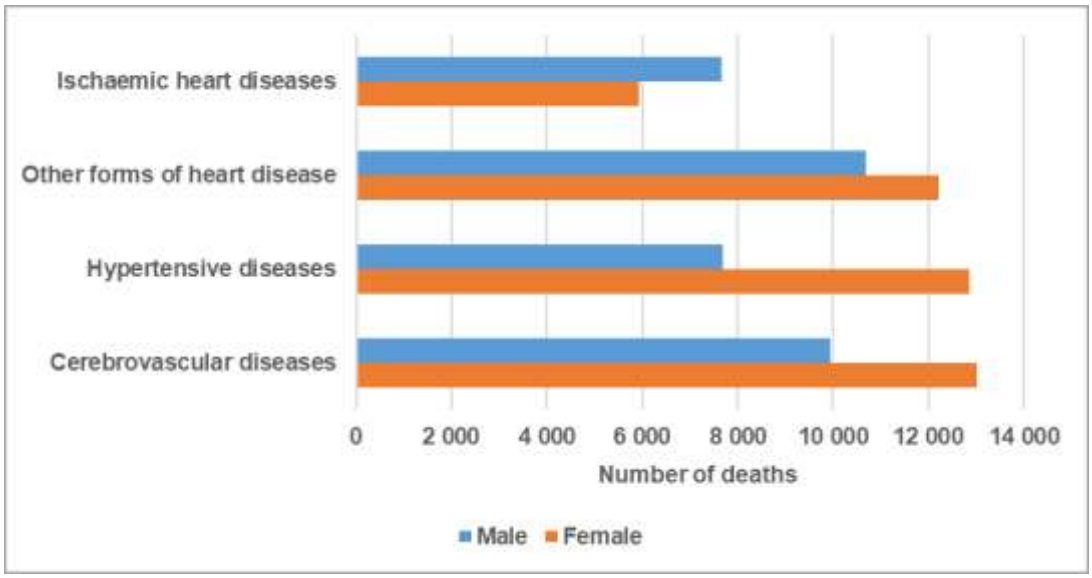


**Table 4.2: Deaths due to major cardiovascular diseases by type of disease and sex: 2018**

| | | Cerebrovascular diseases | Other forms of heart disease | Hypertensive diseases | Ischaemic heart diseases |
|---|---|---|---|---|---|
| **ICD 10 code** | | **I60 - I69** | **I30 - I52** | **I10 - I15** | **I20 - I25** |
| **Total** | **80 133** | **23 000** | **22 956** | **20 579** | **13 598** |
| Male | 35 983 | 9 945 | 10 688 | 7 698 | 7 652 |
| Female | 44 006 | 13 016 | 12 218 | 12 846 | 5 926 |
| Unspecified | 144 | 39 | 50 | 34 | 20 |

Appendix one shows a breakdown of deaths due to all diseases of the circulatory system.

Figure 4.3 below shows a breakdown of deaths due cardiovascular diseases by sex over the period, 2008-2018. In 2018, females accounted for most deaths at 54,9% (44 006). Deaths among females increased by 3,3% (from 42 602 in 2008 to 44 006 in 2018), while deaths among males increased by 3,6% (from 34 734 in 2008 to 35 983 in 2018).

**Figure 4.3: Number of deaths due to cardiovascular diseases. 2008−2018**

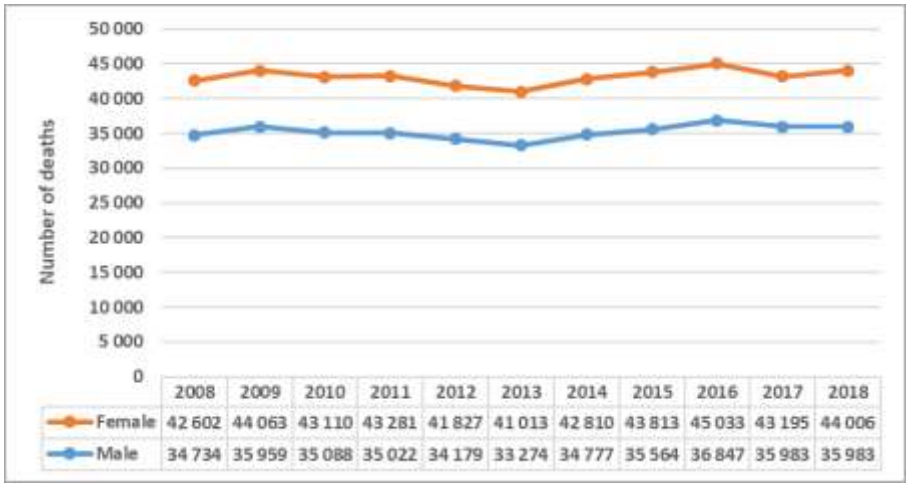


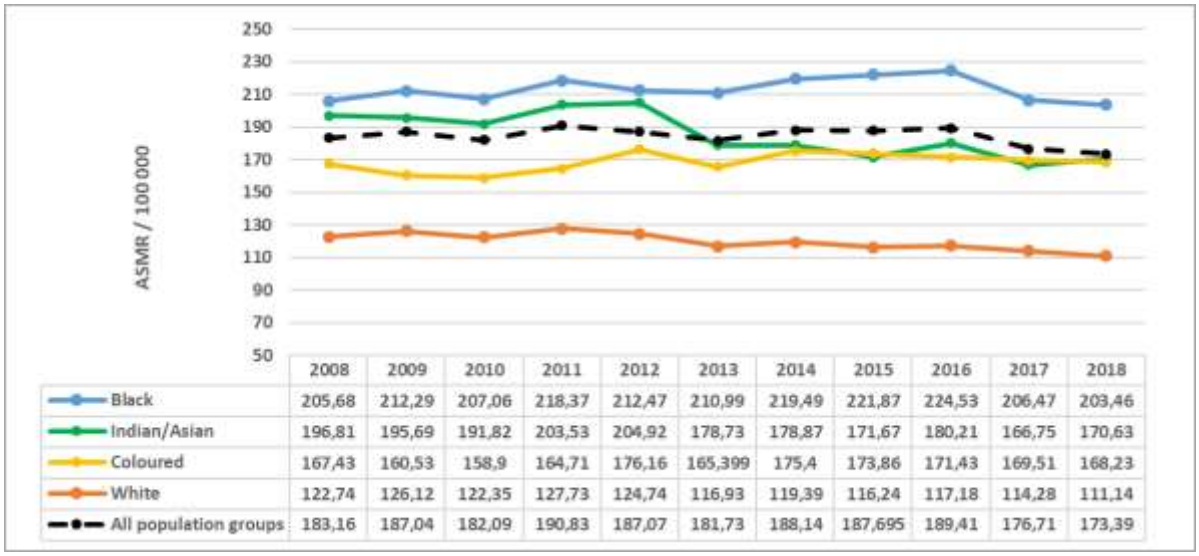

Figure 4.4 below shows the age distributions of deaths due to cardiovascular diseases by sex in 2018. With a median age of 66 years, males are more likely to die earlier than females, who had a median age of 74 years at death.

**Figure 4.4: Age distribution of deaths due to cardiovascular diseases, by sex in 2018**


A study on trends in heart failure mortality in men and women in the United Kingdom (Taylor C. 2020), showed that women have lower incidence of heart failure than men in younger age groups, but the trend reverses in older age groups, above the age of 80 years.

Figure 4.5 below shows the age-standardised mortality rates due to cardiovascular diseases. In 2018, the age-standardised mortality rate due to cardiovascular diseases was 173,39 deaths per 100 000. Black Africans had the highest mortality rates at 203,46 per 100 000, followed by Indian/Asian and coloured population groups, at 170,63 and 168,23 per 100 000 respectively. The white population group had the lowest mortality rates overall, at 111,14 per 100 000 in 2018.

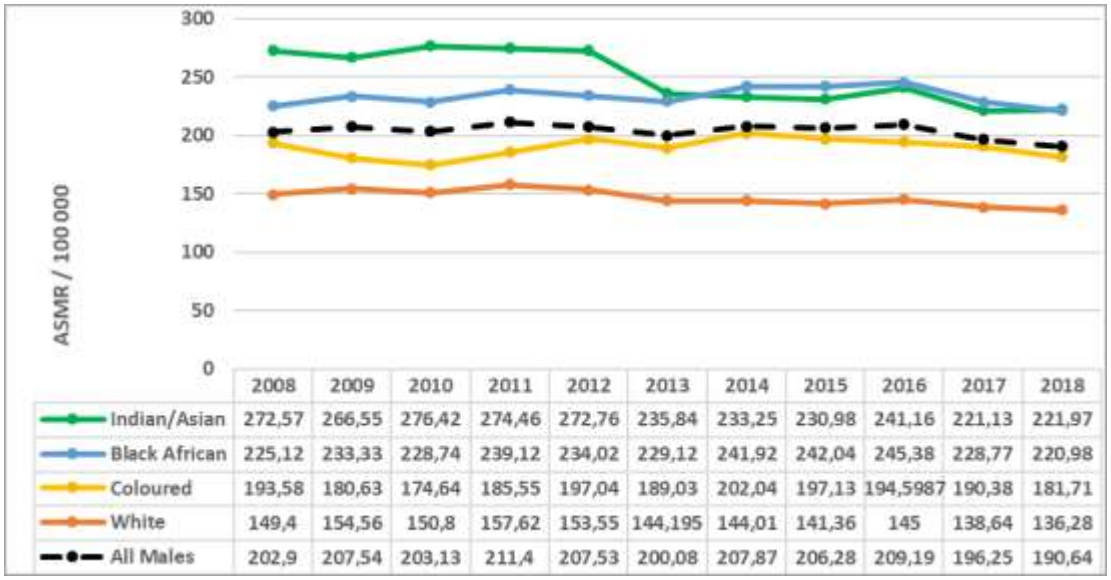
**Figure 4.5: Age-Standardised Mortality Rates due to cardiovascular diseases, by population group, 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Black | 205,68 | 212,29 | 207,06 | 218,37 | 212,47 | 210,99 | 219,49 | 221,87 | 224,53 | 206,47 | 203,46 |
| Indian/Asian | 196,81 | 195,69 | 191,82 | 203,53 | 204,92 | 178,73 | 178,87 | 171,67 | 180,21 | 166,75 | 170,63 |
| Coloured | 167,43 | 160,53 | 158,9 | 164,71 | 176,16 | 165,399 | 175,4 | 173,86 | 171,43 | 169,51 | 168,23 |
| White | 122,74 | 126,12 | 122,35 | 127,73 | 124,74 | 116,93 | 119,39 | 116,24 | 117,18 | 114,28 | 111,14 |
| All population groups | 183,16 | 187,04 | 182,09 | 190,83 | 187,07 | 181,73 | 188,14 | 187,695 | 189,41 | 176,71 | 173,39 |

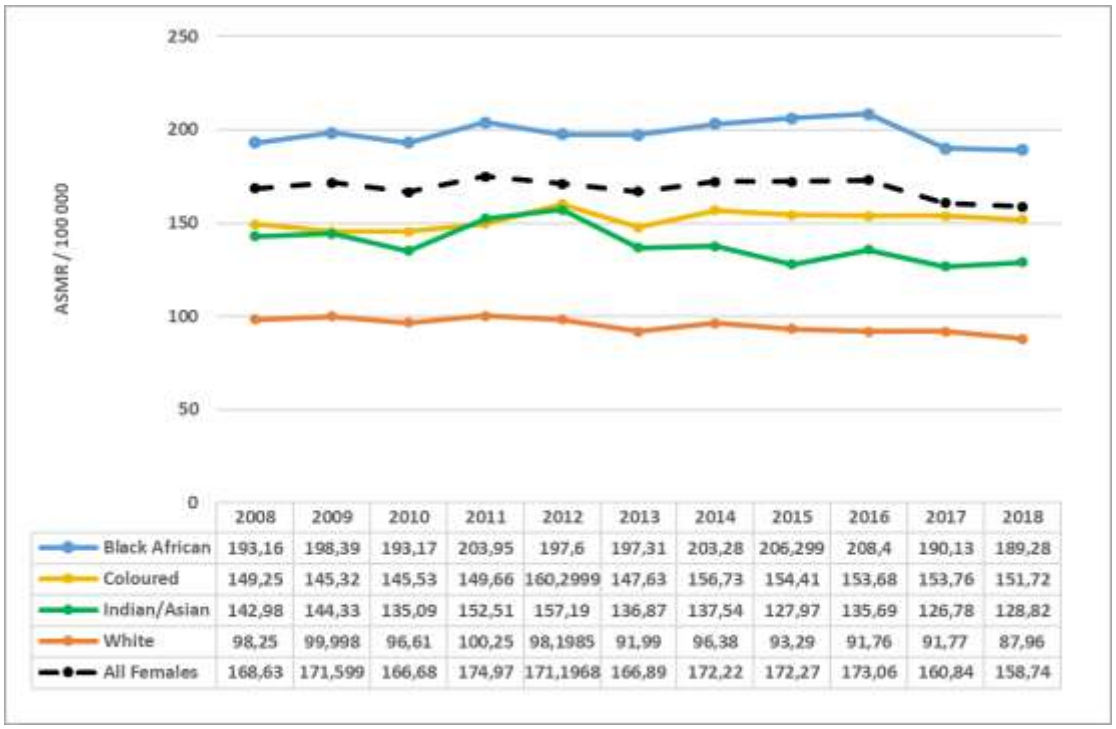
Figure 4.6 below shows the age-standardised mortality rates due to cardiovascular diseases for males between 2008 and 2018. The mortality rate for all males was 190,64 per 100 000 in 2018. Indian/Asian and black African males had the highest mortality rates in 2018, at 221,97 and 220,98 deaths per 100 000 respectively. White males had the lowest mortality rates at 136,28 deaths per 100 000 in 2018.

**Figure 4.6: Age-Standardised Mortality Rates due to cardiovascular diseases, by male population group, 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indian/Asian | 272,57 | 266,55 | 276,42 | 274,46 | 272,76 | 235,84 | 233,25 | 230,98 | 241,16 | 221,13 | 221,97 |
| Black African | 225,12 | 233,33 | 228,74 | 239,12 | 234,02 | 229,12 | 241,92 | 242,04 | 245,38 | 228,77 | 220,98 |
| Coloured | 193,58 | 180,63 | 174,64 | 185,55 | 197,04 | 189,03 | 202,04 | 197,13 | 194,5987 | 190,38 | 181,71 |
| White | 149,4 | 154,56 | 150,8 | 157,62 | 153,55 | 144,195 | 144,01 | 141,36 | 145 | 138,64 | 136,28 |
| All Males | 202,9 | 207,54 | 203,13 | 211,4 | 207,53 | 200,08 | 207,87 | 206,28 | 209,19 | 196,25 | 190,64 |

**Figure 4.7: Age-Standardised Mortality Rates due to cardiovascular diseases, by female population group, 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Black African | 193,16 | 198,39 | 193,17 | 203,95 | 197,6 | 197,31 | 203,28 | 206,299 | 208,4 | 190,13 | 189,28 |
| Coloured | 149,25 | 145,32 | 145,53 | 149,66 | 160,2999 | 147,63 | 156,73 | 154,41 | 153,68 | 153,76 | 151,72 |
| Indian/Asian | 142,98 | 144,33 | 135,09 | 152,51 | 157,19 | 136,87 | 137,54 | 127,97 | 135,69 | 126,78 | 128,82 |
| White | 98,25 | 99,998 | 96,61 | 100,25 | 98,1985 | 91,99 | 96,38 | 93,29 | 91,76 | 91,77 | 87,96 |
| All Females | 168,63 | 171,599 | 166,68 | 174,97 | 171,1968 | 166,89 | 172,22 | 172,27 | 173,06 | 160,84 | 158,74 |

Females had lower age-standardised mortality rates than males over all years, 2008 – 2018. In 2018. The age-standardised mortality rate for females was 158,74 deaths per 100 000 mid-year population, a drop from 168,63 per 100 000 in 2008. Black African females had the highest mortality rates, at 189,28 deaths per 100 000 in 2018. Indian/Asian and coloured females had almost equal mortality rates between 2008 and 2012, but that of Indian/Asian females declined to 128,82 by 2018, while that of coloured females remained steady, reaching 151,72 in 2018. White females had the lowest and slightly declining mortality rates, from 168,63 deaths per 100 000 in 2008 to 158,74 in 2018.

According to a Finnish study on sex differences in age-related cardiovascular mortality, (Mikkola T. et al. 2015; Bots S. et al. 2017), heart disease mortality in men increases rapidly at a relatively young age, while in women the risk shows a steep increase after 60 years of age. The study underscored the need to identify and prevent risk factors for cardiovascular diseases, especially in women in their mid-life years.

Table 4.8 below shows the number of deaths due to cardiovascular diseases by province, between 2008 and 2018. KwaZulu-Natal and Gauteng provinces accounted for the highest numbers of deaths at 21,1% and 20% each, respectively. These were followed by the Eastern Cape, which contributed 13% and Western Cape, 11,1%. These four leading provinces accounted for almost two-thirds of deaths due to cardiovascular diseases. These leading provinces also host slightly more than two-thirds of the population of South Africa (Appendix 2).

**Table 4.8: Deaths due to cardiovascular diseases by province: 2008−2018**

| Province | | KwaZulu-Natal | Gauteng | Eastern Cape | Western Cape | Limpopo | North West | Free State | Mpumalanga | Northern Cape | Other / Unknown |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **863 202** | **182 316** | **172 675** | **112 602** | **96 091** | **72 626** | **66 351** | **64 594** | **62 981** | **24 576** | **8 390** |
| **2008** | **77 373** | 16 459 | 15 615 | 9 920 | 8 282 | 6 455 | 5 896 | 6 147 | 6 174 | 2 077 | 348 |
| **2009** | **80 082** | 16 982 | 16 526 | 10 613 | 8 239 | 6 932 | 5 942 | 6 371 | 6 214 | 2 023 | 240 |
| **2010** | **78 250** | 16 586 | 15 218 | 10 734 | 8 145 | 6 395 | 6 404 | 6 315 | 5 893 | 2 032 | 528 |
| **2011** | **78 412** | 16 662 | 15 810 | 10 315 | 8 684 | 5 982 | 6 286 | 6 305 | 5 840 | 2 019 | 509 |
| **2012** | **76 121** | 16 195 | 15 473 | 9 382 | 9 089 | 5 726 | 6 102 | 5 919 | 5 703 | 2 001 | 531 |
| **2013** | **74 405** | 15 269 | 15 217 | 9 427 | 8 542 | 6 337 | 6 082 | 5 621 | 5 419 | 2 132 | 359 |
| **2014** | **77 716** | 15 997 | 15 826 | 10 314 | 8 551 | 6 828 | 6 245 | 5 619 | 5 647 | 2 371 | 318 |
| **2015** | **79 517** | 16 186 | 16 147 | 10 407 | 9 402 | 7 289 | 6 348 | 5 734 | 5 611 | 2 226 | 167 |
| **2016** | **81 996** | 18 185 | 16 005 | 10 729 | 9 248 | 7 161 | 6 127 | 5 842 | 5 840 | 2 754 | 105 |
| **2017** | **79 197** | 16 249 | 15 326 | 10 484 | 8 685 | 6 806 | 5 667 | 5 534 | 5 166 | 2 347 | 2 933 |
| **2018** | **80 133** | 17 546 | 15 512 | 10 277 | 9 224 | 6 715 | 5 252 | 5 187 | 5 474 | 2 594 | 2 352 |

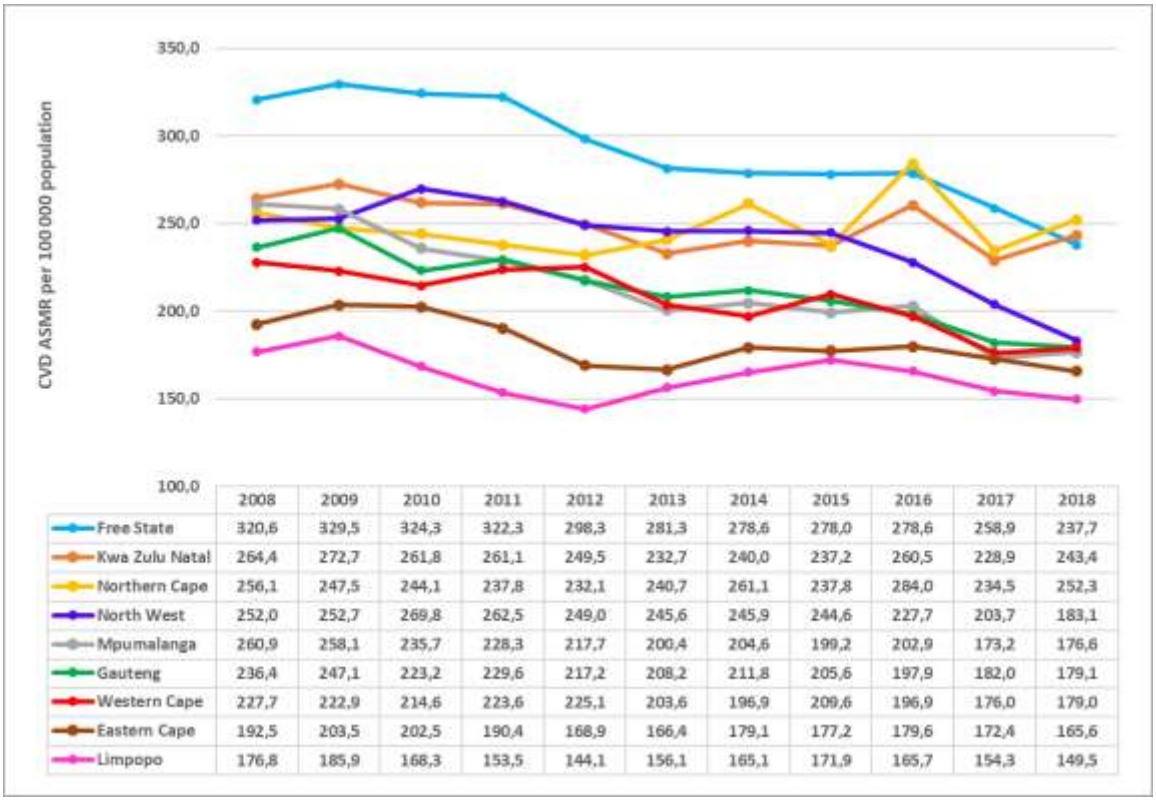
Figure 4.8 below shows the age-standardised mortality rates for cardiovascular diseases between 2008 and 2018, broken down by province. At 320,6 deaths per 100 000 mid-year population, the Free State province had the highest ASMR in 2008, which declined to 237,7 / 100 000 by 2018, slightly below KwaZulu-Natal (KZN) and Northern Cape provinces, which showed little change between 2008 and 2018. The KZN province ASMR was 264,4/100 000 is 2008 and dropped slightly to 243,4/100 1000 by 2018, For the Northern Cape province, the ASMR in 2008 was 256,1/100 000 in 2008 and dropped to 252,3/100 000 by 2018.

Four provinces, North-West, Mpumalanga, Gauteng and Western Cape showed substantial declines in mortality rates due to cardiovascular diseases between 2008 and 2018. For the North-West, the ASMR declined from 252/100 000 in 2008 to 183,1/100 000 in 2018. Mpumalanga ASMR declined from 260,9/100 000 in 2008 to 176,6/100 000 in 2018, for Gauteng, the ASMR declined from 236,4/100 000 in 2008 to 179,1/100 000 in 2018 and for Western Cape, the ASMR declined from 227,7/100 000 in 2008 to 179/100 000 in 2018.

Four of the leading provinces in terms of number of CVD-related deaths, Gauteng, Eastern Cape, Western Cape and Limpopo, had the lowest age-standardised mortality rates. The ASMR for Gauteng was 236,4/100 000 in 2008, and dropped to 179,1/100 000 in 2018. For the Western Cape, the ASMR was 227,7/100 000 in 2008 and dropped to 179/100 000 in 2018, while the Eastern Cape ASMR was 192,5/100 000 in 2008, dropping to 165,6/100 000 in 2018.

While Limpopo province accounted for about 8% of CVD-related deaths, higher than the North-West, Free State, Mpumalanga and Northern Cape (table 4.8 above), it had the lowest age-standardised mortality rates over the ten-year period, at 176,8/100 000 in 2008 and 149,5/100 000 in 2018.

**Figure 4.8: Age-Standardised Mortality Rates due to cardiovascular diseases, by province, 2008−2018.**

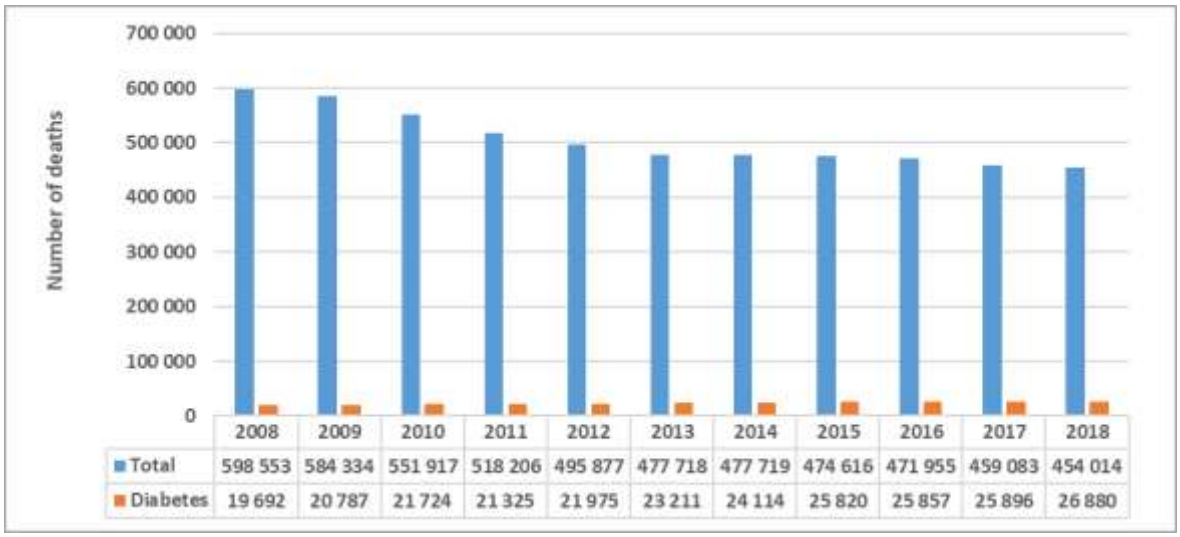



| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Free State | 320,6 | 329,5 | 324,3 | 322,3 | 298,3 | 281,3 | 278,6 | 278,0 | 278,6 | 258,9 | 237,7 |
| Kwa Zulu Natal | 264,4 | 272,7 | 261,8 | 261,1 | 249,5 | 232,7 | 240,0 | 237,2 | 260,5 | 228,9 | 243,4 |
| Northern Cape | 256,1 | 247,5 | 244,1 | 237,8 | 232,1 | 240,7 | 261,1 | 237,8 | 284,0 | 234,5 | 252,3 |
| North West | 252,0 | 252,7 | 269,8 | 262,5 | 249,0 | 245,6 | 245,9 | 244,6 | 227,7 | 203,7 | 183,1 |
| Mpumalanga | 260,9 | 258,1 | 235,7 | 228,3 | 217,7 | 200,4 | 204,6 | 199,2 | 202,9 | 173,2 | 176,6 |
| Gauteng | 236,4 | 247,1 | 223,2 | 229,6 | 217,2 | 208,2 | 211,8 | 205,6 | 197,9 | 182,0 | 179,1 |
| Western Cape | 227,7 | 222,9 | 214,6 | 223,6 | 225,1 | 203,6 | 196,9 | 209,6 | 196,9 | 176,0 | 179,0 |
| Eastern Cape | 192,5 | 203,5 | 202,5 | 190,4 | 168,9 | 166,4 | 179,1 | 177,2 | 179,6 | 172,4 | 165,6 |
| Limpopo | 176,8 | 185,9 | 168,3 | 153,5 | 144,1 | 156,1 | 165,1 | 171,9 | 165,7 | 154,3 | 149,5 |

## 5. Diabetes-related mortality

Figure 5.1 shows the number of deaths due to diabetes compared to all death occurrences between 2008 and 2018. The proportion of diabetes-related deaths ranged from 3,3% (19 692) in 2008 to 5,9% (26 880 in 2018. While the total number of deaths from all causes came down by 24,1% (from 598 553 in 2008 to 454 014 in 2018), the number of deaths due to diabetes increased by 36,5% (from 19 692 in 2008 to 26 880 in 2018).

**Figure 5.1: Total number of deaths compared to those due to diabetes. 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 598 553 | 584 334 | 551 917 | 518 206 | 495 877 | 477 718 | 477 719 | 474 616 | 471 955 | 459 083 | 454 014 |
| Diabetes | 19 692 | 20 787 | 21 724 | 21 325 | 21 975 | 23 211 | 24 114 | 25 820 | 25 857 | 25 896 | 26 880 |

Figure 5.2 and table 5.2 below show a breakdown of deaths due to diabetes by disease type and sex in 2018. Ninety percent (24 214) of deaths due to diabetes were of unspecified type and females accounted for 61,2% (16 447).

**Figure 5.2: Diabetes-related deaths, by disease type and sex. 2018**

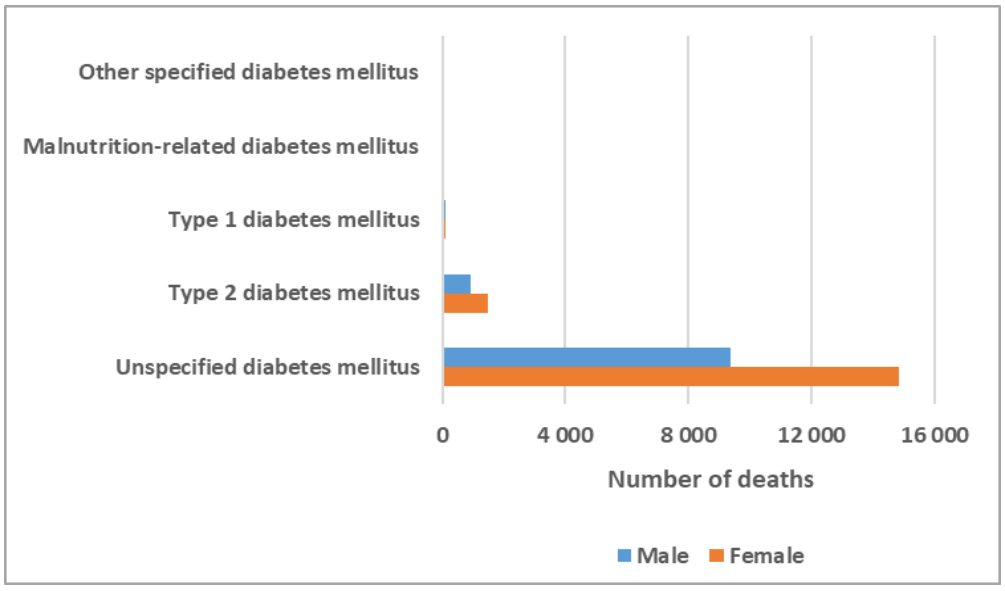
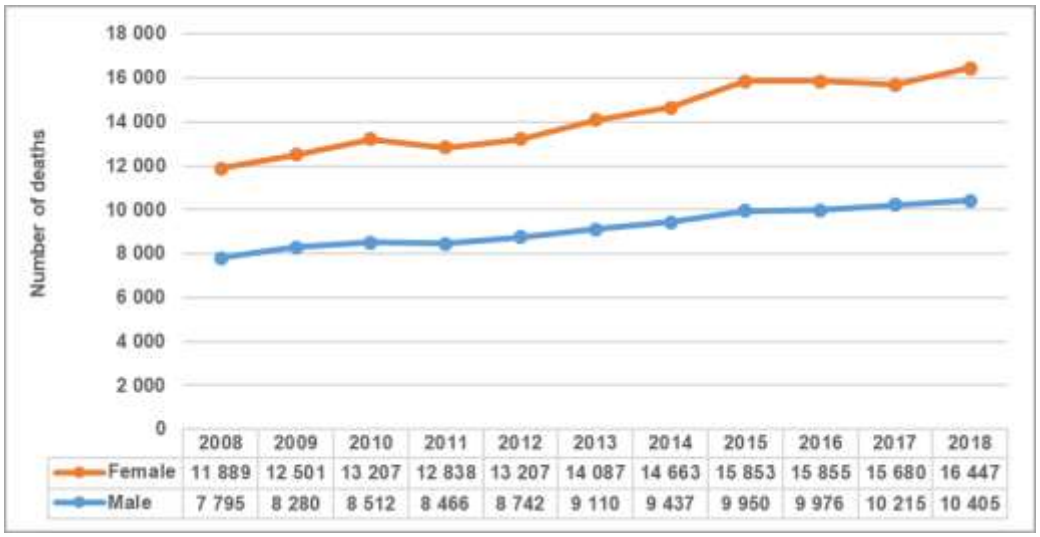


**Table 5.2: Deaths due to diabetes by disease type and sex. 2018**

| | Total | Male | Female | Unspecified |
|---|---|---|---|---|
| **Total** | **26 880** | **10 405** | **16 447** | **28** |
| **Unspecified diabetes mellitus** | **24 214** | 9 346 | 14 846 | 22 |
| **Type 2 diabetes mellitus** | **2 424** | 933 | 1 486 | 5 |
| **Type 1 diabetes mellitus** | **238** | 123 | 114 | 1 |
| **Malnutrition-related diabetes mellitus** | **3** | 2 | 1 | - |
| **Other specified diabetes mellitus** | **1** | 1 | - | - |

Figure 5.3 below shows the number of deaths due to diabetes broken down by sex between 2008 and 2018. Females accounted for a higher proportion, 60% of all deaths due to diabetes over all years. Deaths due to diabetes among females also increased by a higher percentage, 39,3% (from 11 889 in 2008 to 16 447 in 2018), compared to those in males, which increased by 33,5% (from 7 795 in 2008 to 10 405 in 2018).

**Figure 5.3: Number of deaths due to diabetes broken down by sex: 2008−2018**




The 2016 SA-DHS also reported a higher percentage of females with diabetes, 10%, compared to males at 6%. This might explain the higher number of females who died from diabetes compared to males.

Figure 5.4 below shows the distribution of diabetes-related deaths by age in 2018. The median age in years at death was 66 for males and 68 for females, thus deaths due to diabetes occur largely among older groups.

**Figure 5.4: Distribution of diabetes-related deaths by age: 2018**

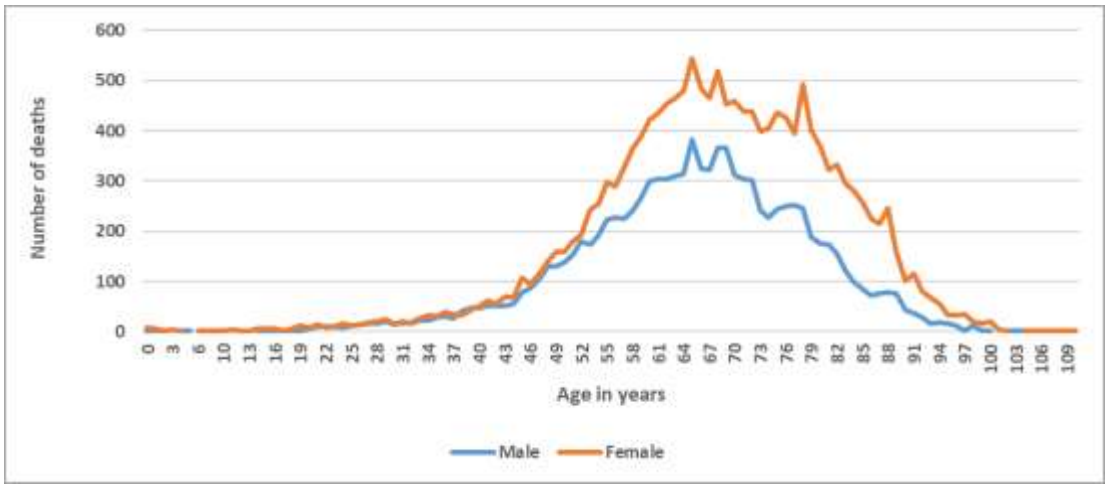
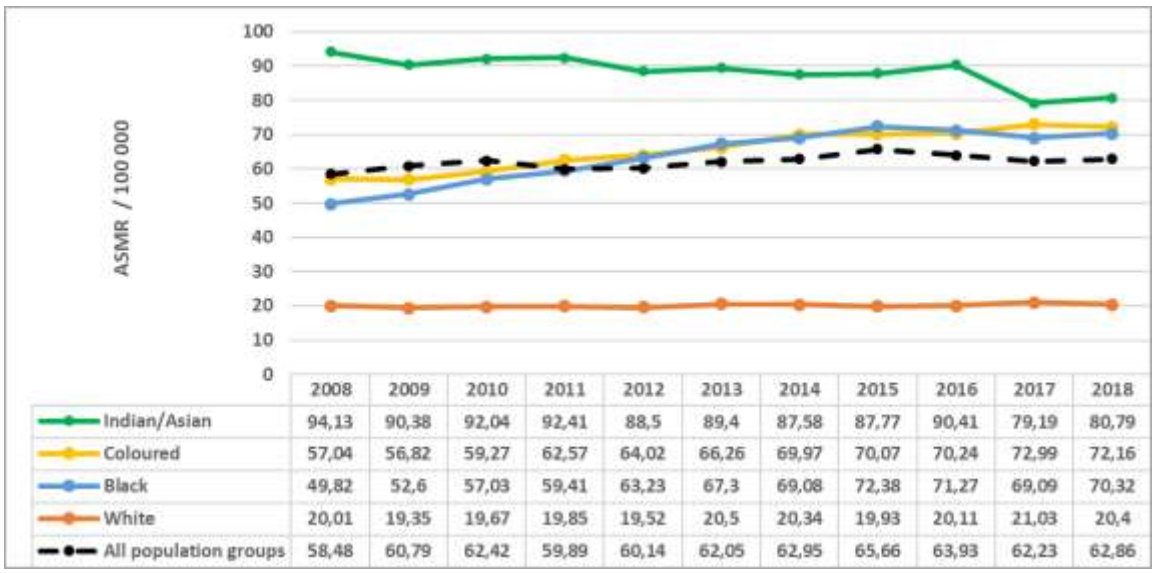



Figure 5.5 below shows the age-standardised mortality rates due to diabetes between 2008 and 2018. In 2018, the age-standardised mortality rate (ASMR) for diabetes was 62,86 deaths per 100 000 mid-year population. The Indian/Asian population group had the highest, but declining ASMR at 80,79 per 100 000, down from 94,13/100 000 in 2008, while the white population group had the lowest and steady ASMR at 20,4 deaths per 100 000. The coloured and black African population groups had lower, but increasing age-standardised mortality rates than the Indian/Asian population group. For the coloured population group, ASMR increased from 57 deaths /100 000 in 2008 to 72,2/100 000 in 2018. For the black African population group, the ASMR increased from 49,8 per 100 000 in 2008 to 70,3 per 100 000 in 2018.

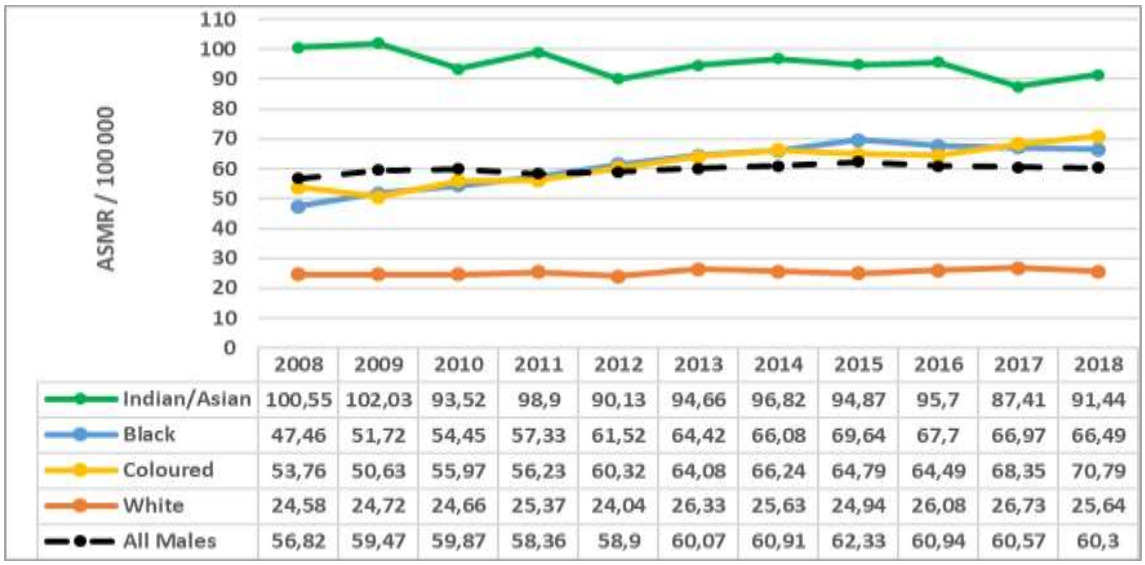
**Figure 5.5: Age-standardised diabetes Mortality Rate: 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indian/Asian | 94,13 | 90,38 | 92,04 | 92,41 | 88,5 | 89,4 | 87,58 | 87,77 | 90,41 | 79,19 | 80,79 |
| Coloured | 57,04 | 56,82 | 59,27 | 62,57 | 64,02 | 66,26 | 69,97 | 70,07 | 70,24 | 72,99 | 72,16 |
| Black | 49,82 | 52,6 | 57,03 | 59,41 | 63,23 | 67,3 | 69,08 | 72,38 | 71,27 | 69,09 | 70,32 |
| White | 20,01 | 19,35 | 19,67 | 19,85 | 19,52 | 20,5 | 20,34 | 19,93 | 20,11 | 21,03 | 20,4 |
| All population groups | 58,48 | 60,79 | 62,42 | 59,89 | 60,14 | 62,05 | 62,95 | 65,66 | 63,93 | 62,23 | 62,86 |

Figure 5.6 below shows that in 2018, the age-standardised mortality rate per 100 000 mid-year population was 60,3 for males. Indian/Asian males had the highest mortality rates overall, at 91,4 deaths per 100 000 in 2018. Black African and coloured males had almost the same mortality rates at 66,5 and 70,8 deaths per 100 000 respectively. White males had the lowest age-standardised mortality rates, at 25,6 deaths per 100 000.

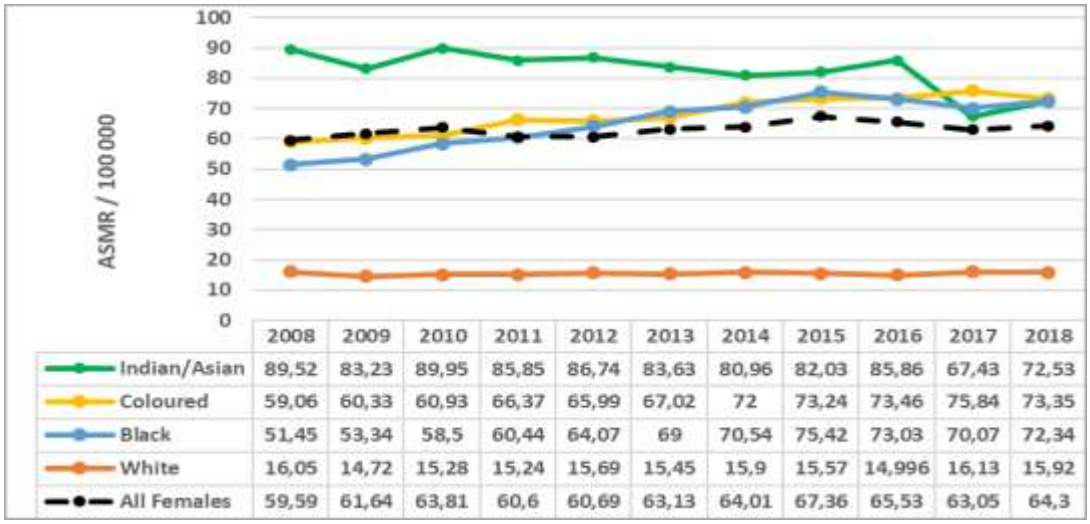
**Figure 5.6: Age-standardised diabetes mortality rate by male population group: 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indian/Asian | 100,55 | 102,03 | 93,52 | 98,9 | 90,13 | 94,66 | 96,82 | 94,87 | 95,7 | 87,41 | 91,44 |
| Black | 47,46 | 51,72 | 54,45 | 57,33 | 61,52 | 64,42 | 66,08 | 69,64 | 67,7 | 66,97 | 66,49 |
| Coloured | 53,76 | 50,63 | 55,97 | 56,23 | 60,32 | 64,08 | 66,24 | 64,79 | 64,49 | 68,35 | 70,79 |
| White | 24,58 | 24,72 | 24,66 | 25,37 | 24,04 | 26,33 | 25,63 | 24,94 | 26,08 | 26,73 | 25,64 |
| All Males | 56,82 | 59,47 | 59,87 | 58,36 | 58,9 | 60,07 | 60,91 | 62,33 | 60,94 | 60,57 | 60,3 |

For females, the age-standardised mortality rate was 64,3 per 100 000 mid-year population. As with males, there were considerable mortality rate differences between population groups. Indian/Asian females had the highest, but declining mortality rates, which were almost equal to those of the coloured and black African populations groups in 2018. As with males, black African and coloured females had almost equal and increasing mortality rates. In the coloured population group, mortality rates increased from 59,1 in 2008 to 73,4 in 2018, while for the black African population group, mortality rates increased from 51,5 in 2008 to 72,3 in 2018. White females had the lowest age-standardised mortality rates, below 20 deaths per 100 000 mid-year population.

**Figure 5.7: Age-standardised diabetes mortality rate by female population group: 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indian/Asian | 89,52 | 83,23 | 89,95 | 85,85 | 86,74 | 83,63 | 80,96 | 82,03 | 85,86 | 67,43 | 72,53 |
| Coloured | 59,06 | 60,33 | 60,93 | 66,37 | 65,99 | 67,02 | 72 | 73,24 | 73,46 | 75,84 | 73,35 |
| Black | 51,45 | 53,34 | 58,5 | 60,44 | 64,07 | 69 | 70,54 | 75,42 | 73,03 | 70,07 | 72,34 |
| White | 16,05 | 14,72 | 15,28 | 15,24 | 15,69 | 15,45 | 15,9 | 15,57 | 14,996 | 16,13 | 15,92 |
| All Females | 59,59 | 61,64 | 63,81 | 60,6 | 60,69 | 63,13 | 64,01 | 67,36 | 65,53 | 63,05 | 64,3 |

Racial differences in mortality due to diabetes may be a reflection of genetic predisposition to diabetes, access to care, dietary or other behavioural practices that place one group of individuals at higher risk than others, or other factors. These need to be studied to formulate appropriate, targeted interventions to reduce the burden of the disease among groups at risk. Health promotion in particular, needs to be reinforced in South Africa to empower individuals to manage their health conditions. The Pan American Health Organisation reports that promoting access to preventive health services, screening and early

detection can save money on costly treatments and reduce periods of disability (PAHO. 2010). A study on patient views on health promotion and diseases prevention services provided by healthcare workers in a South African tertiary hospital revealed that nurses were less likely to empower patients to manage their health and take good control over health during admission, respectively, compared to doctors (Melariri H. et al. 2022). Informing patients on risk factors associated with an illness is key to managing NCDs and healthcare workers need to be empowered with skills to offer health education to patients.

Table 5.8 below shows the number of deaths due to diabetes, broken down by province from 2008 to 2018. Overall, KwaZulu-Natal province accounted for the highest number of deaths at 23,3% (59 999), followed by Gauteng province at 17% (43 719), and Western Cape province at 14% (35 954). These leading provinces accounted for two-thirds of deaths due to diabetes.

**Table 5.8: Deaths due to diabetic diseases by province: 2008−2018**

| Province | | KwaZulu-Natal | Gauteng | Western Cape | Eastern Cape | Limpopo | Mpumalanga | Free State | North West | Northern Cape | Other / Unknown |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **257 281** | **59 999** | **43 719** | **35 954** | **34 283** | **26 262** | **17 841** | **15 793** | **15 143** | **5 864** | **2 423** |
| **2008** | **19 692** | 4 817 | 3 653 | 2 722 | 2 676 | 1 622 | 1 341 | 1 326 | 1 056 | 406 | 73 |
| **2009** | **20 787** | 4 950 | 3 731 | 2 852 | 2 848 | 1 939 | 1 607 | 1 279 | 1 079 | 452 | 50 |
| **2010** | **21 724** | 5 278 | 3 776 | 3 062 | 2 937 | 1 935 | 1 575 | 1 257 | 1 308 | 467 | 129 |
| **2011** | **21 325** | 5 234 | 3 754 | 3 090 | 2 789 | 1 935 | 1 568 | 1 220 | 1 215 | 404 | 116 |
| **2012** | **21 975** | 5 442 | 3 796 | 3 207 | 2 574 | 2 256 | 1 600 | 1 247 | 1 268 | 482 | 103 |
| **2013** | **23 211** | 5 523 | 3 999 | 3 197 | 2 852 | 2 497 | 1 698 | 1 400 | 1 440 | 524 | 81 |
| **2014** | **24 114** | 5 649 | 4 153 | 3 188 | 3 172 | 2 720 | 1 672 | 1 524 | 1 390 | 584 | 62 |
| **2015** | **25 820** | 5 791 | 4 228 | 3 629 | 3 429 | 2 980 | 1 800 | 1 632 | 1 609 | 695 | 27 |
| **2016** | **25 857** | 5 832 | 4 060 | 3 833 | 3 482 | 2 892 | 1 756 | 1 676 | 1 659 | 646 | 21 |
| **2017** | **25 896** | 5 461 | 4 317 | 3 475 | 3 619 | 2 699 | 1 573 | 1 667 | 1 558 | 545 | 982 |
| **2018** | **26 880** | 6 022 | 4 252 | 3 699 | 3 905 | 2 787 | 1 651 | 1 565 | 1 561 | 659 | 779 |

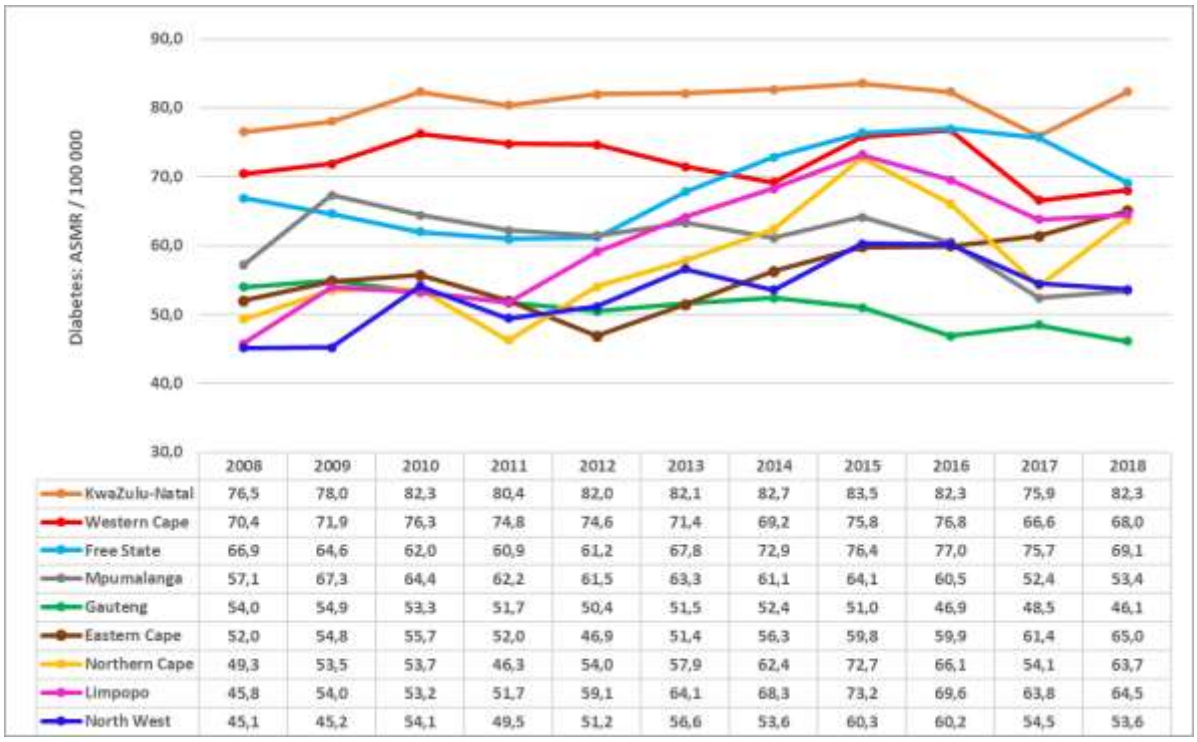
Figure 5.8 shows age-standardised mortality rates due to diabetes broken down by province, between 2008 and 2018.

KwaZulu-Natal (KZN) province had the highest ASMR of 76,5/100 000 in 2008, which increased to 82,3/100 000 in 2018. It was followed by the Western Cape with an ASMR of 70,4/100 000 in 2008, but which dropped to 68/100 000 in 2018.

The Free State province ranked seventh in terms of diabetes-related deaths, contributing 6,1%, but it was the third highest in terms of age-standardised mortality rates, which increased from 66,9/100 000 in 2008 to 77/100 000 in 2016, following which it declined to 69,1/100 000 in 2018.

While Gauteng province was the third-highest in terms of diabetes-related deaths, contributing 17%, it had the lowest age-standardised mortality rates between 2014 and 2018, at 52,4/100 000 in 2014, and dropped to 46,1/100 000 in 2018.

**Figure 5.8: Age-Standardised Mortality Rates due to diabetes, by province, 2008−2018.**



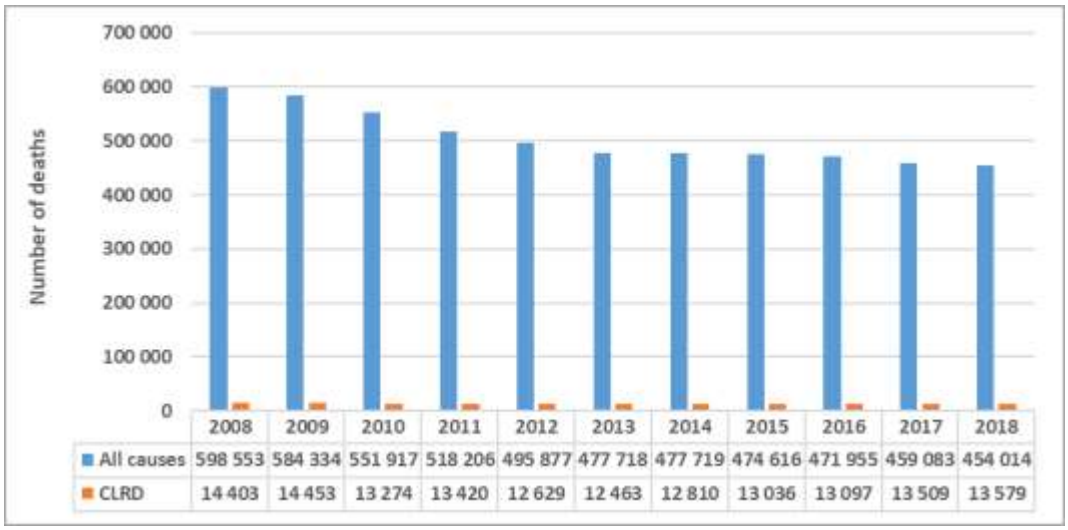

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| KwaZulu-Natal | 76,5 | 78,0 | 82,3 | 80,4 | 82,0 | 82,1 | 82,7 | 83,5 | 82,3 | 75,9 | 82,3 |
| Western Cape | 70,4 | 71,9 | 76,3 | 74,8 | 74,6 | 71,4 | 69,2 | 75,8 | 76,8 | 66,6 | 68,0 |
| Free State | 66,9 | 64,6 | 62,0 | 60,9 | 61,2 | 67,8 | 72,9 | 76,4 | 77,0 | 75,7 | 69,1 |
| Mpumalanga | 57,1 | 67,3 | 64,4 | 62,2 | 61,5 | 63,3 | 61,1 | 64,1 | 60,5 | 52,4 | 53,4 |
| Gauteng | 54,0 | 54,9 | 53,3 | 51,7 | 50,4 | 51,5 | 52,4 | 51,0 | 46,9 | 48,5 | 46,1 |
| Eastern Cape | 52,0 | 54,8 | 55,7 | 52,0 | 46,9 | 51,4 | 56,3 | 59,8 | 59,9 | 61,4 | 65,0 |
| Northern Cape | 49,3 | 53,5 | 53,7 | 46,3 | 54,0 | 57,9 | 62,4 | 72,7 | 66,1 | 54,1 | 63,7 |
| Limpopo | 45,8 | 54,0 | 53,2 | 51,7 | 59,1 | 64,1 | 68,3 | 73,2 | 69,6 | 63,8 | 64,5 |
| North West | 45,1 | 45,2 | 54,1 | 49,5 | 51,2 | 56,6 | 53,6 | 60,3 | 60,2 | 54,5 | 53,6 |

## 6. Chronic lower respiratory diseases (CLRD) mortality

The Centres for Disease Control (CDC) defines chronic lower respiratory diseases as encompassing four major diseases: chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema, and asthma (CDC, 2023).

Chronic lower respiratory diseases accounted for 2,4% of all causes of mortality in 2008 and their contribution increased to 3% in 2018, as shown in Figure 6.1 below.

**Figure 6.1: Deaths due to chronic lower respiratory diseases compared to all causes of death, 2008−2018**

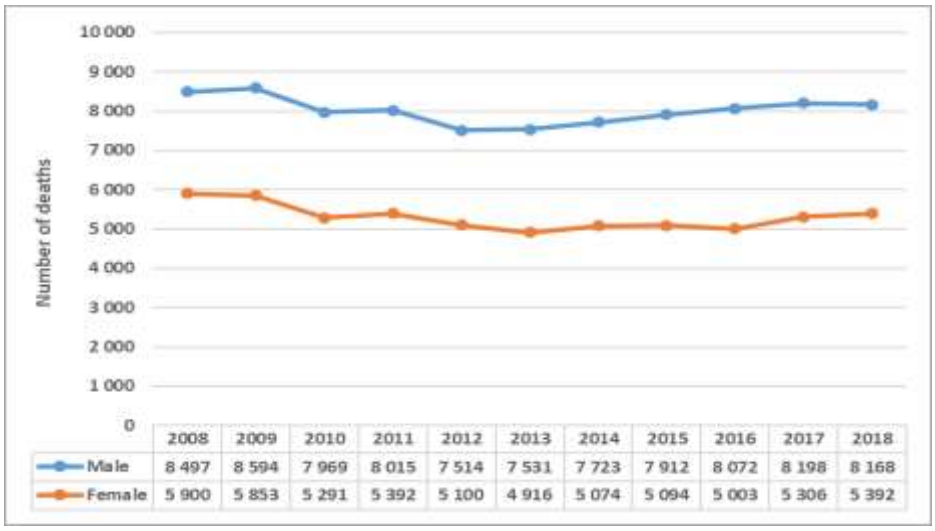



| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| All causes | 598 553 | 584 334 | 551 917 | 518 206 | 495 877 | 477 718 | 477 719 | 474 616 | 471 955 | 459 083 | 454 014 |
| CLRD | 14 403 | 14 453 | 13 274 | 13 420 | 12 629 | 12 463 | 12 810 | 13 036 | 13 097 | 13 509 | 13 579 |

Deaths due to CLRD dropped by 5,7% (from 14 403 in 2008 to 13 579 in 2018), while those due to all causes dropped by 24,1% (from 598 553 in 2008 to 454 014 in 2018).

Figure 6.2 below shows the number of deaths due to chronic lower respiratory diseases (ICD codes J40−J47) between 2008 and 2018. Over all years, the percentage of males who died from CLRD was higher than that of females, at 60% and 40% respectively. Between 2008 and 2014, deaths due to CLRD dropped by 9,1% (from 8 497 in 2008 to 7 743 in 2014) for males, and by 14% (from 5 900 in 2008 to 5 074 in 2014) for females. However, from 2015 the number of deaths increased by 3,2% (from 7 912 in 2015 to 8 168 in 2018) for males and for females, by 5,9% (from 5 094 in 2015 to 5 392 in 2018).

**Figure 6.2: Number of deaths due to chronic lower respiratory diseases by sex, 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Male | 8 497 | 8 594 | 7 969 | 8 015 | 7 514 | 7 531 | 7 723 | 7 912 | 8 072 | 8 198 | 8 168 |
| Female | 5 900 | 5 853 | 5 291 | 5 392 | 5 100 | 4 916 | 5 074 | 5 094 | 5 003 | 5 306 | 5 392 |

Figure 6.3 and Table 6.1 below show a breakdown of deaths due to chronic lower respiratory diseases by type of disease and sex in 2018. CLRDs accounted for 3% (13 579) of all deaths in 2018. Of these, other chronic obstructive pulmonary diseases (COPD) accounted for the majority at 62% (8 413), followed by asthma at 22,3% (3 023) and status asthmaticus at 5,4% (731). These leading chronic respiratory diseases accounted for almost 90% of all deaths due to chronic lower respiratory diseases. Males accounted for the majority of deaths at 60,2% (8 168) while females accounted for 39,7% (5 392). Sex was not specified for 19 deaths from chronic respiratory diseases.

**Figure 6.3: Deaths due to chronic lower respiratory diseases, broken down by sex. 2018**

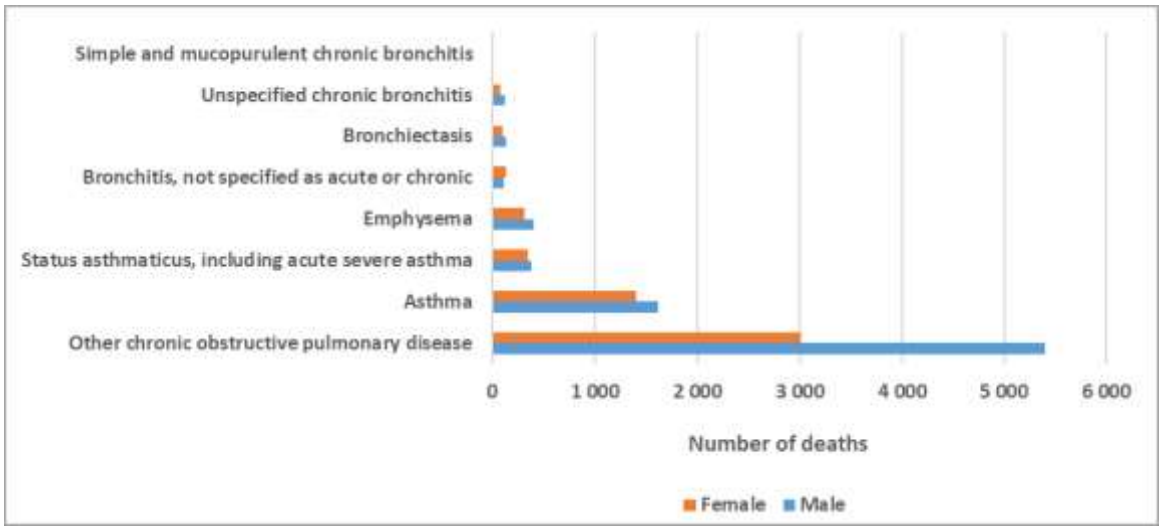


**Table 6.1: Chronic lower respiratory diseases by sex, 2018**

| | | Other chronic obstructive pulmonary disease | Asthma | Status asthmaticus, including acute severe asthma | Emphysema | Bronchitis, not specified as acute or chronic | Bron-chiectasis | Unspecified chronic bronchitis | Simple and muco-purulent chronic bronchitis |
|---|---|---|---|---|---|---|---|---|---|
| **ICD 10 code** | | **J44** | **J45** | **J46** | **J43** | **J40** | **J47** | **J42** | **J41** |
| **Total** | **13 579** | **8 421** | **3 029** | **734** | **721** | **244** | **230** | **199** | **1** |
| **Male** | **8 168** | 5 395 | 1 619 | 386 | 408 | 109 | 131 | 119 | 1 |
| **Female** | **5 392** | 3 018 | 1 404 | 345 | 312 | 135 | 98 | 80 | - |
| **Unknown** | **19** | 8 | 6 | 3 | 1 | - | 1 | - | - |

Figure 6.4 below shows the age distribution of deaths due to CLRD in 2018. The median age at death in years was 66 for males and 69 for females.

**Figure 6.4: Age distribution of deaths due to CLRD by sex, 2018**

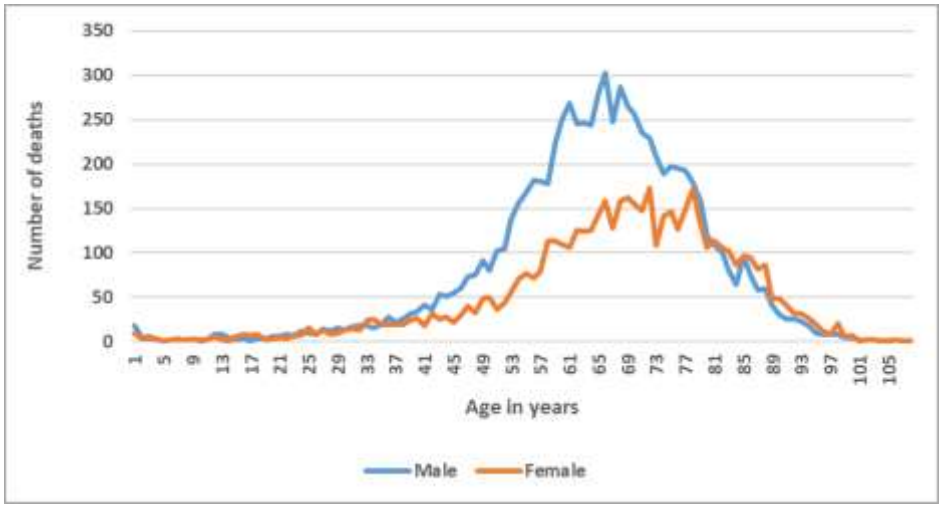
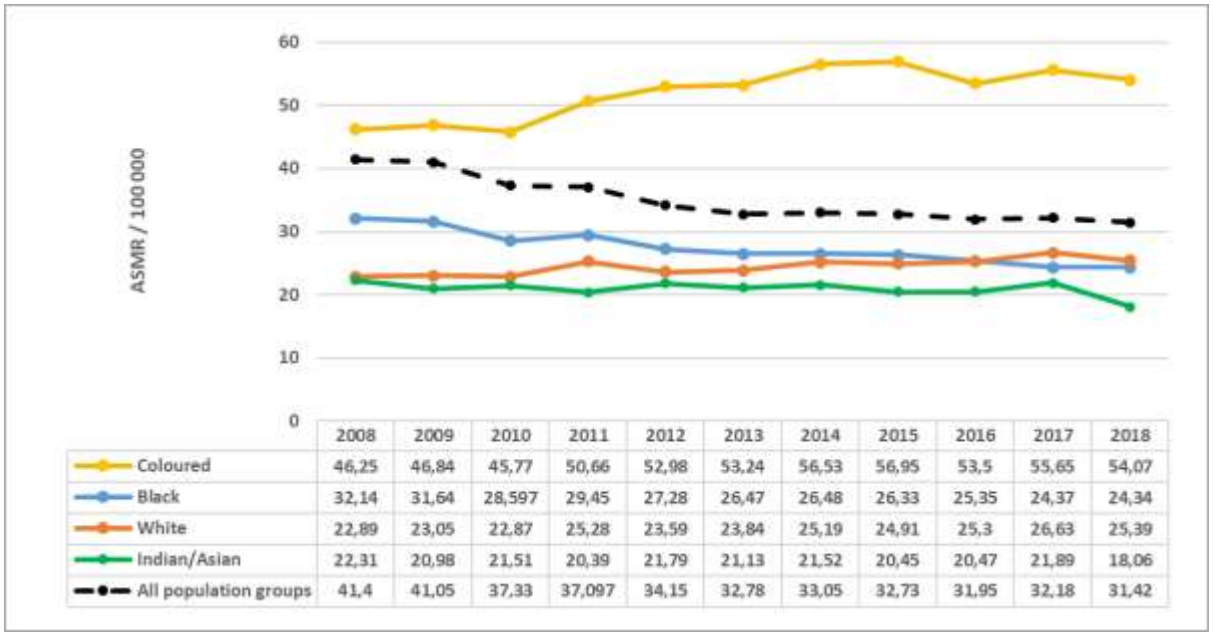


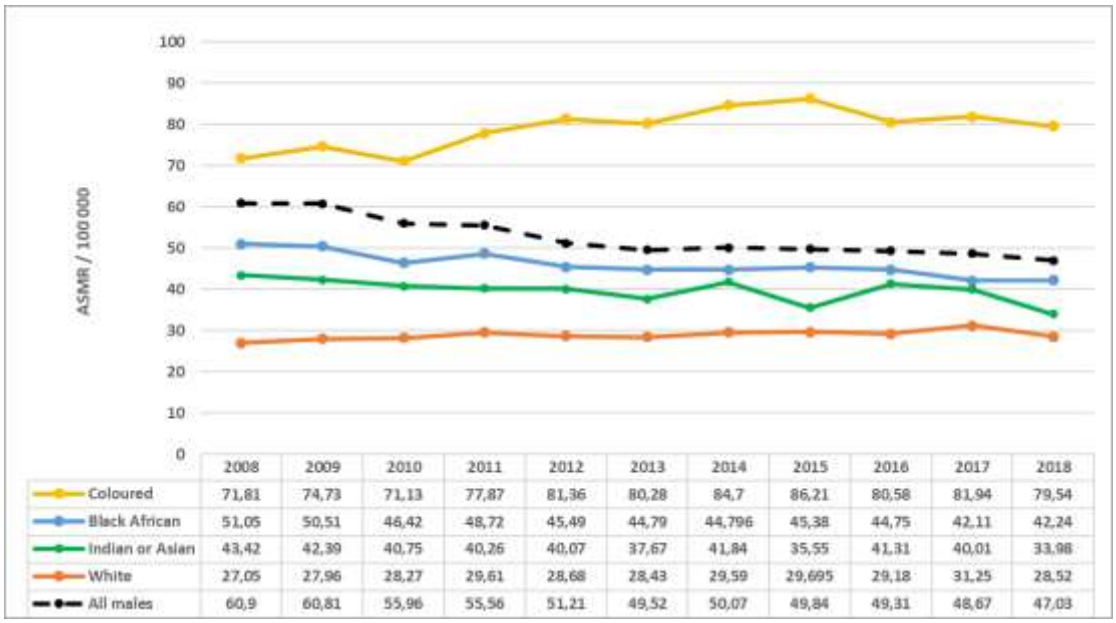

Figure 6.5 below shows the age-standardised mortality rate due to chronic lower respiratory diseases per 100 000 mid-year population. Overall, the mortality rate appears to have declined, from 41,4 deaths per 100 000 in 2008 to 31,4 per 100 000 in 2018. The Coloured population group had the highest mortality rates over the period 2008 to 2018, with more than 45 deaths per 100 000 mid-year population, but remaining relatively stable from 2014 to 2018 at below 60 deaths per 100 000.

**Figure 6.5: Age standardised mortality rate (ASMR) per 100 000 for chronic lower respiratory diseases by population group, 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Coloured | 46,25 | 46,84 | 45,77 | 50,66 | 52,98 | 53,24 | 56,53 | 56,95 | 53,5 | 55,65 | 54,07 |
| Black | 32,14 | 31,64 | 28,597 | 29,45 | 27,28 | 26,47 | 26,48 | 26,33 | 25,35 | 24,37 | 24,34 |
| White | 22,89 | 23,05 | 22,87 | 25,28 | 23,59 | 23,84 | 25,19 | 24,91 | 25,3 | 26,63 | 25,39 |
| Indian/Asian | 22,31 | 20,98 | 21,51 | 20,39 | 21,79 | 21,13 | 21,52 | 20,45 | 20,47 | 21,89 | 18,06 |
| All population groups | 41,4 | 41,05 | 37,33 | 37,097 | 34,15 | 32,78 | 33,05 | 32,73 | 31,95 | 32,18 | 31,42 |

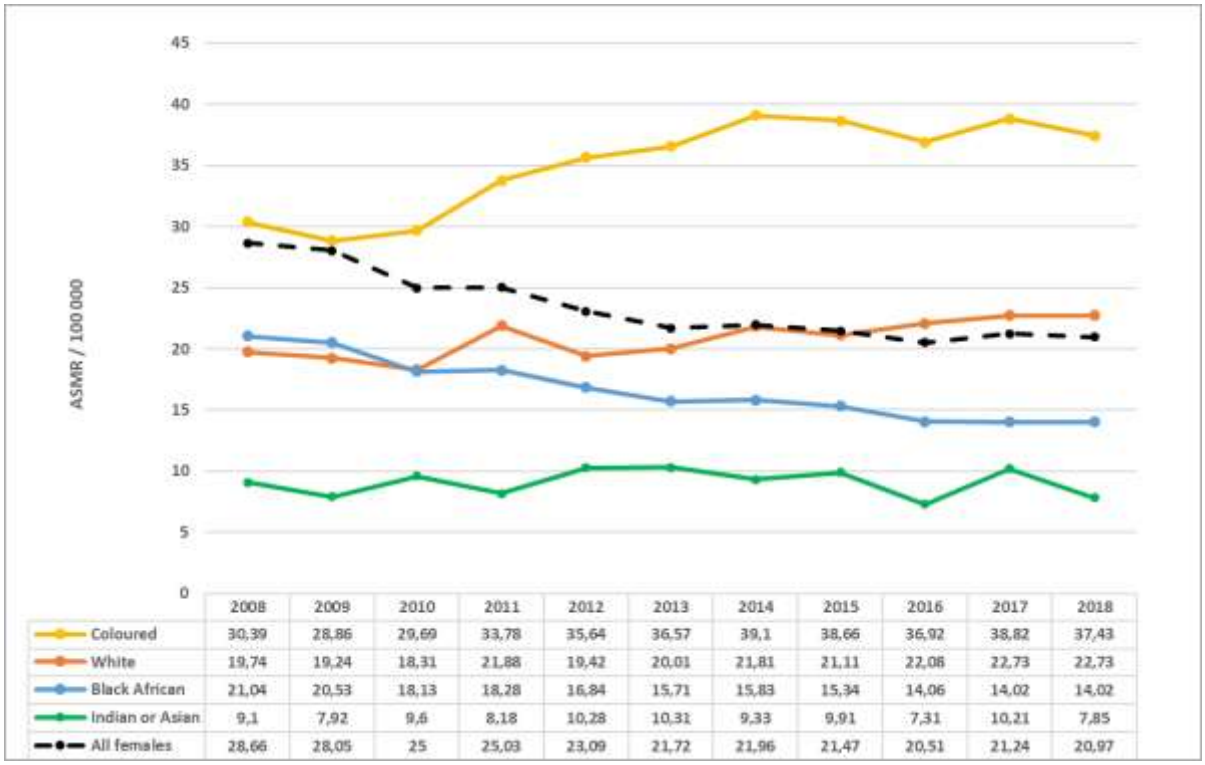
**Figure 6.6: Age standardised mortality rate per 100 000 for chronic lower respiratory diseases by male population group, 2008−2018**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Coloured | 71,81 | 74,73 | 71,13 | 77,87 | 81,36 | 80,28 | 84,7 | 86,21 | 80,58 | 81,94 | 79,54 |
| Black African | 51,05 | 50,51 | 46,42 | 48,72 | 45,49 | 44,79 | 44,796 | 45,38 | 44,75 | 42,11 | 42,24 |
| Indian or Asian | 43,42 | 42,39 | 40,75 | 40,26 | 40,07 | 37,67 | 41,84 | 35,55 | 41,31 | 40,01 | 33,98 |
| White | 27,05 | 27,96 | 28,27 | 29,61 | 28,68 | 28,43 | 29,59 | 29,695 | 29,18 | 31,25 | 28,52 |
| All males | 60,9 | 60,81 | 55,96 | 55,56 | 51,21 | 49,52 | 50,07 | 49,84 | 49,31 | 48,67 | 47,03 |

The age-standardised mortality rate for chronic lower respiratory diseases in 2018 was 47,03 per 100 000 mid-year population for males. Males from the coloured population group had much higher mortality rates at 79,54 per 100 000, compared to other population groups. White males had the lowest age-standardised mortality rates at 28,52 per 100 000 in 2018.

**Figure 6.7: Age standardised mortality rate per 100 000 mid-year population, for chronic lower respiratory diseases by female population group, 2008−2018**

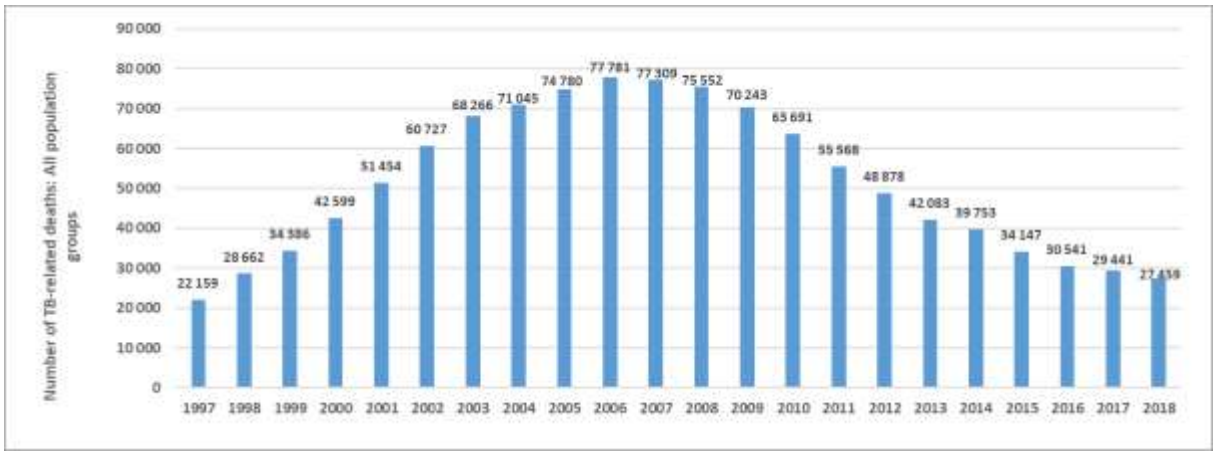



| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Coloured | 30,39 | 28,86 | 29,69 | 33,78 | 35,64 | 36,57 | 39,1 | 38,66 | 36,92 | 38,82 | 37,43 |
| White | 19,74 | 19,24 | 18,31 | 21,88 | 19,42 | 20,01 | 21,81 | 21,11 | 22,08 | 22,73 | 22,73 |
| Black African | 21,04 | 20,53 | 18,13 | 18,28 | 16,84 | 15,71 | 15,83 | 15,34 | 14,06 | 14,02 | 14,02 |
| Indian or Asian | 9,1 | 7,92 | 9,6 | 8,18 | 10,28 | 10,31 | 9,33 | 9,91 | 7,31 | 10,21 | 7,85 |
| All females | 28,66 | 28,05 | 25 | 25,03 | 23,09 | 21,72 | 21,96 | 21,47 | 20,51 | 21,24 | 20,97 |

The age-standardised mortality rate for chronic lower respiratory diseases for females was 20,97 per 100 000 mid-year population in 2018. Females from the coloured and white population groups had higher mortality rates at 37,43 and 22,73 deaths per 100 000 respectively, while Indian/Asian females had the lowest at 7,85 deaths per 100 000. For all population groups, females had lower age-standardised mortality rates due to chronic lower respiratory diseases compared to males.

For both males and females, there is a decline in the age-standardised mortality rate, from 60,9 per 100 000 in 2008 to 47,03 per 100 000 in 2018 for males, and a decline from 28,06 per 100 000 in 2008 to 20,97 per 100 000 in 2018 for females. This is in line with the decline in number of CLRD-related deaths, shown in Figure 6.1, which shows that deaths due to chronic respiratory diseases declined by 5,7%, from 14 403 in 2008 to 13 579 in 2018. A possible contributing factor is the considerable reduction in deaths due to tuberculosis between 2008 and 2018 as shown in Figure 6.8 below. This decrease in deaths due to CLRD may be attributed to the drop in TB-related deaths as pulmonary TB has been recognised as a risk factor for chronic obstruction pulmonary disease (Kayongo A et al, 2023). TB-related deaths declined by 63,7%, from 75 552 in 2008 to 27 459 in 2018, following an almost four-fold increase between 1997 and 2006. In 1997 22 159 deaths due to TB were reported and this increased to 77 781 by 2006.

**Figure 6.8: Deaths related to tuberculosis: 1997−2018**




According to the National Institute for Communicable Diseases (NICD, 2022), South Africa ranks amongst the high-burden tuberculosis (TB), drug-resistant TB and HIV co-infected TB countries, globally. TB notification rates are reported to have increased rapidly with the growing HIV epidemic, increasing from 163 per 100 000 in 1986 to 628 per 100 000 in 2006 (Karim, 2009). However, as the chart shows, mortality due to TB declined considerably after 2006. This coincided with the roll-out of ARVs in 2006, and adoption of WHO guidelines on an integrated approach to management of TB and HIV. The guidelines recommended intensified TB case-finding and TB preventive therapy (isoniazid preventive therapy or IPT) for people living with HIV, routine HIV testing for TB patients and cotrimoxazole preventive therapy (CPT) for TB patients with HIV (WHO, 1998; NDoH, 2012). A study in a high HIV incidence setting in South Africa showed significantly reduced tuberculosis risk among HIV-infected adults after they received IPT and highly active anti-retroviral therapy (HAART) (Golub et al, 2009).

Table 6.9 below shows the number of deaths due to chronic lower respiratory diseases by province between 2008 and 2018. At 21,7% (31 787), the Eastern Cape province accounted for the highest total number of deaths due to chronic lower respiratory diseases, followed by Gauteng at 17,8% (26 002), Western Cape, 116,9% (24 846) and KwaZulu-Natal, 13,8% (20 255). The rest of the provinces, North West, Free State, Limpopo, Mpumalanga and Northern Cape all contributed less than 10% each to CLRD-related deaths between 2008 and 2018.

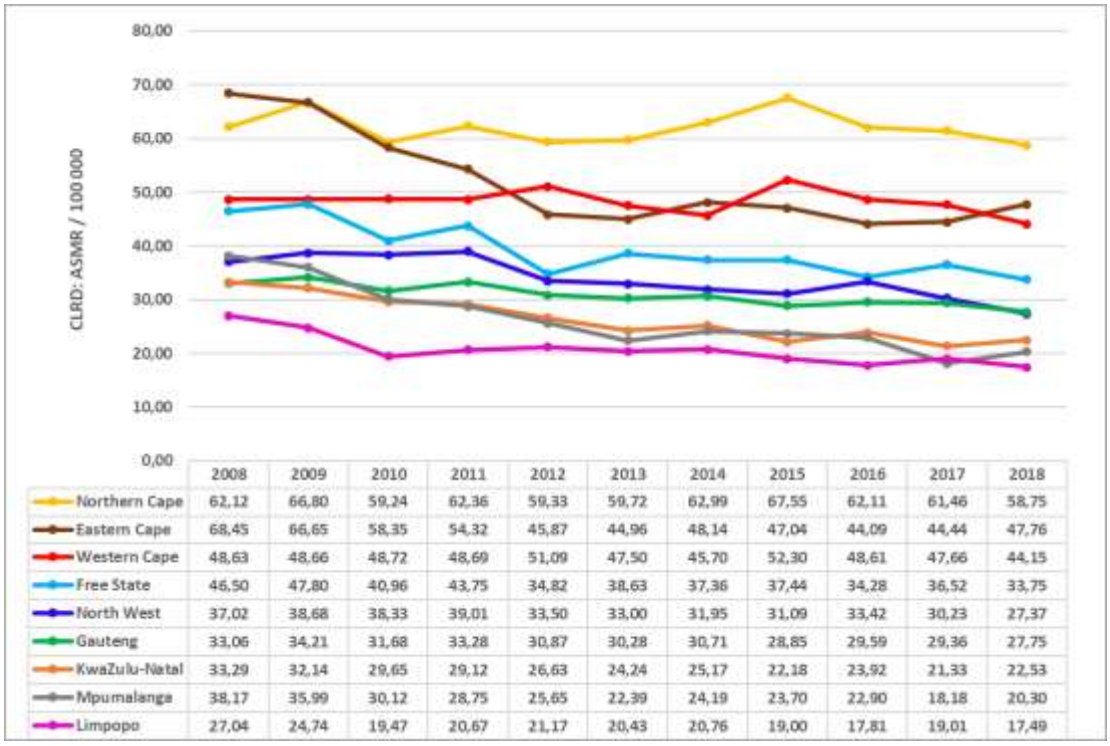
**Table 6.9: Deaths due to chronic lower respiratory diseases by province: 2008−2018**

| Province | | Eastern Cape | Gauteng | KwaZulu-Natal | Western Cape | North West | Free State | Limpopo | Mpumalanga | Northern Cape | Other / Unknown |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **146 673** | **31 787** | **26 002** | **24 846** | **20 255** | **9 906** | **9 055** | **9 045** | **8 116** | **6 367** | **1 294** |
| **2008** | **14 403** | 3 553 | 2 262 | 2 228 | 1 965 | 920 | 941 | 983 | 985 | 527 | 39 |
| **2009** | **14 453** | 3 470 | 2 427 | 2 147 | 2 004 | 963 | 959 | 922 | 942 | 582 | 37 |
| **2010** | **13 274** | 3 099 | 2 224 | 2 004 | 2 035 | 965 | 826 | 731 | 791 | 520 | 79 |
| **2011** | **13 420** | 2 941 | 2 363 | 1 971 | 2 086 | 996 | 888 | 798 | 757 | 555 | 65 |
| **2012** | **12 629** | 2 547 | 2 245 | 1 835 | 2 264 | 861 | 713 | 830 | 714 | 535 | 85 |
| **2013** | **12 463** | 2 526 | 2 304 | 1 699 | 2 195 | 865 | 810 | 821 | 634 | 549 | 60 |
| **2014** | **12 810** | 2 736 | 2 343 | 1 759 | 2 192 | 843 | 780 | 841 | 684 | 595 | 37 |
| **2015** | **13 036** | 2 724 | 2 342 | 1 593 | 2 583 | 847 | 791 | 787 | 691 | 655 | 23 |
| **2016** | **13 097** | 2 596 | 2 466 | 1 731 | 2 505 | 950 | 760 | 757 | 700 | 611 | 21 |
| **2017** | **13 509** | 2 682 | 2 515 | 1 590 | 2 547 | 879 | 821 | 810 | 566 | 624 | 475 |
| **2018** | **13 579** | 2 913 | 2 511 | 1 698 | 2 470 | 817 | 766 | 765 | 652 | 614 | 373 |

Figure 6.9 below shows the age-standardised mortality rates due to chronic lower respiratory diseases between 2008 and 2018, broken down by province. As with number of deaths, the Eastern Cape province had the highest ASMR of 68,5 per 100 000 in 2008, but which dropped down substantially to 47,8 per 100 000 by 2018. While the Northern Cape contributed the lowest number of deaths at 4,3% (6 367), from 2009 it had the highest ASMR at 66,8 per 100 000 in 2009, with changed very little by 2018 at 58,8 per 100 000. The Western Cape province had the third highest age-standardised mortality rates, which, as with the Northern Cape, remained relatively stable over the ten-year period at 48,6 per 100 000 in 2008 and 48 per 100 000 in 2018. While Gauteng province was second highest in terms of number of CLRD-related deaths, contributing 17,7% (26 002), it was the sixth-lowest in terms of ASMR, at 33,1 per 100 000 in 2008, dropping down steadily to 27,8 per 100 000 by 2018.

At 6,2% (9 045), Limpopo province had higher number of CLRD-related deaths than Mpumalanga and the Northern Cape provinces between 2008 and 2018, but it had the lowest ASMR of 27 per 100 000 in 2008, which dropped to 19,5 per 100 000 in 2010 and remained relatively stable up to 2018, where it had an ASMR of 17,5 per 100 000.

**Figure 6.9: Age-Standardised Mortality Rates due to chronic lower respiratory diseases, by province, 2008−2018.**




| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Northern Cape | 62,12 | 66,80 | 59,24 | 62,36 | 59,33 | 59,72 | 62,99 | 67,55 | 62,11 | 61,46 | 58,75 |
| Eastern Cape | 68,45 | 66,65 | 58,35 | 54,32 | 45,87 | 44,96 | 48,14 | 47,04 | 44,09 | 44,44 | 47,76 |
| Western Cape | 48,63 | 48,66 | 48,72 | 48,69 | 51,09 | 47,50 | 45,70 | 52,30 | 48,61 | 47,66 | 44,15 |
| Free State | 46,50 | 47,80 | 40,96 | 43,75 | 34,82 | 38,63 | 37,36 | 37,44 | 34,28 | 36,52 | 33,75 |
| North West | 37,02 | 38,68 | 38,33 | 39,01 | 33,50 | 33,00 | 31,95 | 31,09 | 33,42 | 30,23 | 27,37 |
| Gauteng | 33,06 | 34,21 | 31,68 | 33,28 | 30,87 | 30,28 | 30,71 | 28,85 | 29,59 | 29,36 | 27,75 |
| KwaZulu-Natal | 33,29 | 32,14 | 29,65 | 29,12 | 26,63 | 24,24 | 25,17 | 22,18 | 23,92 | 21,33 | 22,53 |
| Mpumalanga | 38,17 | 35,99 | 30,12 | 28,75 | 25,65 | 22,39 | 24,19 | 23,70 | 22,90 | 18,18 | 20,30 |
| Limpopo | 27,04 | 24,74 | 19,47 | 20,67 | 21,17 | 20,43 | 20,76 | 19,00 | 17,81 | 19,01 | 17,49 |

# 7. Summary and conclusion

- Deaths due to major non-communicable diseases, cardiovascular, cancer, diabetes and chronic lower respiratory diseases increased by 13,1% between 2008 and 2018 (from 145 188 in 2008 to 164 205 in 2018). The biggest increase was for diabetes-related deaths, which increased by 36,5%, from 19 692 in 2008 to 26 880 in 2018. Cancer-related deaths increased by 29,3%, from 33 720 in 2008 to 43 613 in 2018. While deaths due to cardiovascular diseases increased by the lowest percentage with 3,6%, they contributed half of all the deaths due to NCDs. Deaths due to chronic lower respiratory diseases declined by 5,7%, from 14 403 in 2008 to 13 579 in 2018. This decrease in deaths due to CLRD may be attributed to the drop in TB-related deaths as pulmonary TB has been recognised as a risk factor for chronic obstruction pulmonary disease (Kayongo A et al. 2023). Sustained efforts to reduce TB-related mortality rates may have a positive spin-off in terms of reduced mortality due to CLRD.

- Females accounted for more deaths due to cardiovascular diseases at 54,9% (44 006) in 2018. But, with a median age of 66 years at death due to CVD, males are more likely to die earlier compared to females, who had a median age of 74 years at death in 2018.

- The age-standardised mortality rate (ASMR) due to CVD in 2018 was 173,39 deaths per 100 000 mid-year population. The black African population group had the highest ASMR at 203,46 deaths per 100 000, followed by the Indian/Asian population group at 170,63/100 000, and the coloured population group at 168,23/100 000. The white population group had the lowest ASMR at 111,14 deaths per 100 000.

- At 61,2% (16 447), females accounted for more deaths due to diabetes in 2018. The median age at death due to diabetes in years was 66 for males and 68 for females.

- The age-standardised mortality rate due to diabetes was 62,86/100 000 in 2018. The Indian/Asian population group had the highest ASMR at 80,79/100 000, but which had declined steadily from 90,13/100 000 in 2008. The coloured and black African population groups had almost equal ASMR in 2018, at 72,16/100 000 and 70,32/100 000 respectively. The white population group had the lowest ASMR at 20,4/100 000.

- Males accounted for more deaths due to chronic lower respiratory diseases at 60,2% (8 168) in 2018. The median age in years at death was 66 for males and 69 for females.

- The age-standardised mortality rate due to CLRD was 31,42/100 000 in 2018. The coloured population group had the highest ASMR at 54,1/100 000. White and black African population groups had almost equal ASMR at 25,4/100 000 and 24,3/100 000 respectively. The Indian/Asian population group had the lowest ASMR of 18,1/100 000 in 2018.

- Differences in mortality rates due to non-communicable diseases between population groups may be due to access to health care, behavioural practices that place one group of individuals at greater risk than another or genetic factors that predispose one group to greater risk than others. These factors need to be studied and individuals at risk be targeted with appropriate interventions.

- There were substantial differences between provinces in terms of management of non-communicable diseases, as reflected in number of deaths and age-standardised mortality rates:

    - While KwaZulu-Natal, Gauteng, Eastern Cape and Western Cape provinces jointly accounted for almost two-thirds of cardiovascular diseases deaths, they had substantially different ASMR. KwaZulu-Natal had the second-highest ASMR after the Free State

province, while Gauteng, Western Cape and Eastern Cape provinces were among the four provinces with the lowest CVD ASMR. The Free State province was the third-lowest after Northern Cape and Mpumalanga in terms of deaths due to cardiovascular diseases, accounting for 8% of all deaths, but had the highest, although declining ASMR.

- In terms of diabetes-related deaths, KwaZulu-Natal, Gauteng, Western Cape and Eastern Cape provinces also accounted for two-thirds of the deaths. The two leading provinces, KwaZulu-Natal and Western Cape provinces had the highest ASMR, while Gauteng and Eastern Cape provinces were much lower, ranking fifth and sixth in terms of ASMR, and in the case of Gauteng province, had the lowest ASMR between 2014 and 2018. Of concern is the Free State province, which accounted for 6,1% of deaths, the third lowest after Northern Cape and North-West provinces, but was among the three leading provinces in terms of ASMR.

- The leading provinces in terms of deaths due to chronic lower respiratory diseases were the Eastern Cape, Gauteng, Western Cape and KwaZulu-Natal, which accounted for 70% of all deaths. In terms of ASMR, the Northern Cape province was the highest although it accounted for 4% of all CLRD-related deaths. After 2012, the Eastern Cape and Western Cape provinces had almost equal ASMR and were second-highest in terms of ASMR, while Gauteng and KwaZulu-Natal ranked sixth and seventh respectively.

- Limpopo province had the lowest ASMR for cardiovascular and chronic lower respiratory diseases. But for diabetes ASMR, Gauteng province was the lowest between 2014 and 2018.

- The paucity of data on non-communicable diseases makes it difficult to understand the burden of these diseases and monitor the impact of interventions aimed at reducing their prevalence. In the absence of such data, surveys need to be undertaken more frequently to measure the burden of these diseases, understand the contributing risk factors and formulate appropriate, targeted interventions.

- Implementation of an integrated disease surveillance system in line with the National Public Health Institute of South Africa Act (NAPHISA Act No 1 of 2020), which aims to co-ordinate, develop and maintain surveillance systems to collect, analyse and interpret health data to guide health interventions needs to be accelerated in order to bridge this gap in data on surveillance data.

- Health promotion is a key component of any strategy to reduce disease burden (WHO 1998). The 2016 SADHS study as well as a 2017 May measurement month (MMM) blood pressure screening campaign which revealed that 24,5% of adults had hypertension and only half of those with hypertension had controlled blood pressure, highlighted the need for hypertension awareness programmes and meticulous management of hypertension (Woodiwiss et al. 2020; SADHS, 2016). Concerted effort is required to achieve the 90-60-50 target for management of hypertension and diabetes.

# 8. Appendix 1: Breakdown of circulatory system diseases contributing to death. 2018

| Circulatory system diseases | ICD10 Code | Total<br>85 686 | Male<br>38 571 | Female<br>46 953 | Unknown<br>162 |
|---|---|---|---|---|---|
| Cerebrovascular diseases | I60 - I69 | 23 000 | 9 945 | 13 016 | 39 |
| Other forms of heart diseases | I30 - I52 | 22 956 | 10 688 | 12 218 | 50 |
| Hypertensive diseases | I10 - I15 | 20 579 | 7 698 | 12 846 | 35 |
| Ischaemic heart diseases | I20 - I25 | 13 598 | 7 652 | 5 926 | 20 |
| Pulmonary heart disease and diseases of pulmonary circulation | I26 - I28 | 2 770 | 1 255 | 1 510 | 5 |
| Diseases of arteries, arterioles and capillaries | I70 - I79 | 1 473 | 838 | 630 | 5 |
| Diseases of veins, lymphatic vessels and lymph nodes, not elsewhere classified | I80 - I89 | 728 | 270 | 453 | 5 |
| Chronic rheumatic heart diseases | I05 - I09 | 358 | 133 | 223 | 2 |
| Other and unspecified disorders of the circulatory system | I95 - I99 | 215 | 88 | 126 | 1 |
| Acute rheumatic fever | I00 - I02 | 9 | 4 | 5 | - |

## Appendix 2: Mid-year population estimates of South Africa by province. 2008−2018

| Province | Gauteng | KwaZulu-Natal | Western Cape | Eastern Cape | Limpopo | Mpumalanga | North-West | Free State | Northern Cape |
|---|---|---|---|---|---|---|---|---|---|
| **2008** | 11 266 387 | 10 002 277 | 5 471 362 | 6 570 219 | 5 269 877 | 3 845 923 | 3 342 133 | 2 750 849 | 1 109 062 |
| **2009** | 11 589 564 | 10 090 073 | 5 590 278 | 6 570 925 | 5 310 936 | 3 907 746 | 3 396 991 | 2 758 738 | 1 122 111 |
| **2010** | 11 929 013 | 10 186 596 | 5 716 561 | 6 575 077 | 5 354 631 | 3 974 948 | 3 454 301 | 2 768 281 | 1 136 096 |
| **2011** | 12 284 594 | 10 288 314 | 5 849 185 | 6 579 646 | 5 398 729 | 4 045 981 | 3 513 269 | 2 778 523 | 1 150 656 |
| **2012** | 12 630 422 | 10 406 665 | 5 973 197 | 6 594 537 | 5 447 963 | 4 114 293 | 3 574 090 | 2 793 604 | 1 164 483 |
| **2013** | 12 982 237 | 10 527 990 | 6 098 556 | 6 610 597 | 5 500 555 | 4 180 284 | 3 636 463 | 2 808 596 | 1 179 107 |
| **2014** | 13 342 736 | 10 652 840 | 6 226 211 | 6 627 601 | 5 556 514 | 4 244 389 | 3 700 784 | 2 823 741 | 1 194 620 |
| **2015** | 13 704 897 | 10 775 003 | 6 352 746 | 6 641 410 | 5 612 442 | 4 304 469 | 3 764 990 | 2 837 464 | 1 210 318 |
| **2016** | 14 068 746 | 10 892 163 | 6 478 067 | 6 650 181 | 5 666 570 | 4 360 336 | 3 828 575 | 2 849 540 | 1 225 969 |
| **2017** | 14 426 188 | 11 008 499 | 6 605 126 | 6 661 763 | 5 719 059 | 4 420 451 | 3 892 567 | 2 864 727 | 1 241 655 |
| **2018** | 14 784 742 | 11 127 366 | 6 735 419 | 6 674 638 | 5 771 526 | 4 485 401 | 3 957 061 | 2 880 179 | 1 256 919 |

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