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Mortality and causes of death in South Africa: Findings from death notification

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Preface

This statistical release presents information on mortality and causes of death in South Africa for deaths that occurred during the 2022 calendar year. Deaths that occurred during the years 2001–2021 have also been included to show trends in mortality and causes of death, using updated information which includes late registrations. The statistical release is based on deaths collected through the South African civil registration system maintained by the Department of Home Affairs. The information on causes of death is captured as it was recorded on death notification forms completed by medical practitioners and other certifying officials.

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Abbreviations/acronyms

AIDS	Acquired Immuno Deficiency Syndrome
ANACoD	Analysing Mortality and Causes of Death
CDC	Centre for Disease Control
COVID-19	Corona Virus Disease of 2019
CRVS	Civil Registration and Vital Statistics
DHA	Department of Home Affairs
ECA	Economic Commission for Africa
GBD	Global Burden of Diseases
HIV	Human Immunodeficiency Virus
ICD-10	International Classification of Diseases 10th Revision
ICD-11	International Classification of Diseases 11th Revision
MACOD	Mortality and Causes of Death
MDR-TB	MultiDrug-Resistant Tuberculosis
NCDs	Non-Communicable Diseases
NDP	National Development Plan
NPR	National Population Register
Stats SA	Statistics South Africa
TB	Tuberculosis
UNECA	United Nation’s Economic Commission for Africa
WHO	World Health Organization
XDR-TB	Extensively Drug-Resistant Tuberculosis

1. Introduction

1.1 Background

The responsibility of a well-established civil registration and vital statistics system (CRVS) is to attach a discrete legal identity to every individual in society (Peters, 2016). Over and above this basic function, CRVS provides essential data for policymaking, it is the foundation from which evidence-based decisions and policies can be formulated. Such a system provides a foundation for human rights and identity, data for development planning, monitoring of health and development goals, improving health systems, disaster response and humanitarian action (AbouZahr *et al*. 2017).

The CRVS system in South Africa is a well-established framework, with near-perfect registration completeness rates for both births and deaths. Its sustainability is supported by a strong legal framework that effectively captures both hospital and community deaths. The registration of deaths in South Africa is governed by the Births and Deaths Registration Act No. 51 of 1992 (Republic of South Africa, 1992). The Statistics Act No. 6 of 1999, as amended through Act 29 of 2024, gives Statistics South Africa (Stats SA) the legal mandate to publish vital statistics based on births and deaths reported through the civil registration system (Republic of South Africa, 2024).

Stats SA, in collaboration with DHA, National Department of Health (NDoH) and other stakeholders, has ensured continued provision of mortality data from the civil registration system. Sustained partnerships between the stakeholders are essential for improvements in mortality statistics to be realised and the findings from this statistical release will inform efforts aimed at strengthening the civil registration and vital statistics systems in the country.

The utility of mortality data depends largely on the accuracy and completeness of cause-of-death reporting. The basis of which is the accurate completion of death notification forms by medical doctors, aligning with the International Classification of Diseases (ICD) for standardised reporting of causes of death which is gold standard for cause of death recording. Equally, timely information is critical for interventions and during health emergencies, it is key to informing health leaders on areas for intervention. Mortality and causes of death continue to be one of the key outputs for Stats SA. Consistent efforts to address the four-year backlog in the processing of MACOD are underway in order to meet its mandate to provide reliable information on the levels and causes of mortality through the application of appropriate quality criteria and standards, classifications and procedures for vital statistics (Republic of South Africa, 1999).

Accurate and reliable mortality data are also fundamental for understanding disease patterns, improving health outcomes, public health planning, and monitoring progress towards health and development goals. It is one of the indicators of the well-being and health status of a population, hence the South African government's flagship plan, National Development Plan (NDP), has "Health care for all by 2030" as one of the key development objectives (National Planning Commission, 2012).

1.2 Objectives of this statistical release

The mortality and causes of death statistical release is part of a regular series published by Stats SA, based on data collected through the civil registration system. This statistical release has two main objectives:

- To outline emerging trends spanning a 22-year period (2001–2022) and differentials in mortality by selected socio-demographic and geographic characteristics for deaths that occurred in 2022; and
- To present statistics on the causes of death for deaths that occurred in 2022, focusing on the underlying causes of death.

1.3 Scope of this statistical release

This release is based on information on mortality and causes of death from the South African civil registration system. All death notification forms from DHA for deaths that occurred in 2022 or earlier that reached Stats SA during the 2025/2026 processing phase are covered. However, the main focus is on deaths that occurred in 2022. Deaths that occurred during the period 2001 to 2022 are also provided to show trends in mortality and causes of death. This release excludes stillbirths, which are also collected through the civil registration system using the same death notification form. The definitions of technical terms used in this release are provided in Appendix A.

1.4 Organisation and presentation of this statistical release

This release is composed of five sections. The first section consists of information on the background and purpose of the release. Section two lays out the data and methods, which focuses on data sources, including methods used in data processing, data editing, quality assurance and data analysis. The third section on registered deaths presents mortality levels, trends and differentials, specifically focusing on the socio-demographic and geographic characteristics of the deceased. The fourth section mainly covers information on the underlying causes of death for 2022 death occurrences. In addition, the section provides information on immediate, contributing, and underlying causes of death differentials by natural versus non-natural causes, as well as the Global Burden of Disease (GBD). Due to fewer proportions of COVID-19 deaths, there will be no dedicated sub-section for COVID-19, as was the case in 2020 and 2021. Finally, the last section presents a summary of the findings and concluding remarks.

This release is accompanied by additional analysis in Appendices D to Q under the tab *"Additional downloads"* on the Stats SA website. The workbook provided covers information on deaths and causes of deaths (including main group, broad group and underlying causes of death by population group), and the analysis is disaggregated by province and district municipality of death. Any information not provided in this release, or additional downloads can be requested from Stats SA.

2. Data and methods

In this section, focus is placed on data sources, methods used in data processing, data editing and data analysis. Procedures followed in assessment of the quality of data are also covered.

2.1 Data source

This statistical release is based on administrative records from death notification forms acquired from the Department of Home Affairs (DHA). The DHA currently uses two death notification forms to register deaths: Form BI-1663 which was introduced in 1998 and Form DHA-1663 which was introduced in 2009 as a replacement of Form BI-1663. Form BI-1663 continues to be used in areas where it is still in stock. In the event that a medical practitioner could not certify the occurrence of death, a traditional leader (such as chief, induna, headman) completes Form DHA-1680 (referred to as the Death Report) to certify the occurrence of death and to provide a description of the circumstances that resulted in death. The completed Death Report is then sent to DHA where the information is transcribed on to the DHA-1663. During processing at Stats SA, the two death notifications (Form BI-1663 and Form DHA-1663) were merged into one dataset as the data elements in these two forms are largely comparable. The main difference between the two forms is in the registration of perinatal deaths (stillbirths and deaths occurring within the first seven days of life). Form BI-1663 records perinatal deaths in the same section as all other deaths, whereas Form DHA-1663 has a separate section for the comprehensive recording of the details of perinatal deaths.

The Births and Deaths Registration Act, 1992 (Act No. 51 of 1992) amended in 2010 as the Births and Deaths Registration Amendment Act, 2010 (Act No. 18 of 2010) is the legislation governing the registration of deaths in South Africa (Republic of South Africa, 1992; Republic of South Africa, 2010). In addition, the 2014 Births and Deaths Regulations which repealed the 1992 Regulations prescribe that notice of death or stillbirth for all deaths that occur must be given within 72 hours of death occurrence by an informant, regardless of citizenship status of the deceased. After death registration is completed, the DHA issues a death certificate to the informant and updates the National Population Register (NPR). The NPR only includes deaths for South African citizens and permanent residents whose births records were already captured onto the NPR prior to death. Those not eligible for inclusion in the NPR are non-South African citizens who had sojourned temporarily in the country and all South African citizens and permanent residents who died before notice of their births had been registered. Statistics South Africa (Stats SA) collects all death notification forms, irrespective of the deceased's citizenship status for processing, analysis and dissemination of mortality and causes of death information. It is for this reason that the figure of deaths processed by Stats SA will always be higher than the figure of deaths recorded on the National Population registered (NPR) for the same period.

This statistical release is based on a total of 486 041 deaths that occurred in 2022 and 12 712 late death registrations for 2001 to 2021 that were registered at the DHA and reached Stats SA in time for the 2025/2026 processing phase.

2.2 Data processing

The processing of the completed death notification forms takes place at the Stats SA Data Processing Centre. The stages of data processing start with sorting the forms by year of death occurrence, pasting unique identifier labels on each of the forms, data capturing; and coding socio-demographic and causes of death variables.

2.2.1 Classification of the causes of death

The cause-of-death statistics in this publication are compiled using the International Classification of Diseases (ICD), 10th Revision 2016 and 2019 Editions. The ICD is a system of categories to which morbid entities of either external or pathological causation are assigned according to established criteria. It is developed collaboratively between the World Health Organization (WHO) and various international agencies who are involved in mortality data quality improvement. It is revised from time to time in line with new adaptations, classifications and glossaries. All member states of the United Nations, including South Africa, agreed to use ICD as the standard classification system for compiling morbidity and mortality statistics. The South African National Information System also adopted it as a standard.

The primary purpose of ICD is to provide for conversion of word descriptions of diseases or conditions into an alphanumeric code, which permit easy storage, retrieval and analysis of data. It also allows for the systematic and standardised recording, analysis, interpretation, comparison and sharing of morbidity and mortality data within a population and across countries. The ICD-10 provides for coding and classification of diseases and injuries and a wide range of signs, symptoms and other abnormal findings.

According to WHO (2016), the most effective public health objective is to prevent the underlying cause of death from operating. For this purpose, the WHO recommends that countries use the international form of medical certificate of cause of death to facilitate the selection of the underlying cause of death. The ICD-10 contains about 8 000 categories of causes of death, which are organised into 22 chapters consisting of communicable diseases, non-communicable diseases, ill-defined causes of death and external causes of injury and death.

Each chapter contains three-character categories which is subdivided into 10 four-character subcategories. However, for international comparisons, three-character coding is the mandatory level for reporting morbidity and mortality statistics, while four-character coding is recommended for more specific details about the disease or condition resulting in morbidity or mortality. Statistics South Africa codes the causes-of-death data at four-character level where sufficient details about the causes of death were available. However, this statistical release analyses up to three-character level.

The quality of the causes of mortality statistics depends on completeness and accuracy of certified death notification forms. Coders at Stats SA follow the principle of ‘what you see is what you code’ when coding causes-of-death statistics. The coders use the ICD-10 for categories of causes of death coded in the ICD-10 manual. For categories that are not coded in the ICD-10 manual, Stats SA has outlined specific guidelines and procedures. For example, according to these rules and procedures, immunosuppression is coded as immunodeficiency and not as human immunodeficiency virus (HIV) disease.

Medical practitioners sometimes report the cause of death as acquired immune suppression which is not coded in the ICD-10 manual. Based on the Stats SA guidelines, this is coded as human immunodeficiency virus (HIV) disease (B20-B24). Multidrug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB) were assigned the ICD-10 special codes U51 and U52, respectively, and are included in the tuberculosis (A15-A19) broad group causes of mortality.

2.2.2 Generation of the underlying causes of death

The underlying cause of death is defined as: "(a) the disease or injury that initiated the sequence of events leading directly to death, or (b) the circumstances of the accident or violence that produced the fatal injury" (WHO, 2016: 31).

Stats SA uses IRIS software for the automated derivation of the underlying causes of death according to the ICD-10 rules. IRIS is the most up-to-date software available for coding as MMDS is no longer being supported by the US Centre for Disease Control who have moved to join the IRIS development core group. IRIS software contains language-dependent tables that can be developed to suit individual jurisdictions e.g. can include common phrases used in South African death certificates which may not be included in the standard English dictionary released with the IRIS package.

In instances where the software fails to derive the underlying cause of death, experienced coders at Stats SA derive the underlying cause of death manually within IRIS software. In efforts to improve the quality, timeliness, and consistency of coded data, IRIS was used to its full potential (i.e coding of the causes and derivation of the underlying cause of death).

2.3 Data editing

On completion of all data processing stages, the Stats SA editing program was used to check for data consistency and accuracy and to flag implausible causes of death for further investigations. In addition, two electronic tools both developed by WHO: Analysing mortality levels and causes-of-death (ANACoD) version 2.0 and CoDEdit version 1.0 were used to further check data consistency and plausibility (WHO, 2014a and WHO, 2014b). The tools were developed to enhance the value of mortality statistics in informing health policies and programmes. Both tools were used to automatically check the 2022 death data for accuracy and consistency by highlighting cases with causes that were unlikely to cause death categorised by age and sex (sex-specific causes, age-specific causes and notifiable diseases) and possible misuse of ICD-10 codes as well as providing a summary of the records within the dataset (WHO, 2014a; WHO, 2014b). For example, for causes of death that are specific to one sex, the tools warn and flag for errors when the combination of sex and cause is wrong. The errors that were flagged by the tools were manually investigated (checked on the original death notification form) for verification and corrections were made where necessary.

The main difference between the two tools is that CoDEdit assesses data consistency and plausibility for each unit record while ANACoD checks the data at an aggregate level. However, this does not undermine the importance of ANACoD as it can calculate demographic indicators such as crude death rates, life expectancy and death registration completeness level.

2.4 Assessment of the quality of data

The importance of producing quality mortality statistics derived from the civil registration system cannot be over-emphasised, since they are the only source of health information data continuously available at national and local administrative levels.

The usability of mortality statistics wholly depends on their quality, while the data have potential to support decentralised population health administration, (WHO, 2013). An accurate, complete and timely civil registration system provides the foundation to produce reliable and routine vital statistics. However, the data can suffer from a range of quality limitations such as the extent of late registrations, timeliness of death registration, completeness of death registration, timeliness of publishing, accuracy of reporting, ill-defined causes of death and misreporting or misclassification of causes of death. It is therefore vitally important to check the data quality and to be transparent about data limitations, so that areas of improvement can be identified.

For the purpose of this statistical release, in addition to the ANACoD and CoDEdit electronic tools, the framework proposed by Mahapatra et al. (2007) was used to assess the quality of the 2022 causes of death data. A detailed assessment is provided in Appendix C.

2.5 Data analysis

A two-pronged approach was followed for this release, which includes mortality analysis and causes of death analysis. The first section on mortality describes information on selected socio-demographic variables and mortality patterns, based on frequency distributions and cross-tabulations.

The section further covers demographic indicators such as sex ratios at death, age-specific death rates and median ages at death. Sex ratios at death show the ratio of male deaths per 100 female deaths and age-specific death rates show variations in mortality taking into consideration the population size of each age group. Age-specific death rates indicate the number of deaths in a particular age group per 1 000 population in that age group while the median ages at death provide a basic measure of how early or late mortality occurs in a population over time.

The second section lays out analyses of information on causes of death, mainly based on ranking the natural underlying causes of death and proportions of deaths due to specific causes. The top-ranking causes determine the leading causes of death. The ranking indicates the frequency of causes of death among those causes eligible to be ranked and does not reflect causes of death in terms of their importance from a public health perspective. Causes of death with the same proportion received the same rank, and a rank was skipped for the next cause. For example, if two causes of death had the same proportion and were ranked third, they both received the same rank, and the next cause received rank five.

The process of ranking natural underlying causes of death excluded symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99), because such information is not sufficiently detailed to be of use for public health purposes. It is therefore essential to raise awareness among certifying practitioners to seek sufficient evidence to assign causes of these deaths to the more precise categories through training programmes and other initiatives. Due to concerns about violence and deaths due to accidents in South Africa, natural and non-natural causes have been separated. Although non-natural causes of death were not ranked, for analysis they were disaggregated by characteristics such as age, sex and province of death of the deceased that relay important information on the levels and patterns of non-natural deaths.

In addition, the second section also provides information on causes of death based on the Global Burden of Disease as generated by ANACoD. Causes of deaths are categorised into three broad groups, namely Group I (communicable diseases), Group II (non-communicable diseases) and Group III (injuries). *Symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified* (R00–R99) deaths which are ill-defined natural causes of death were accorded across communicable and non-communicable diseases categories. Information on local municipalities is not provided in this release, but it can be made available in an aggregated dataset format and not as unit records datasets to users, on request.

3. Mortality

This chapter provides an analysis on the distribution of 2022 registered deaths that reached Stats SA during the 2025/2026 processing phase. The section mainly focuses on absolute numbers and percentage distributions of 2022 deaths by selected background characteristics of the deceased such as age, sex, place/institution of death and geographic information. Levels and trends of registered deaths over the period 2001−2021 are also included.

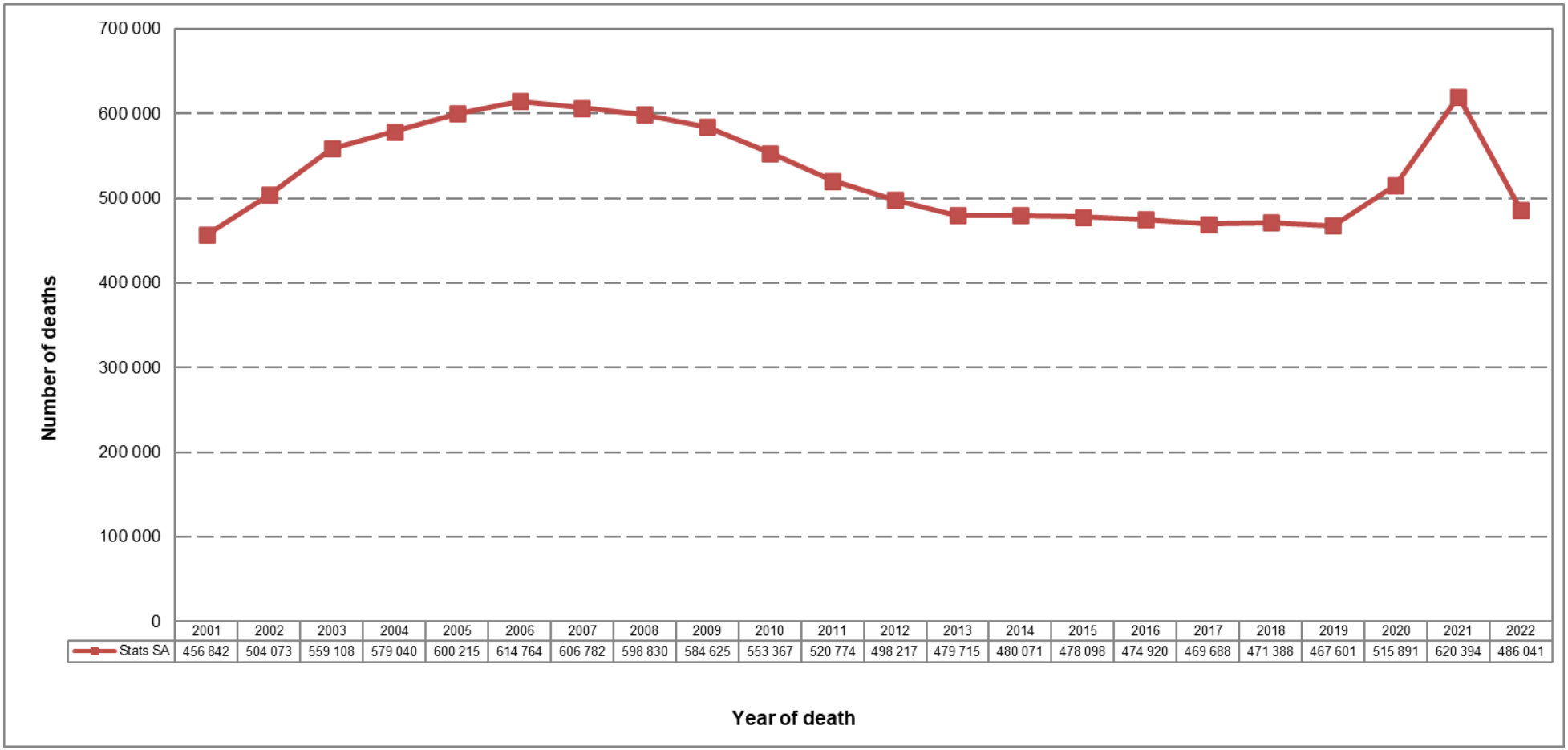
3.1 Levels and trends of mortality in 2022

Figure 3.1 shows that the total number of deaths that occurred and were registered at the DHA and processed by Stats SA in 2022 was 486 041, indicating a decrease when compared with 620 394 deaths that were processed in 2021. This sharp decline was largely due to a decrease in COVID-19-related deaths.

The general trend in the number of registered deaths processed by Stats SA indicates an increase from 2001 to 2006 when the number of deaths peaked at 614 764, and a decrease thereafter until 2019. A notable increase in the number of deaths was observed in 2020 (515 891), increasing to 620 394 deaths in 2021. This was followed by a sharp decrease in the number of deaths in 2022 (486 041), reaching pre-COVID-19 levels.

The overall number of deaths per year increases as additional forms are processed at Stats SA. Additional forms may result from delayed registration or delayed transmission of forms from DHA to Stats SA. It is, therefore, expected that additional forms, 2022 forms in particular, and for the previous years, will still be received for processing at Stats SA in the coming years. Updated information will be provided in the next statistical release.

Figure 3.1 - Number of registered deaths by year of death, 2001−2022*



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Stats SA	456 842	504 073	559 108	579 040	600 215	614 764	606 782	598 830	584 625	553 367	520 774	498 217	479 715	480 071	478 098	474 920	469 688	471 388	467 601	515 891	620 394	486 041

*Data for 2001–2021 have been updated with late registrations / delayed death notification forms processed in 2025/2026

3.2 Age differentials

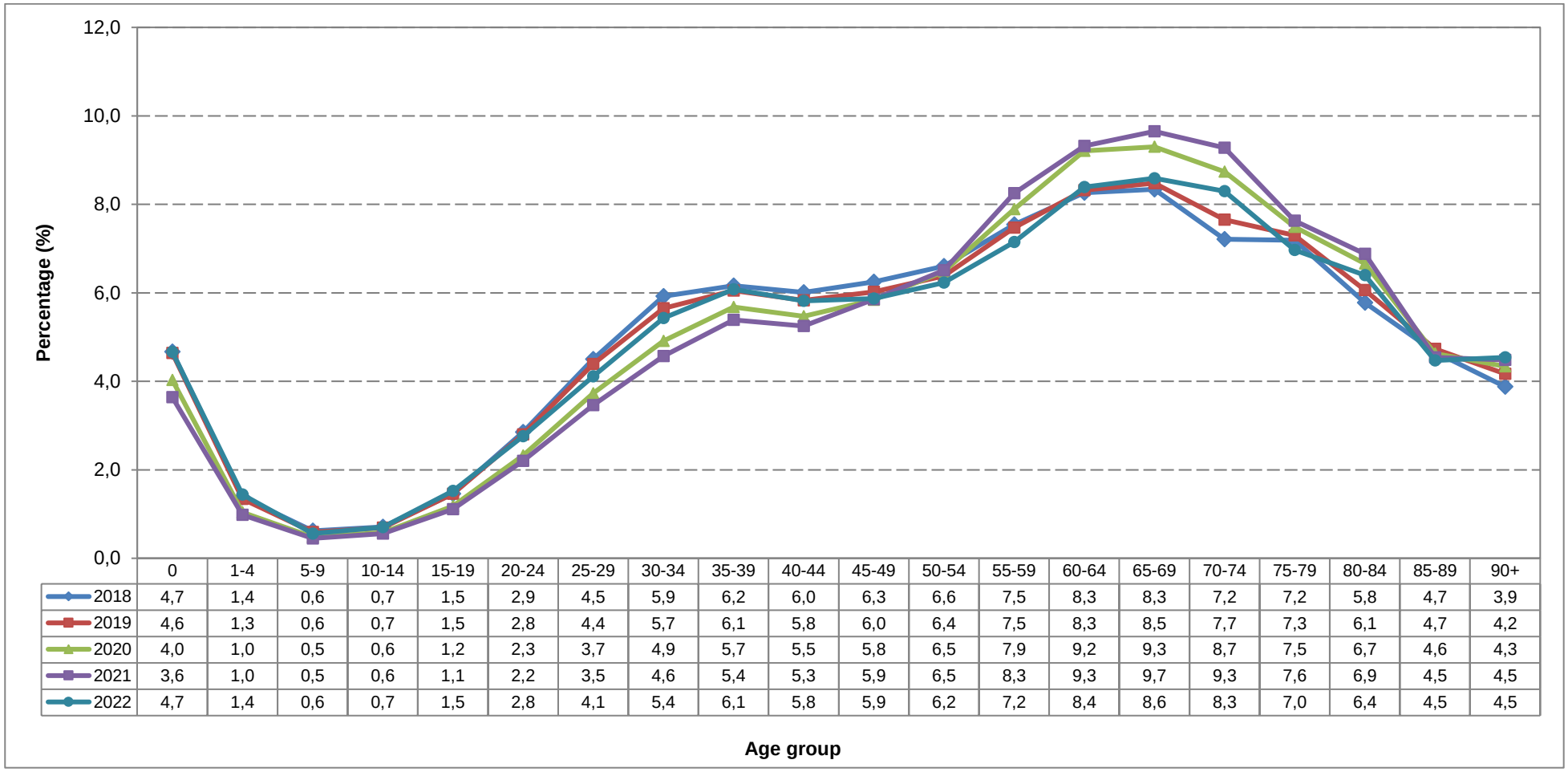
Table 3.1 below, shows the number and percentage distribution of deaths by age groups for deaths that occurred in 2022. The highest proportion of deaths were amongst those aged 65–69 years (8,6%), closely followed by those 60–64 years (8,4%) and 70–74 years (8,3%). The age groups which contributed the least number of deaths were age groups 5–9 years (0,6%) and 10–14 years (0,7%). Infants (age zero years) constituted 4,7% of the registered deaths.

Table 3.1 - Number and percentage (%) distribution of deaths by age group, 2022

Age group	Number	Percentage (%)
0	22 629	4,7
1−4	7 009	1,4
5−9	2 700	0,6
10−14	3 383	0,7
15−19	7 388	1,5
20−24	13 418	2,8
25−29	19 984	4,1
30−34	26 392	5,4
35−39	29 543	6,1
40−44	28 307	5,8
45−49	28 548	5,9
50−54	30 277	6,2
55−59	34 773	7,2
60−64	40 774	8,4
65−69	41 760	8,6
70−74	40 340	8,3
75−79	33 863	7,0
80−84	31 125	6,4
85−89	21 745	4,5
90+	22 083	4,5
Total	**486 041**	**100,0**

Figure 3.2 shows the percentage distribution of deaths by age groups and year of death between 2018 and 2022. A general observation is that the age pattern of mortality was somewhat consistent over the five-year period. However, slight deviations were observed during the COVID-19 years (2020 and 2021). During this time, the age groups between 0 years and 45–49 years recorded slightly lower proportions of deaths than typically observed. In contrast, the age groups between 55–59 years to 75–79 years showed a higher proportion of deaths than usual during the same period. The overall pattern is generally characterised by high proportions of deaths amongst infants (zero years), lower proportions for ages 1−4 years, lowest proportions between 5−9 years and 10−14 years, rising but still low proportions between age group 15−19 years and 20−24 years. High proportions averaging over 6,0% are observed from age group 50−54 years to 75−79 years with decreasing proportions seen from age group 80 and older.

Figure 3.2 - Percentage (%) distribution of deaths by age group and year of death, 2018–2022*



	0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+
2018	4,7	1,4	0,6	0,7	1,5	2,9	4,5	5,9	6,2	6,0	6,3	6,6	7,5	8,3	8,3	7,2	7,2	5,8	4,7	3,9
2019	4,6	1,3	0,6	0,7	1,5	2,8	4,4	5,7	6,1	5,8	6,0	6,4	7,5	8,3	8,5	7,7	7,3	6,1	4,7	4,2
2020	4,0	1,0	0,5	0,6	1,2	2,3	3,7	4,9	5,7	5,5	5,8	6,5	7,9	9,2	9,3	8,7	7,5	6,7	4,6	4,3
2021	3,6	1,0	0,5	0,6	1,1	2,2	3,5	4,6	5,4	5,3	5,9	6,5	8,3	9,3	9,7	9,3	7,6	6,9	4,5	4,5
2022	4,7	1,4	0,6	0,7	1,5	2,8	4,1	5,4	6,1	5,8	5,9	6,2	7,2	8,4	8,6	8,3	7,0	6,4	4,5	4,5

*Excluding deaths with unspecified age

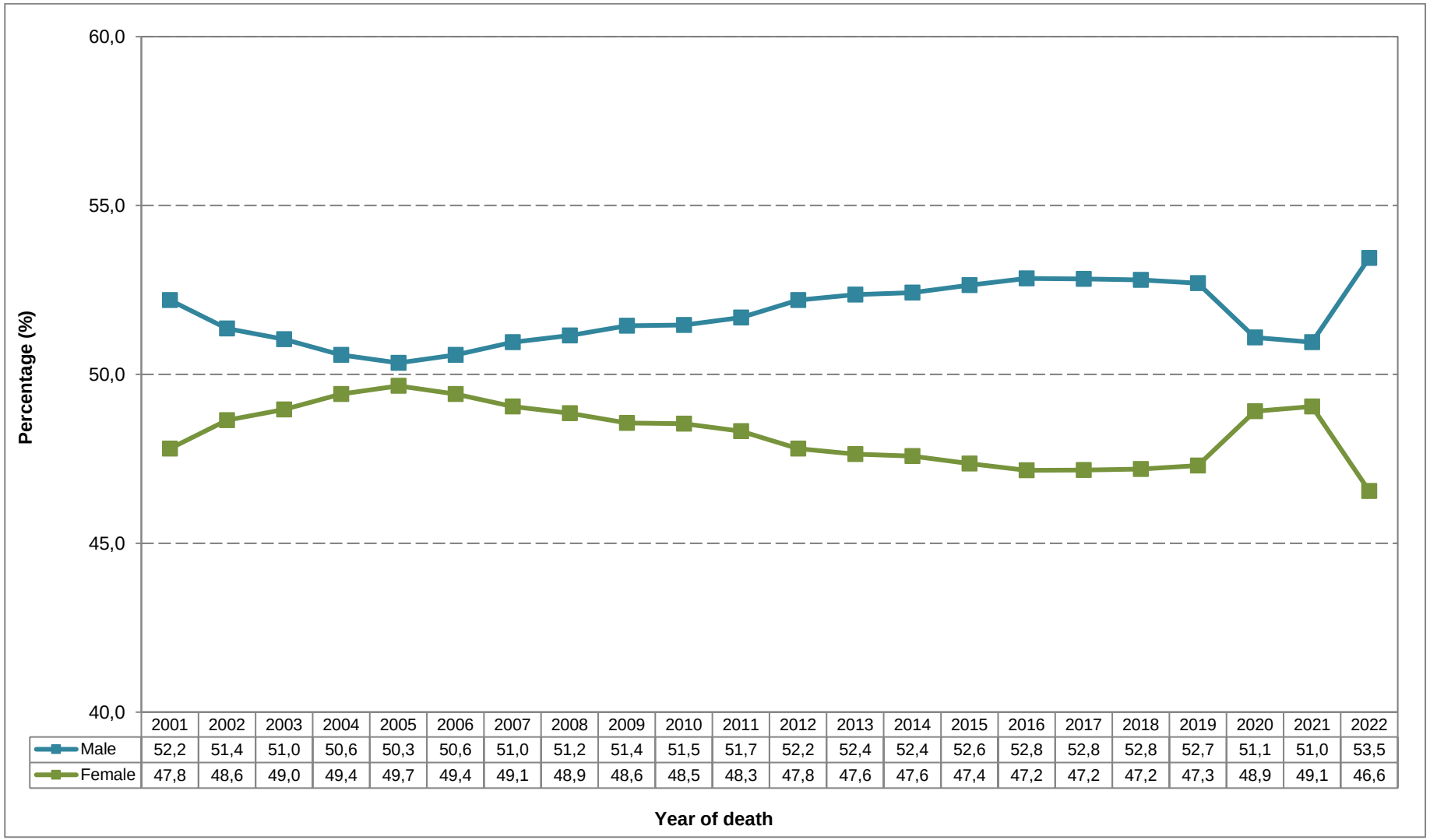
Data for 2018–2021 have been updated with late registrations / delayed death notification forms processed in 2025/2026

3.3 Sex differentials

Figure 3.3 shows the percentage distribution of deaths by sex and year from 2001 to 2022. Over the 22-year period, a consistent and persistent gender disparity in mortality is evident, with male deaths consistently exceeding those of females. In 2022, this pattern continued, with males accounting for 53,5% of deaths and females 46,6%. Notably, 2022 recorded the widest gap in the series, marking the highest male share and the lowest female share of deaths observed over the entire period.

The distribution of the deaths shows that there was a gap in the proportion of male and female deaths in 2001 (4,4 percentage points), but this narrowed yearly until 2005 (0,6 percentage points) and broadened again thereafter, reaching a male excess of 5,6 percentage points in 2016 to 2018. The emergence of COVID-19 in 2020 brought about the convergence in sex differentials, with the gap narrowing between the two sexes. A notable narrowing was observed in 2020 (2,2 percentage points) and 2021 (1,9 percentage points). In 2022, the gap widened, reaching a trend high of 6,9 percentage points. Additional information on annual percentage changes in the number of deaths by sex, and Age-specific Death Rates (ASDRs) is provided in a workbook published separately.

Figure 3.3 - Percentage (%) distributions of deaths by sex and year of death, 2001–2022*



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	52,2	51,4	51,0	50,6	50,3	50,6	51,0	51,2	51,4	51,5	51,7	52,2	52,4	52,4	52,6	52,8	52,8	52,8	52,7	51,1	51,0	53,5
Female	47,8	48,6	49,0	49,4	49,7	49,4	49,1	48,9	48,6	48,5	48,3	47,8	47,6	47,6	47,4	47,2	47,2	47,2	47,3	48,9	49,1	46,6

*Excluding deaths with unspecified sex

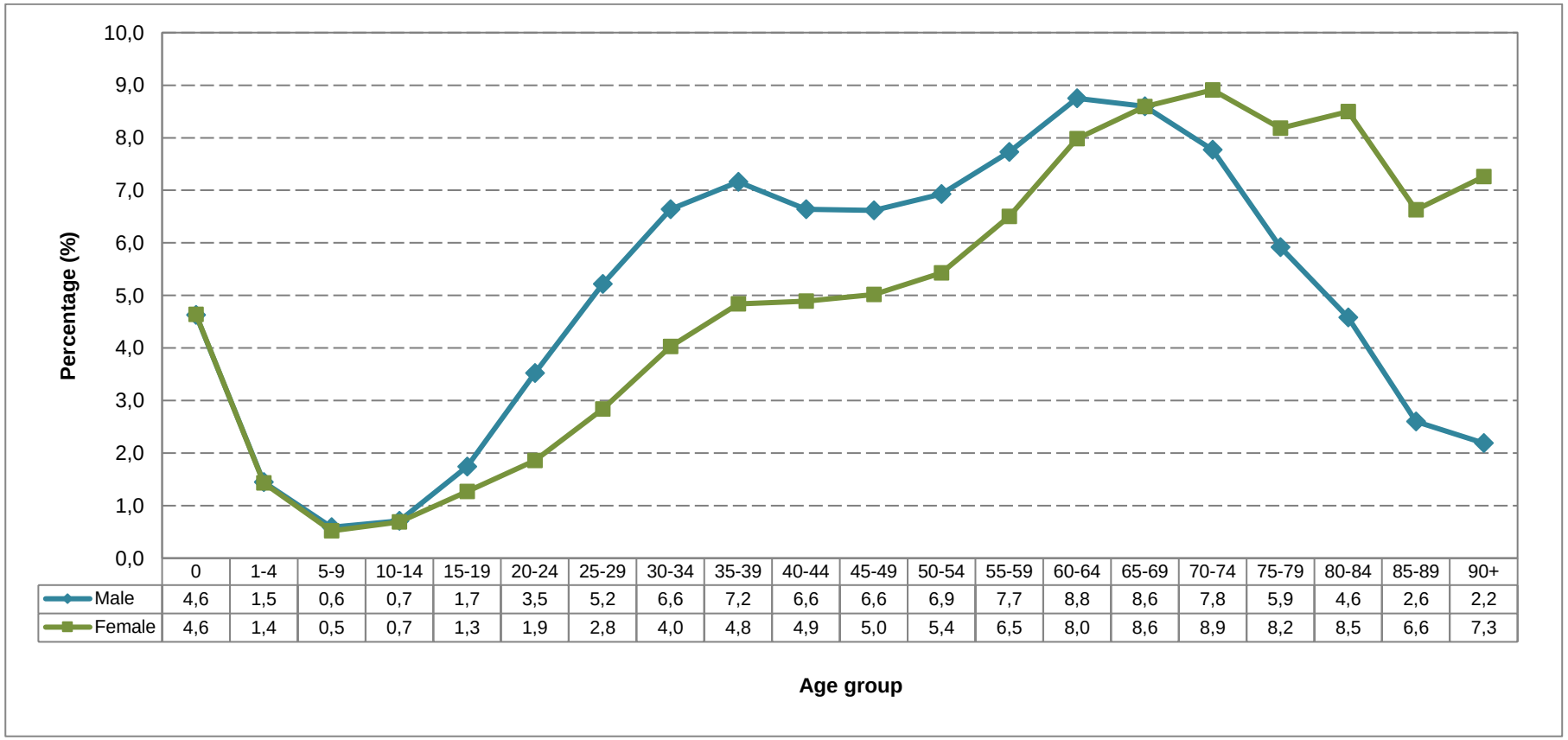
Data for 2001–2021 have been updated with late registrations / delayed death notification forms processed in 2025/2026

3.4 Age and sex differentials

3.4.1 Distribution of deaths by age group and sex

Figure 3.4 shows the age and sex percentage distribution of deaths for 2022. It is observed that the proportion of deaths for males and females were both lowest and somewhat similar for the age groups 5–9 and 10–14 years. Overall, the male deaths exceeded those of females from age group 1-4 years up to 60-64 years, with the exception of age group 10–14 years. From ages 70 years and above there were more female than male deaths. The gap in the proportion for male and female deaths was highest from 80 years and above, where female deaths surpassed male deaths by 3,9% at age group 80–84 years, by 4,0% at age groups 85–89 years and by 5,1% at ages 90 years and above. Additional information on absolute number of deaths by age, sex and year of death is provided in a workbook published separately.

Figure 3.4 - Percentage (%) distribution of deaths by age group and sex, 2022*



	0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+
Male	4,6	1,5	0,6	0,7	1,7	3,5	5,2	6,6	7,2	6,6	6,6	6,9	7,7	8,8	8,6	7,8	5,9	4,6	2,6	2,2
Female	4,6	1,4	0,5	0,7	1,3	1,9	2,8	4,0	4,8	4,9	5,0	5,4	6,5	8,0	8,6	8,9	8,2	8,5	6,6	7,3

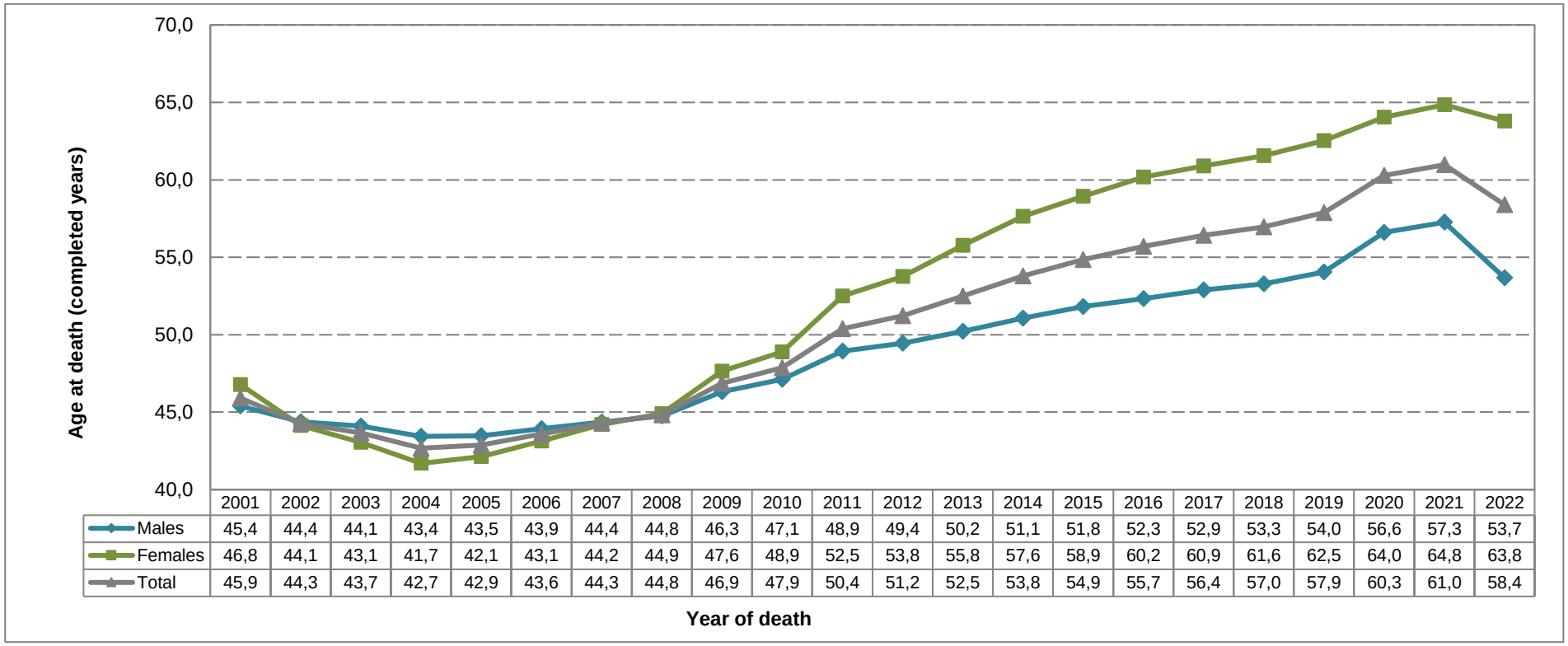
*Excluding deaths with unspecified sex

3.4.2 Median ages at death by sex

The median age at death shows how early or late mortality occurs in a population and specifies the age at which half of the reported deaths occur. The median ages at death by sex and year of death over the years 2001 to 2022 are presented in Figure 3.5. Trends in median ages at death are important in the analysis of changes in mortality patterns over time, such as an increase in the proportion of deaths occurring at older ages or at younger ages. The former is indicative of improvements and postponement of mortality to older ages, while the latter indicates premature mortality.

Figure 3.5 shows that the median ages for males, females and total deaths decreased consistently from 2001 to 2004 and thereafter increased. It is also notable that both the declines and the increases were more pronounced amongst females relative to males. The median ages for total deaths decreased from 45,9 years in 2001, to a low average age of 42,7 years in 2004 and increased gradually from 2005, reaching a high of 61,0 years in 2021 and decreased to 58,4 years in 2022. The median ages at death for males decreased from 45,4 years in 2001 to 43,4 years in 2004, while a reverse trend was observed between 2005 and 2021, from 43,5 years in 2005 to 57,3 years in 2021. In 2022, the median age at death for males decreased to 53,7 years. Similarly, the female median ages at death decreased prior to 2005, from 46,8 years in 2001 to 41,7 years in 2004. Between 2005 and 2021, the average age at death for females increased from 42,1 years in 2005 to a high of 64,8 years in 2021. Similar to males, the female median age at death also dropped in 2022, recording 63,8 years.

Figure 3.5 - Median ages at death by sex and year of death, 2001–2022*



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Males	45,4	44,4	44,1	43,4	43,5	43,9	44,4	44,8	46,3	47,1	48,9	49,4	50,2	51,1	51,8	52,3	52,9	53,3	54,0	56,6	57,3	53,7
Females	46,8	44,1	43,1	41,7	42,1	43,1	44,2	44,9	47,6	48,9	52,5	53,8	55,8	57,6	58,9	60,2	60,9	61,6	62,5	64,0	64,8	63,8
Total	45,9	44,3	43,7	42,7	42,9	43,6	44,3	44,8	46,9	47,9	50,4	51,2	52,5	53,8	54,9	55,7	56,4	57,0	57,9	60,3	61,0	58,4

*Data for 2001–2021 have been updated with late registrations / delayed death notification forms processed in 2025/2026

3.4.3 Sex ratios by age groups

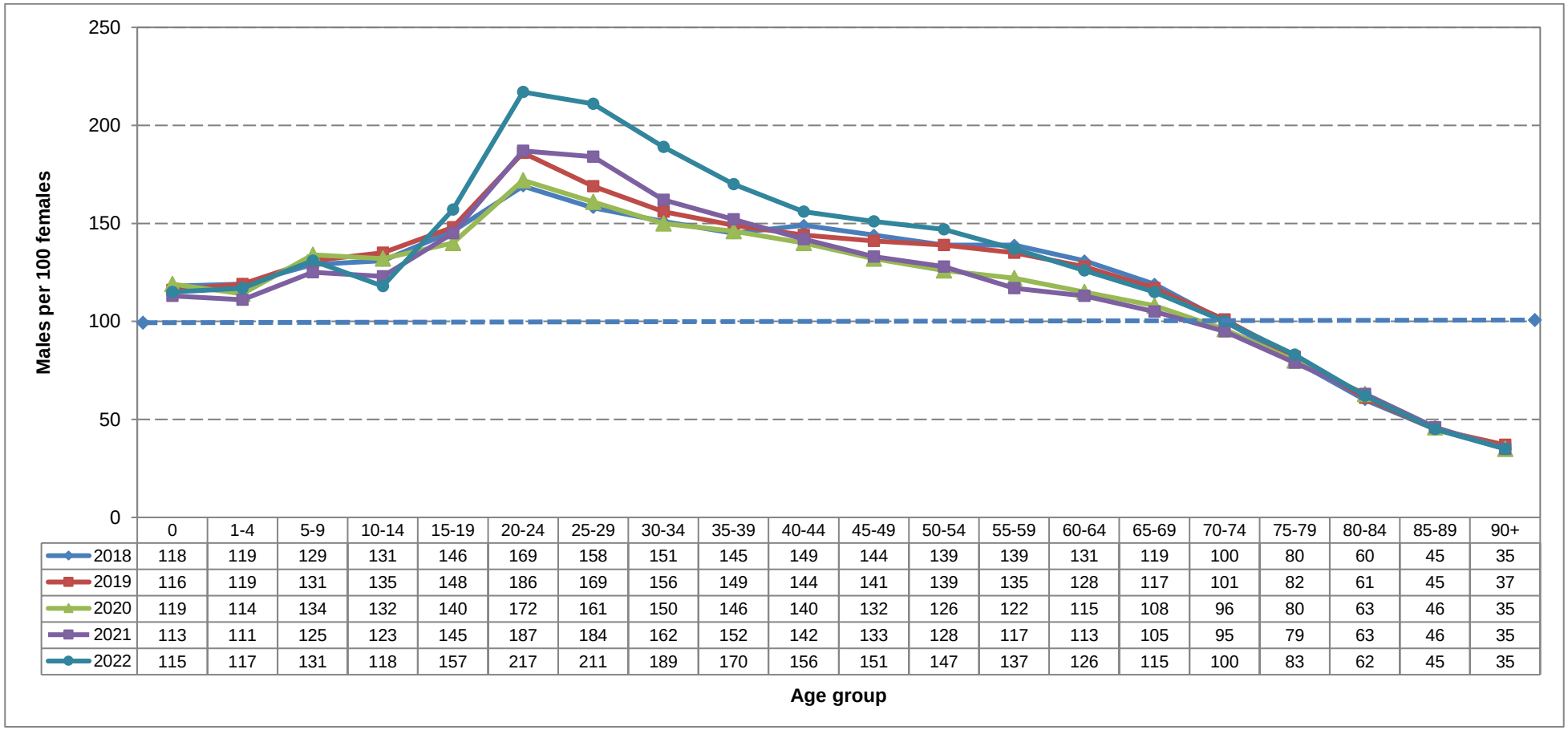
The sex ratio at death is an important demographic indicator, highlighting the number of male deaths relative to the number of female deaths. When there are equal numbers of male and female deaths, the sex ratio at death is equal to 100. If there are more male than female deaths, the sex ratio is above 100, and excess female deaths are indicated by a sex ratio at death less than 100.

Sex ratios at death by age and year of death for the period 2018–2022 are shown in Figure 3.6. Over the five-year period, more male than female deaths were consistently observed from age 0 up to age group 65–69. Beyond this point, the pattern reversed, with more female deaths recorded than male deaths.

Results indicate that in 2022, for the age group 0 years, the sex ratio was 115 male deaths per 100 female deaths, showing a slight decrease from 113 in 2021. In 2022, the sex ratio at death reached a notable peak of 217 males per 100 females in the 20–24 age group, the highest across all age groups and years observed. A similarly high ratio of 211 was recorded in the 25–29 age group.

Overall, from 2018 to 2022, the sex ratio generally showed an upward trend, particularly from age group 15-19 to age group 40-44, with the exception of 2020, where ratios were comparatively lower. The most notable deviation occurred between the 40-44 to 65-69 age groups, where the 2020 and 2021 ratios dropped significantly but rebounded in 2022, returning to or exceeding pre-COVID-19 levels. From age group 70–74 onward, the sex ratio consistently fell below 100, indicating more female than male deaths in the older population.

Figure 3.6 - Sex ratios by age group and year of death, 2018–2022*



	0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+
2018	118	119	129	131	146	169	158	151	145	149	144	139	139	131	119	100	80	60	45	35
2019	116	119	131	135	148	186	169	156	149	144	141	139	135	128	117	101	82	61	45	37
2020	119	114	134	132	140	172	161	150	146	140	132	126	122	115	108	96	80	63	46	35
2021	113	111	125	123	145	187	184	162	152	142	133	128	117	113	105	95	79	63	46	35
2022	115	117	131	118	157	217	211	189	170	156	151	147	137	126	115	100	83	62	45	35

*Excluding deaths with unspecified age and sex

Data for 2018–2021 have been updated to include late registrations/death notification forms processed in 2025/2026

3.5 Population group differences in mortality

Table 3.2 below, shows the distribution of the 2022 deaths by population group of the deceased. To account for the population composition, the table also shows deaths per thousand population. Black Africans had the highest percentage of deaths, comprising 68,9% of the total deaths, followed by the white population group (9,5%) and then the coloured population group (7,6%). The Indian/Asian population group (2,3%) accounted for the least percentage of registered deaths. The proportions observed are somewhat indicative of the variations in population size by population group.

While the percentage of deaths within the entire population indicates that the black African population group had the highest proportion of deaths, the death rate within each population group, reveals a different picture. The white population group had the highest death rate at 10,3 deaths per thousand population, followed by the coloured and black African population group at 7,4 and 6,6 deaths per thousand population, respectively. The Indian/Asian population group recorded a slightly lower death rate of 6,4, while other population groups had the lowest death rate at 5,5 deaths per thousand population.

Additional information on the distribution of underlying causes of death by population group is provided in a workbook which is published separately.

Table 3.2 - Number and percentage (%) distribution of deaths by population group, 2022

Population group	Number of deaths	Percentage (%) of deaths	Population group size	Deaths per thousand population
Black African	335 049	68,9	50 486 856	6,6
White	46 204	9,5	4 504 252	10,3
Indian/Asian	10 938	2,3	1 697 506	6,4
Coloured	37 137	7,6	5 052 349	7,4
Other	1 367	0,3	247 353	5,5
Unknown or unspecified*	55 346	11,4	39 188	*
Total	**486 041**	**100,0**	**62 027 503**	**7,8**

Source: Census 2022
*Deaths per thousand population not calculated for the "Unknown or unspecified" group due to the lack of a directly comparable population base

3.6 Marital status differences in mortality

Table 3.3 depicts the number and percentage distribution of deaths by marital status of the deceased. The majority of the deaths (37,8%) occurred amongst the people that had never been married, followed by those who are married (20,9%) and the widowed (10,3%). It is worth noting that the variations in the percentage of deaths by marital status may be affected by differences in population sizes across the marital status categories. In addition, caution should be exercised when interpreting the results, as 28,8% of the death notification forms had missing information on marital status of the deceased.

Table 3.3 - Number and percentage (%) distribution of deaths by marital status, 2022

Marital status	Number	Percentage (%)
Never married	183 796	37,8
Married	101 485	20,9
Widowed	49 983	10,3
Divorced	10 883	2,2
Unknown/unspecified/not applicable	139 894	28,8
Total	**486 041**	**100,0**

3.7 Differences in mortality by smoking status of the deceased

The number and percentage distribution of 2022 registered deaths classified by smoking status of the deceased is depicted in Table 3.4. below. Smoking status of the deceased is defined as the regular smoking of tobacco during the five years prior to death. The law strictly prohibits the sale of tobacco products to anyone under the age 16 years so the question on smoking status is applicable if the deceased was aged 16 years and older.

The table shows that the highest percentage of deaths were among people who were non-smokers (39,6%) while approximately 20,2% of the deaths occurred among people who were smoking. The table also shows that 34,1% of registered deaths in 2022 had unknown or unspecified smoking status. The high proportion of deaths with missing information on smoking status shows a poor reporting of this information on the death notification forms.

Table 3.4 - Number and percentage (%) distribution of deaths by smoking status among those aged 16 and older, 2022

Smoking status	Number	Percentage (%)
Yes	90 813	20,2
No	177 905	39,6
Do not know	27 307	6,1
Unknown or unspecified	153 182	34,1
Total	**449 207**	**100,0**

3.8 Differences in mortality by place or institution of death occurrence

The distribution of registered deaths by place or institution of death occurrence for 2022 is shown in Table 3.5, below. Results indicate that 38,4% of the deaths took place in hospitals, 2,2% occurred in emergency rooms or outpatient facilities, while 2,4% died in nursing homes. These three places of death occurrence account for 43,0 % of total deaths that occurred within a health care facility. A total of 24,9% of all deaths occurred at home in 2022, while 1,5% were amongst people who had already died by the time they reached the hospital. A total of 28,5% of the death notification forms had unknown or unspecified information on place or institution of death.

Table 3.5 - Number and percentage (%) distribution of deaths by place of death occurrence, 2022

Place of death	Number	Percentage (%)
Hospital	186 520	38,4
Emergency room / Outpatient	10 786	2,2
Nursing home	11 802	2,4
Dead on arrival	7 066	1,5
Home	121 198	24,9
Other	10 044	2,1
Unknown/ unspecified	138 625	28,5
Total	**486 041**	**100,0**

3.9 Geographic variations in mortality

This section presents information on the distribution of registered deaths by province of occurrence and by the deceased's usual residence. The information was derived based on the 2016 municipal boundaries. Additional information on province of death by province of usual residence, sex and age group is provided in a workbook published separately.

3.9.1 Differences by province, age and sex

Table 3.6 shows the distribution of 2022 deaths by province of death occurrence and province of usual residence of the deceased. The province of death occurrence may not always be similar to the place of usual residence.

For province of death occurrence, the highest proportion of deaths (21,9%) occurred in Gauteng, followed by KwaZulu-Natal and Eastern Cape, each comprising 18,6% and 15,9%, respectively. The lowest percentage of deaths occurred in Northern Cape (3,1%).

With regard to province of usual residence, the same pattern was observed as that of province of death occurrence. Gauteng (20,2%) had the highest proportion of deaths, followed by KwaZulu-Natal (18,2%) and Eastern Cape (16,7%). The lowest percentage was Northern Cape at 3,1%.

It must be noted that analysis on geographic distribution of deaths is based only on place of death occurrence, not place of residence or place of birth of the deceased. However, information on the distribution of deaths by place of residence and place of birth of the deceased is available on request from Stats SA.

Table 3.6 - Distribution of deaths by province of death occurrence and province of usual residence of the deceased, 2022

Province	Province of death occurrence		Province of usual residence of deceased	
	Number	Percentage (%)	Number	Percentage (%)
Western Cape	55 742	11,5	54 395	11,2
Eastern Cape	77 160	15,9	81 101	16,7
Northern Cape	15 121	3,1	15 269	3,1
Free State	30 499	6,3	31 128	6,4
Kwa-Zulu Natal	90 552	18,6	88 589	18,2
North West	32 553	6,7	33 155	6,8
Gauteng	106 293	21,9	98 354	20,2
Mpumalanga	31 850	6,6	31 938	6,6
Limpopo	45 458	9,4	47 459	9,8
Unknown	778	0,2	1 008	0,2
Unspecified	35	0,0	3 645	0,7
Total	**486 041**	**100,0**	**486 041**	**100,0**

4. Causes of death

This section presents information on causes of death for all deaths that occurred in 2022 and previous years and were registered in 2022, as well as comparisons with data from the previous years. In terms of the Birth and Deaths Act 51 of 1992, as amended, medical practitioners are responsible for certification of causes of death in the dedicated page for recoding the causes of deaths in the death notification form. Other role players are responsible for other sections of the form.

This section has nine sub-sections, namely: introduction, reported causes of death, method of ascertaining the cause of death, main groups of the underlying causes of death, natural and non-natural causes of death, major group of causes of death, broad groups of natural causes of death, non-natural causes of death, and comparison between immediate, contributing and underlying causes of death. A summary of causes of death by age, sex and province of occurrence is also included in the analysis.

The 10th revision of the International Classification of Diseases (ICD-10) was used to classify the causes of death data in this publication. The analysis undertaken focuses mainly on underlying cause of death, which is defined as the disease or injury that initiated the train of events leading directly to death; or the circumstances of the accident or violence which produced the fatal injury (WHO, 1992). Previous publications have shown that Non-Communicable Diseases (NCD) pose a major barrier to health, quadrupling the burden of disease and as such, this necessitated the inclusion of analysis on the Global Burden of Diseases. Global Burden of Diseases is a critical resource for informed policymaking, as it provides a tool to quantify and compare the effects of different diseases in a population.

The last subsection presents comparison between the underlying, immediate and contributing causes of death. This analysis gives an overview of recorded instances of multiple causes of death and utilises information on all causes of death recorded on each death notification form, as death notification forms allow for reporting one or more causes of death on each form.

4.1 Reported causes of death

Table 4.1 shows information on the number of causes of death provided on each death notification form for deaths that occurred in 2022. Below one per cent (0,46%) of the forms had no cause of death recorded on the forms. These are as a result of two scenarios:

Scenario 1: This is a situation where the page for recording causes of death information was missing when the form was received from the DHA, but there is a doctor’s tick to show that it was a natural cause but with no specific cause given.

Scenario 2: This is where the page with causes of death information was missing when the form was received from the DHA, but the doctor indicated that the death was still under investigation and therefore cause of death had not yet been established.

In both scenarios, the age of the deceased was used to establish the underlying cause of death. ICD-10 codes such as R99 (other ill-defined and unspecified causes of mortality) and P96 (other conditions originating in the perinatal period) were used for these deaths, depending on the age of the deceased. ICD-10 code R99 (other ill-defined and unspecified causes of mortality) was used for adult deaths, while P96 (other conditions originating in the perinatal period) was used for perinatal deaths.

More than half of the death notification forms (53,59%) had only one cause recorded, followed by 23,34% of death notification forms which had two causes of death recorded and 14,56 % had three causes recorded.

Table 4.1 - Number and percentage (%) distribution of death notification forms by the number of causes reported on the death notification form, 2022

Number of the reported causes of death	Number of death notification forms	Percentage (%)
No cause	2 240	0,5
One cause	260 479	53,6
Two causes	113 440	23,3
Three causes	70 784	14,6
Four or more causes	39 098	8,0
Total	**486 041**	**100,0**

4.2 Method of ascertaining cause of death

The death notification form makes provision for a certifying official to indicate the method used to ascertain the cause of death. The eight options available on the form for method used to ascertain the death are shown in Table 4.2. In instances where the method of ascertainment was not filled but on the form there is date of post-mortem, the date was used as proxy for method of ascertainment in this case post-mortem.

The opinion of the attending medical practitioner was the most common method of ascertaining causes of death at 51,3%. It was followed by the opinion of the attending medical practitioner on duty at 13,5% and interview of family member at 13,2%. An autopsy was performed in 11,6% of the deaths. There were 3,7% forms that had unspecified method of ascertainment, while 4,5% of forms indicated that cause of death was ascertained through postmortem examination.

Table 4.2 - Number and percentage (%) distribution of deaths by method used to ascertain the cause of death, 2022

Method of ascertaining the cause of death	Number	Percentage (%)
Autopsy	56 455	11,6
Postmortem examination	21 860	4,5
Opinion of attending medical practitioner	249 072	51,3
Opinion of attending medical practitioner on duty	65 627	13,5
Opinion of registered professional nurse	4 340	0,9
Interview of family member	64 072	13,2
Other	3 796	0,8
Autopsy results may be available later*	47	0,0
Autopsy not performed*	1 480	0,3
Unknown	1 511	0,3
Unspecified	17 781	3,7
Total	**486 041**	**100,0**

*For perinatal deaths only

4.3 Main groups of the underlying causes of death

This section presents an overview of the underlying causes of death for main groups (chapters) of classification of causes of death. The ICD-10 classifies diseases and related health problems into 22 chapters, of which 19 are used in the reporting of information on underlying causes of death (see Table 4.3).
This report excludes ICD-10 chapters 19, 21 and 22 and these are discussed briefly below:

I. Chapter 19: *Injury, poisoning and certain other consequences of external causes (S00-T98).* These codes are used to classify causes of death in other causes but not in the underlying causes.
II. Chapter 21: *Factors influencing health status and contact with health services (Z00-Z99).* These are only used in morbidity coding.
III. Chapter 22: Codes for special purposes. These codes are used by WHO for the provisional assignment of new diseases of uncertain aetiology. U51 and U52 were used for coding *multidrug-resistant tuberculosis (MDR-TB)* and *extensively drug-resistant tuberculosis (XDR-TB)* in this release for individual causes of death but were both recoded to the broad group of tuberculosis (A15-A19) in the analyses.

Just as with other countries, South Africa (Stats SA) adopted the inclusion of COVID-19 as an additional chapter to the existing 22 chapters. This makes it easier for international comparison between countries and enables South Africa to align with countries using a similar approach. This is because the 2016 version of ICD-10 did not have COVID-19 as a chapter on the underlying causes of death.

Table 4.3 shows both the number and percentage distribution of deaths by the main groups (chapters) of the classification of causes of death. The most common main group of causes of death in 2022 was *diseases of the circulatory system,* comprising 20,4% of all deaths. The second most common main group of causes of death was *certain infectious and parasitic diseases*, accounting for almost 14,4% of deaths. This group also included 253 deaths due to *multidrug-resistant tuberculosis (MDR-TB)* and 19 deaths due to *extensively drug-resistant tuberculosis (XDR-TB).*

The third most reported main group of underlying causes in 2022 was *symptoms and signs not elsewhere classified* (13,8%). This main group consist mainly of information about various symptoms and signs that may not fit neatly into other categories; for example, some common conditions under this group include *abnormal heart sounds (R01) and abnormal blood chemistry (R79)*. This group was followed by *external causes of morbidity and mortality (13,3%).* The rest of the groups contributed less than 10% of deaths in 2022. Amongst these were *diseases of the respiratory system comprising* (9,1%) of all deaths, *neoplasms* (8,8%) and *endocrine, nutritional and metabolic diseases* (8,2%), amongst others.

Table 4.3 - Distribution of deaths by main causes of death, 2022

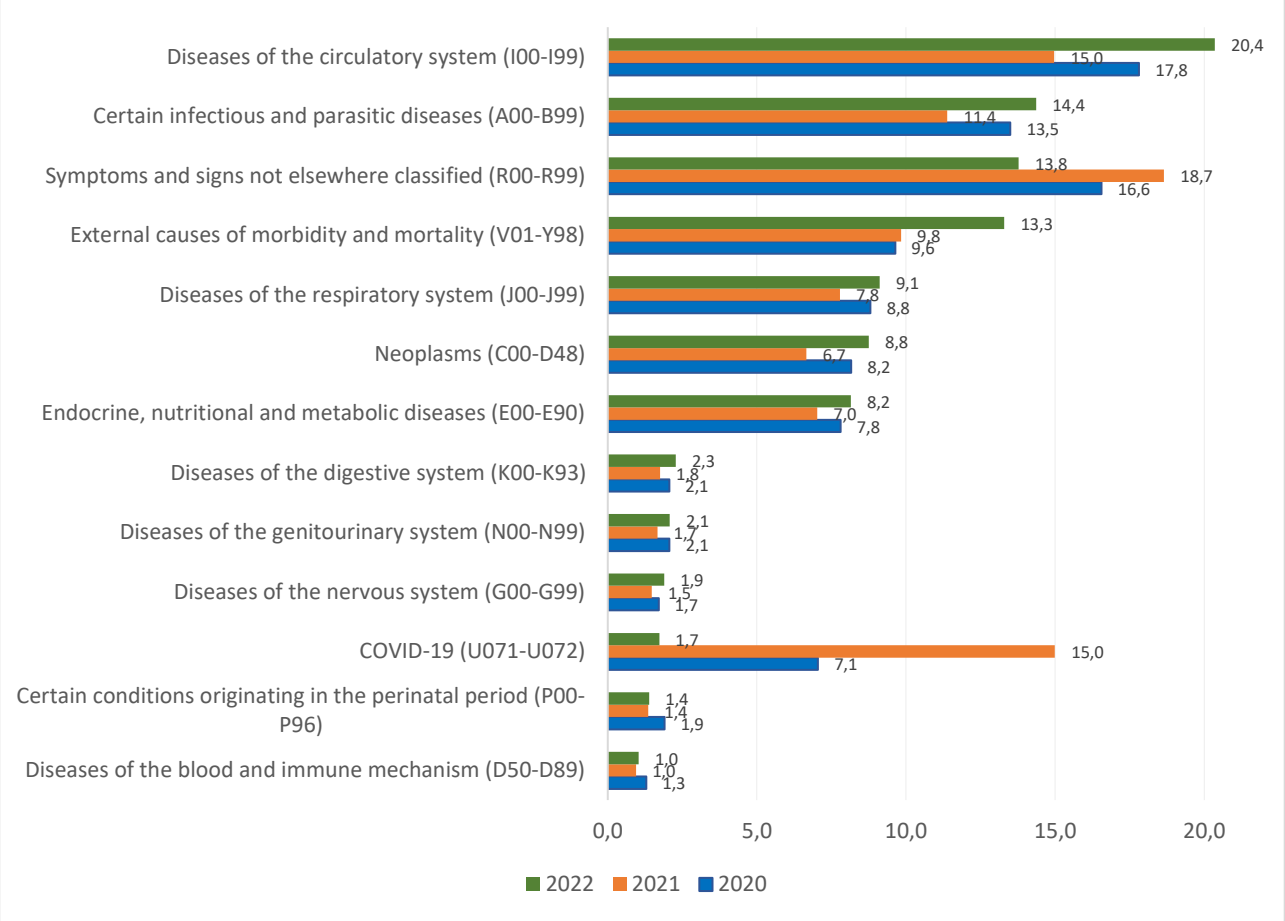
No.	Main groups of underlying causes of death (based on ICD-10)	Number	Percentage (%)
9	Diseases of the circulatory system (I00-I99)	98 888	20,4
1	Certain infectious and parasitic diseases (A00-B99)	69 816	14,4
18	Symptoms and signs not elsewhere classified (R00-R99)	66 944	13,8
20	External causes of morbidity and mortality (V01-Y98)	64 575	13,3
10	Diseases of the respiratory system (J00-J99)	44 310	9,1
2	Neoplasms (C00-D48)	42 552	8,8
4	Endocrine, nutritional and metabolic diseases (E00-E90)	39 620	8,2
11	Diseases of the digestive system (K00-K93)	11 067	2,3
14	Diseases of the genitourinary system (N00-N99)	10 102	2,1
6	Diseases of the nervous system (G00-G99)	9 190	1,9
	COVID-19 (U071-U072)	8 408	1,7
16	Certain conditions originating in the perinatal period (P00-P96)	6 736	1,4
3	Diseases of the blood and immune mechanism (D50-D89)	5 041	1,0
17	Congenital malformations (Q00-Q99)	2 512	0,5
5	Mental and behavioural disorders (F00-F99)	2 413	0,5
13	Diseases of the musculoskeletal system etc, (M00-M99)	1 912	0,4
12	Diseases of the skin and subcutaneous tissue (L00-L99)	1 346	0,3
15	Pregnancy, childbirth and puerperium (O00-O99)	556	0,1
8	Diseases of the ear and mastoid process (H60-H95)	40	0,0
7	Diseases of the eye and adnexa (H00-H59)	13	0,0
	Total	**486 041**	**100,0**

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

A three-year (2020–2022) trend analysis on the distribution of deaths by main groups of causes of death is shown in Figure 4.1. It was observed that the rankings of the main groups of causes of death by year have remained more or less the same during the period 2020–2022. *Diseases of the circulatory system* were the most common causes of death for the three years and accounted for between 15,0% and 20,4% of deaths across the three years. They also accounted for the biggest increase in proportion of deaths between the years 2021 and 2022 from 15,0% in 2021 to a high of 20,4% in 2022. A significant decrease was observed for deaths due to *COVID-19* from 15,0% in 2021 to 7,1% in 2022.

Five main groups that contributed the least to the causes of death for the observed years were, *diseases of the blood and immune mechanism*, *certain conditions originating in the perinatal period*, *diseases of the nervous system, diseases of the genitourinary system*, *diseases of the digestive system* and *COVID-19* in 2022.

Figure 4.1 - Percentage (%) distribution of deaths by main groups of causes of death, 2020–2022*



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

Data for 2020–2021 have been updated with late registrations/delayed death notification forms processed in 2025/2026

4.4 Natural and non-natural causes of death

The ICD-10 codebook classifies all causes of death from chapters 1 to 18 of the ICD-10 as natural causes and chapter 20 (V01-Y98) as non-natural causes. This section discusses both natural and non-natural causes of death. Non-natural causes of death comprise all deaths that were not attributable or may not have been attributable to natural causes. Natural and non-natural causes of death information reported in this release was derived from the underlying causes of death based on specific causes of death recorded on the death notification form.

Table 4.4 shows that since 2001, the number of deaths due to natural causes were higher than the number of deaths due to non-natural causes. Between 2001 and 2006, there was a consistent increase in the number of natural deaths, after which a decline was observed until 2019 and increased again in 2020 and 2021 the decreased again in 2022. The increase in natural deaths during 2020 and 2021 was attributed to COVID-19 deaths. Further, it can be observed that there was an inconsistent pattern in the number of deaths due to non-natural causes.

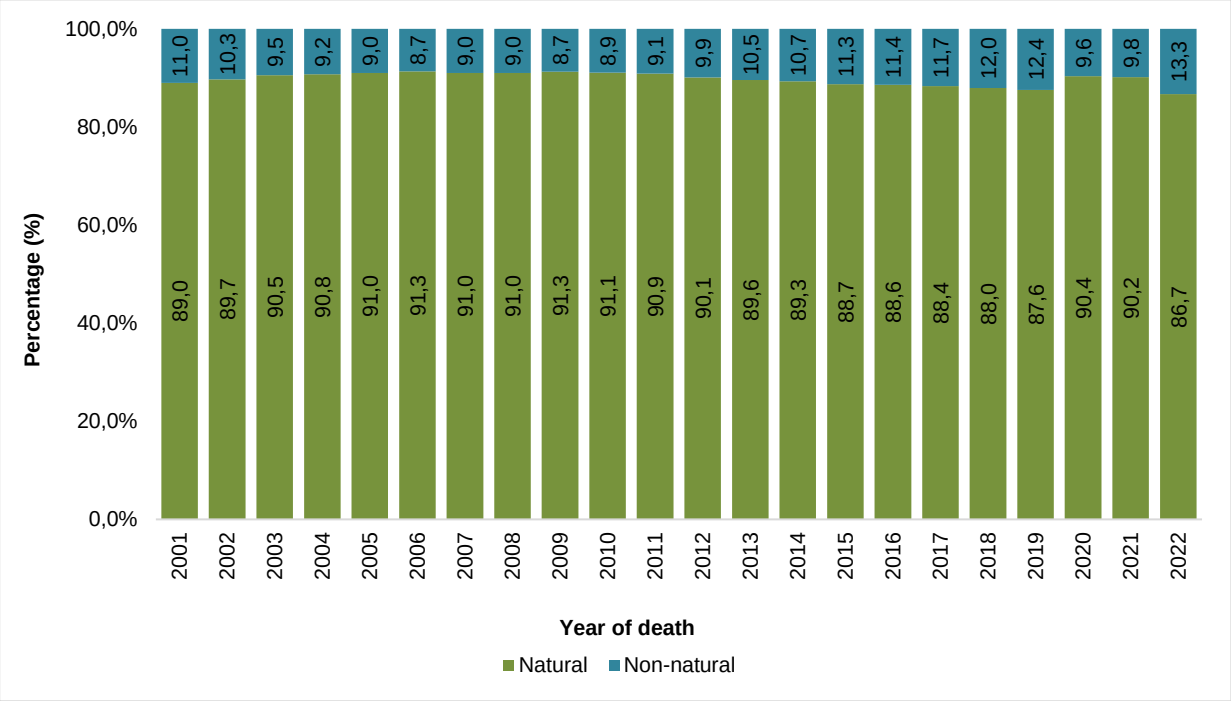
Table 4.4 - Number of natural and non-natural deaths by year of death occurrence, 2001–2022*

Year of death	Number of natural deaths	Number of non-natural deaths	Total
2001	406 391	50 451	**456 842**
2002	452 252	51 821	**504 073**
2003	506 122	52 986	**559 108**
2004	525 561	53 479	**579 040**
2005	546 124	54 091	**600 215**
2006	561 439	53 325	**614 764**
2007	552 114	54 668	**606 782**
2008	545 117	53 713	**598 830**
2009	533 718	50 907	**584 625**
2010	503 876	49 491	**553 367**
2011	473 174	47 600	**520 774**
2012	448 978	49 239	**498 217**
2013	429 574	50 141	**479 715**
2014	428 747	51 324	**480 071**
2015	424 272	53 826	**478 098**
2016	420 727	54 193	**474 920**
2017	414 987	54 701	**469 688**
2018	414 639	56 749	**471 388**
2019	409 492	58 109	**467 601**
2020	466 151	49 740	**515 891**
2021	559 395	60 999	**620 394**
2022	421 466	64 575	**486 041**

*Data for 2001–2021 have been updated with late registrations/delayed death notification forms processed in 2025/2026

Figure 4.2 shows the percentage distributions of natural and non-natural causes of death by year of death for the period 2001 to 2022. The pattern shows that the percentage of deaths due to natural causes was consistently above 85,0% each year. For non-natural causes of death, the pattern shows decreases in the proportion of deaths from 2001 to 2006 followed by an increase to 9,0% in 2007 and 2008. There was a decline to 8,7% in 2009 and from 2010 deaths due to non-natural causes increased steadily until 2019 while in 2020 they decreased to 9,6% and then slightly increased in both 2021 and 2022 to 9,8% and 13,3% respectively.

Figure 4.2 - Percentage (%) distribution of natural and non-natural causes of death by year of death, 2000–2021*

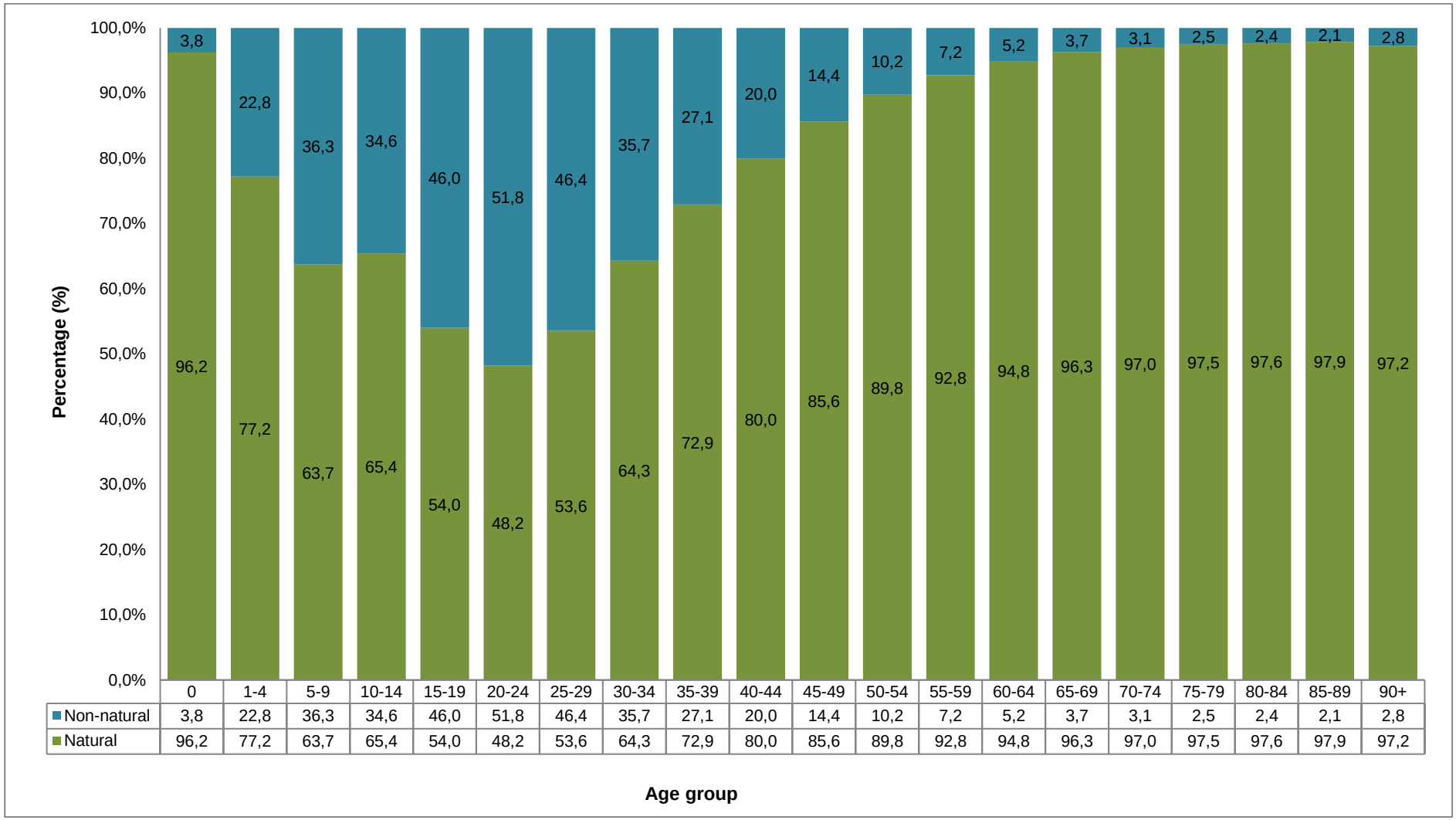


*Data for 2001–2022 have been updated with late registrations/delayed death notification forms processed in 2025/2026

4.4.1 Natural and non-natural causes of death by age

The percentage distribution of deaths due to natural and non-natural causes classified by age group for deaths that occurred in 2022 is provided in Figure 4.3. The general pattern observed that the proportion of deaths due to non-natural causes increases consistently from age 0 (3,8%) to age group 20–24 (51,8%) then decreased thereafter. It is worth noting that age group 20–24 was the age mostly affected by non-natural causes. Other ages with higher proportions (over 30%) of deaths due to non-natural causes were age groups 25–29 (46,4%), 15–19 (46,0%), 5–9 (36,3%), 30–34 (35,7%) and 10–14 (34,6%). Ages least affected by non-natural deaths were infants (less than 0) and older ages (55 years and older) where less than 10,0% of the deaths in each of these age groups were due to non-natural causes of death.

Figure 4.3 - Percentage (%) distribution of natural and non-natural causes of death by age, 2022



	0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+
Non-natural	3,8	22,8	36,3	34,6	46,0	51,8	46,4	35,7	27,1	20,0	14,4	10,2	7,2	5,2	3,7	3,1	2,5	2,4	2,1	2,8
Natural	96,2	77,2	63,7	65,4	54,0	48,2	53,6	64,3	72,9	80,0	85,6	89,8	92,8	94,8	96,3	97,0	97,5	97,6	97,9	97,2

4.5 Major groups of causes of death as per Global Burden of Disease

The Global Burden of Disease (GBD) Study is an all-inclusive program of disease burden that assesses mortality and disability from major diseases, injuries, and risk factors. It provides a comprehensive picture of mortality and disability across countries, time, age, and sex and is a landmark initiative that systematically quantifies the prevalence, morbidity, and mortality for hundreds of diseases, injuries, and risk factors of global health importance (Institute for Health Metrics and Evaluation). This is a useful measure as countries can combine this type of evidence along with information about policies and their costs to decide how to set their health targets and interventions. GBD also makes comparisons across populations, enabling understanding of the changing health challenges facing people across the world.

The nineteen ICD-10 chapters used in the reporting of information on underlying causes of death can be further condensed into three groups of causes of death as per the Global Burden of Disease cause list:

Group I:

- Communicable diseases (e.g. *tuberculosis, pneumonia, diarrhoea, malaria, measles);*
- Maternal and perinatal causes (e.g. *maternal hemorrhage, birth trauma);* and
- Nutritional conditions (e.g. *protein-energy malnutrition*).

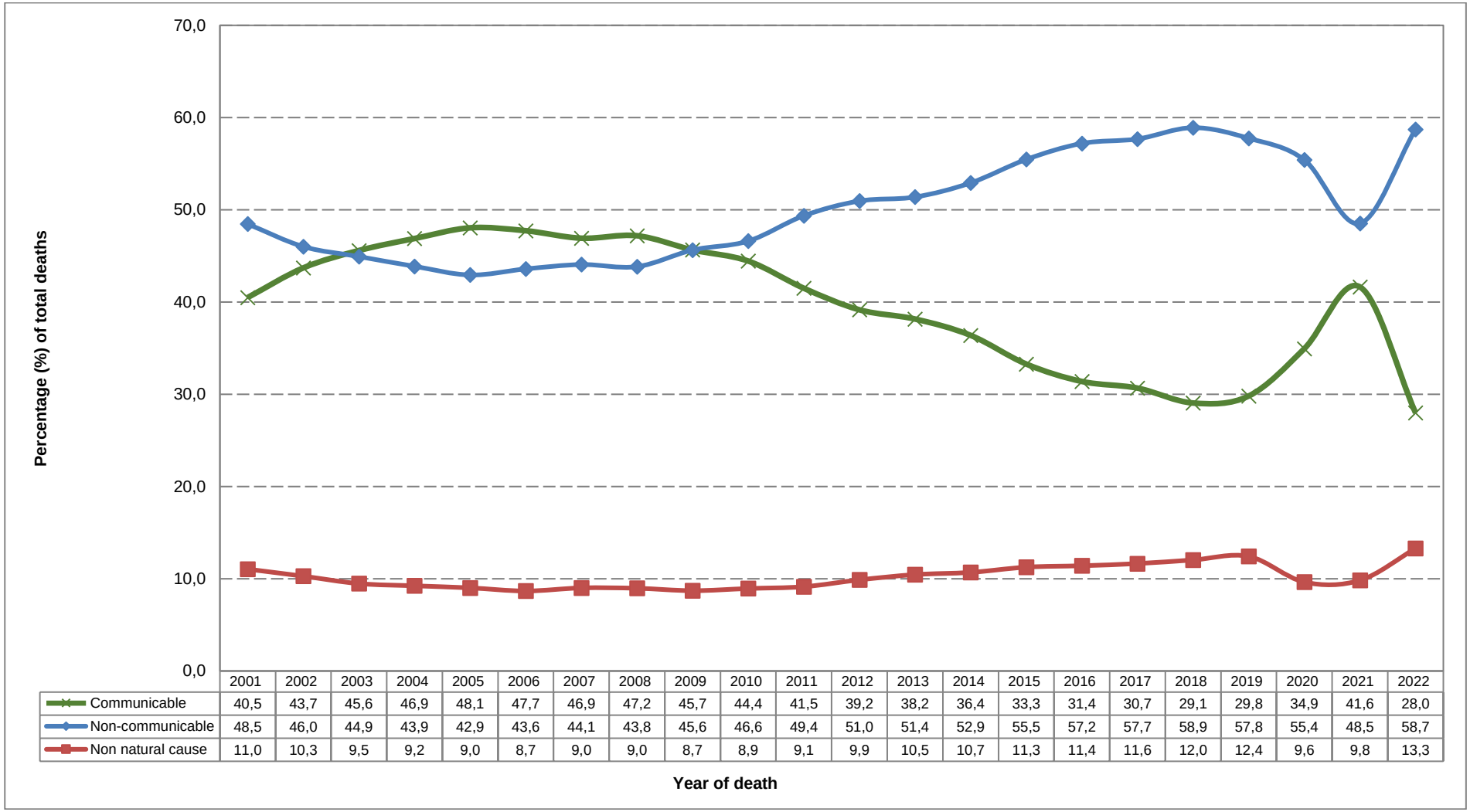
Group II: Non-communicable diseases (e.g. *cancer, diabetes, heart disease and asthma)*

Group III: External causes of mortality (e.g. *accidents, homicide and suicide*)

Communicable diseases are diseases caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi and can be spread, directly or indirectly, from one person to another. These include, amongst other diseases, diarrhoea, tuberculosis and pneumonia. Non-communicable diseases are medical conditions or diseases that are non-infectious or non-transmissible among people. These diseases last for longer periods of time and progress slowly and include, amongst others, cancer, asthma and heart diseases. External causes of mortality are the non-natural causes of death which are discussed in chapter 20 of the ICD-10.

The percentage distribution of deaths by group type and year of death are depicted in Figure 4.4. The pattern shows that prior to 2003, there were more deaths from non-communicable diseases relative to communicable diseases, although the gap narrowed over time. Starting from the year 2004 up to 2008, deaths due to communicable diseases surpassed non-communicable deaths. In 2009, there were equal proportion of deaths due to communicable and non-communicable diseases. From 2010 to 2018, the gap between the communicable and non-communicable diseases became wider with more deaths resulting from non-communicable diseases. This however changed in the years 2019 to 2021, a convergence was observed between communicable and non-communicable diseases. This as mainly driven by the high number of COVID-19 deaths especially for the years 2020 and 2021. In 2022, the pattern reversed back to the one observed prior to COVID-19 years where the gap between communicable and non-communicable diseases widened.

Figure 4.4 - Percentage (%) of deaths due to communicable diseases (Group I), non-communicable diseases (Group II) and injuries (Group III) by year of death, 2001–2022*



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Communicable	40,5	43,7	45,6	46,9	48,1	47,7	46,9	47,2	45,7	44,4	41,5	39,2	38,2	36,4	33,3	31,4	30,7	29,1	29,8	34,9	41,6	28,0
Non-communicable	48,5	46,0	44,9	43,9	42,9	43,6	44,1	43,8	45,6	46,6	49,4	51,0	51,4	52,9	55,5	57,2	57,7	58,9	57,8	55,4	48,5	58,7
Non natural cause	11,0	10,3	9,5	9,2	9,0	8,7	9,0	9,0	8,7	8,9	9,1	9,9	10,5	10,7	11,3	11,4	11,6	12,0	12,4	9,6	9,8	13,3

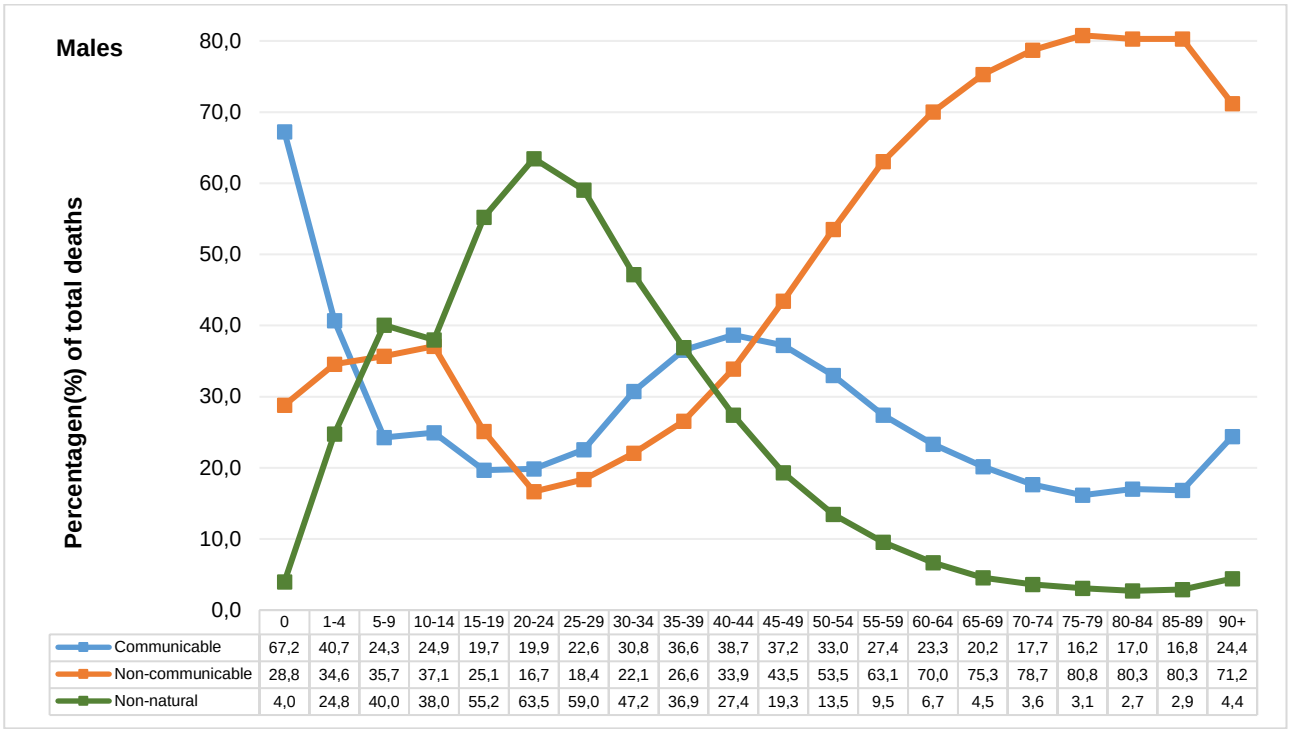
*Data for 2001–2021 have been updated with late registrations/delayed death notification forms processed in 2025/2026

The percentage distribution of group type by sex and age group is presented in Figure 4.5. Infants (aged 0 years) had the highest proportion of deaths due to communicable diseases for both sexes (67,2% for males and 66,5% for females). Deaths due to communicable diseases peak again at ages 40–44 (38,7%) for males while it peaks again at ages 30–34 (52,4%) for females. The proportion of deaths due to communicable diseases declines gradually with age from the age of 45 for males and from the age of 35 for females. Communicable diseases were lowest amongst the elderly for both sexes at age group 75–79 years at 14,8% for females while it was 16,1% for males.

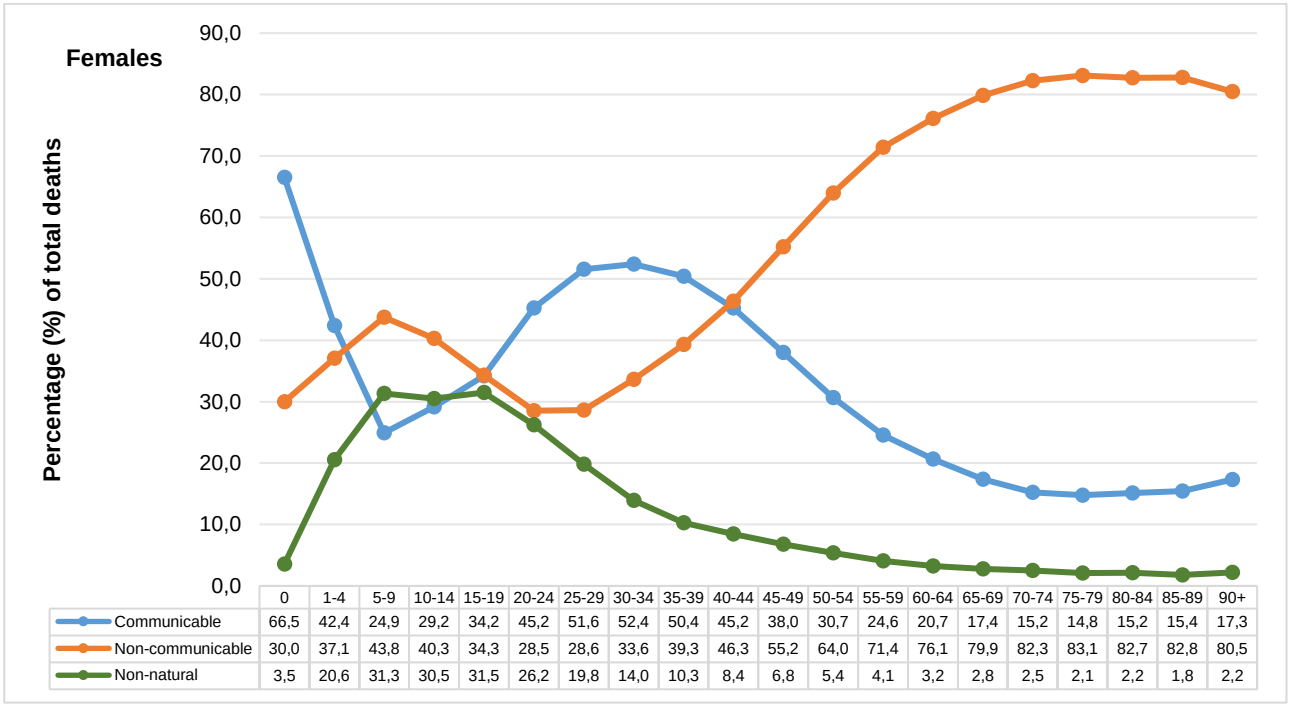
The trend in the proportion of deaths due to non-communicable diseases increases from age groups 25-29 years and 30-34 years for males (22,6%) and females (26,5%) respectively, until older ages. For males aged 0, almost 30% (28,8%) of deaths were due to this group of causes and 23,4% for female infants. For both males and females, deaths due to communicable diseases peaked slightly at age group 90 years and older.

The most notable pattern in non-natural causes of death i.e. external causes of death including accidents and violence, for both sexes is the steady increase and peak at age group 20–24 years for males (63,5%), and age group 5–9 years amongst females (31,3%). Deaths due to external causes were much higher for males than for females starting from age group 1-4 and through all age groups. For males, non-natural causes of death declined to below 10% from age group 55-59 years, while for females the decline is observed from age group 40-44 years.

Figure 4.5 - Percentage (%) of deaths due to communicable diseases (Group I), non-communicable diseases (Group II) and injuries (Group III) by sex and age group, 2022*



	0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+
Communicable	67,2	40,7	24,3	24,9	19,7	19,9	22,6	30,8	36,6	38,7	37,2	33,0	27,4	23,3	20,2	17,7	16,2	17,0	16,8	24,4
Non-communicable	28,8	34,6	35,7	37,1	25,1	16,7	18,4	22,1	26,6	33,9	43,5	53,5	63,1	70,0	75,3	78,7	80,8	80,3	80,3	71,2
Non-natural	4,0	24,8	40,0	38,0	55,2	63,5	59,0	47,2	36,9	27,4	19,3	13,5	9,5	6,7	4,5	3,6	3,1	2,7	2,9	4,4



	0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+
Communicable	66,5	42,4	24,9	29,2	34,2	45,2	51,6	52,4	50,4	45,2	38,0	30,7	24,6	20,7	17,4	15,2	14,8	15,2	15,4	17,3
Non-communicable	30,0	37,1	43,8	40,3	34,3	28,5	28,6	33,6	39,3	46,3	55,2	64,0	71,4	76,1	79,9	82,3	83,1	82,7	82,8	80,5
Non-natural	3,5	20,6	31,3	30,5	31,5	26,2	19,8	14,0	10,3	8,4	6,8	5,4	4,1	3,2	2,8	2,5	2,1	2,2	1,8	2,2

4.6 Broad groups of natural causes of death

This subsection presents information on the leading underlying natural causes of death for broad groups using top 10 ranking. The ten leading causes were identified by ranking the causes of death by the number of deaths among those eligible for ranking as described in Section 2 and excludes *symptoms, signs and abnormal findings, not elsewhere classified as well as all non-natural deaths* (external causes of morbidity and mortality). The top-ranking causes determine the leading underlying natural causes of death as it accounts for large numbers of deaths within a specified population and time period.

Ranking causes of death is crucial for identifying major health challenges and allocating resources for prevention and treatment. Unspecified causes don't offer actionable insights for these purposes. Knowing that a large number of deaths are attributed to "unspecified" conditions doesn't help in designing targeted interventions. By focusing on specific, well-defined causes, public health officials can better track trends, identify risk factors, and evaluate the effectiveness of health programs.

4.6.1 Overall pattern of the leading underlying natural causes of death

Table 4.5 shows the ten leading underlying natural causes of death in South Africa for the years 2020–2022. The years 2020 and 2021 have been included to show recent trends in natural causes of death. The table provides changes in the ten leading underlying causes of death by absolute numbers and percentages over the three-year period.

Table 4.5 shows that nine of the ten leading causes of death in 2020 were the same for the three-year period, although they differed in rank as well as proportions. The COVID-19 pandemic first reached South Africa in 2020 and became the leading cause of death and it remained in the top ten as a leading cause in 2021. In 2022, however, it was no longer in the top ten leading underlying causes of death. This at a population level reflects that the acute phase of the COVID-19 pandemic is now over, however, it is still not completely eradicated as there were still significant number of deaths due to COVID-19 in 2022 though they were not in the top ten.

In 2022, *diabetes mellitus* replaced *COVID-19* as the top leading underlying cause of death in South Africa responsible for 6,8% deaths in the country. It was ranked the second leading underlying cause of death in 2020 and 2021. Besides COVID-19, the most notable change in rank was for *other forms of heart diseases*, which moved from ninth rank (accounting for 2,3% of deaths) in 2021 to fourth rank in 2022 accounting for 4,2% deaths.

Table 4.5 – The ten leading underlying natural causes of death, 2020–2022*

Causes of death (based on ICD-10)	2020			2021			2022		
	Rank	Number	%	Rank	Number	%	Rank	Number	%
Diabetes mellitus (E10-E14)	2	33 902	7	2	37 028	6,0	1	32 863	6,8
Hypertensive diseases (I10-I15)	4	26 186	5,1	3	30 643	4,9	2	31 230	6,4
Cerebrovascular diseases (I60-I69)	3	28 301	5,5	4	28 188	4,5	3	28 819	5,9
Human immunodeficiency virus [HIV] disease (B20-B24)	7	20 449	4,0	5	24 146	3,9	4	20 784	4,3
Other forms of heart disease (I30-I52)	9	15 702	3,0	9	14 009	2,3	5	20 375	4,2
Tuberculosis (A15-A19)	5	20 815	4,0	7	17 751	2,9	5	20 372	4,2
Influenza and pneumonia (J09-J18)	5	20 739	4,0	6	21 459	3,5	7	19 705	4,1
Other viral diseases (B25-B34)	10	13 051	2,5	10	13 583	2,2	8	13 139	2,7
Ischaemic heart diseases (I20-I25)	8	16 228	3,1	8	14 851	2,4	8	13 137	2,7
Chronic lower respiratory diseases (J40-J47)	…	…	…	…	…	…	10	11 838	2,4
COVID-19 (U071-U072)	1	36 391	7,1	1	92 978	15,0	…	…	…
Other Natural		234 387	45,4		264 759	43		209 204	43,0
Non-natural		49 740	9,6		60 999	9,8		64 575	13,3
All causes		**515 891**	**99,9**		**620 394**	**100,1**		**486 041**	**100,0**

*Data from 2020–2021 have been updated with late registrations/delayed death notification forms processed in 2025/2026

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

… Category not in top ten

4.6.2 Leading underlying natural causes of death by sex

The distribution of the ten leading underlying natural causes of death in 2022 by sex is shown in Table 4.6 Overall, nine of the ten leading causes were the same for both sexes and four had the same rank for both sexes. The two underlying causes that were not common between the two sexes were *chronic lower respiratory diseases* and *malignant neoplasm of female genital organs*. *Chronic lower respiratory diseases* ranked ninth amongst males responsible for 2,8% male deaths while *malignant neoplasm of female genital organs* ranked tenth amongst females responsible for 2,4% deaths.

Diabetes mellitus was the leading underlying cause of death for both sexes responsible for 5,2% male deaths while it accounted for 8,6% female deaths. It was one of the four common underlying causes of death for both sexes. The other common underlying causes of death with common ranking between the two sexes was *human immunodeficiency virus (HIV), cerebrovascular diseases,* and *influenza and pneumonia* though their contribution differed in terms of proportion. For example, for males 4,9% deaths were attributed to *cerebrovascular diseases* while it was 7,1% for females.

The second leading underlying cause of death for males was *tuberculosis* accounting for 5,0% male deaths followed closely by *cerebrovascular diseases* and *hypertensive diseases*, both ranked as the third leading underlying cause of death respectively, responsible for 4,9% deaths. Causes that had the same proportion received the same rank and a rank was skipped for the next cause. For example, if two causes of death had the same proportion and were the top-ranking causes, they both received rank one, and the next cause received rank three.

The second leading underlying cause of death for females was *hypertensive diseases* responsible for 8,2 % female deaths, followed closely by *cerebrovascular diseases* (7,1%) which ranked third then *other forms of heart diseases* ranked fourth responsible for 4,8% deaths. *Human immunodeficiency virus [HIV] disease* ranked fifth accounting for 4,5% deaths.

Table 4.6 - The ten leading underlying causes of death for males and females, 2022*

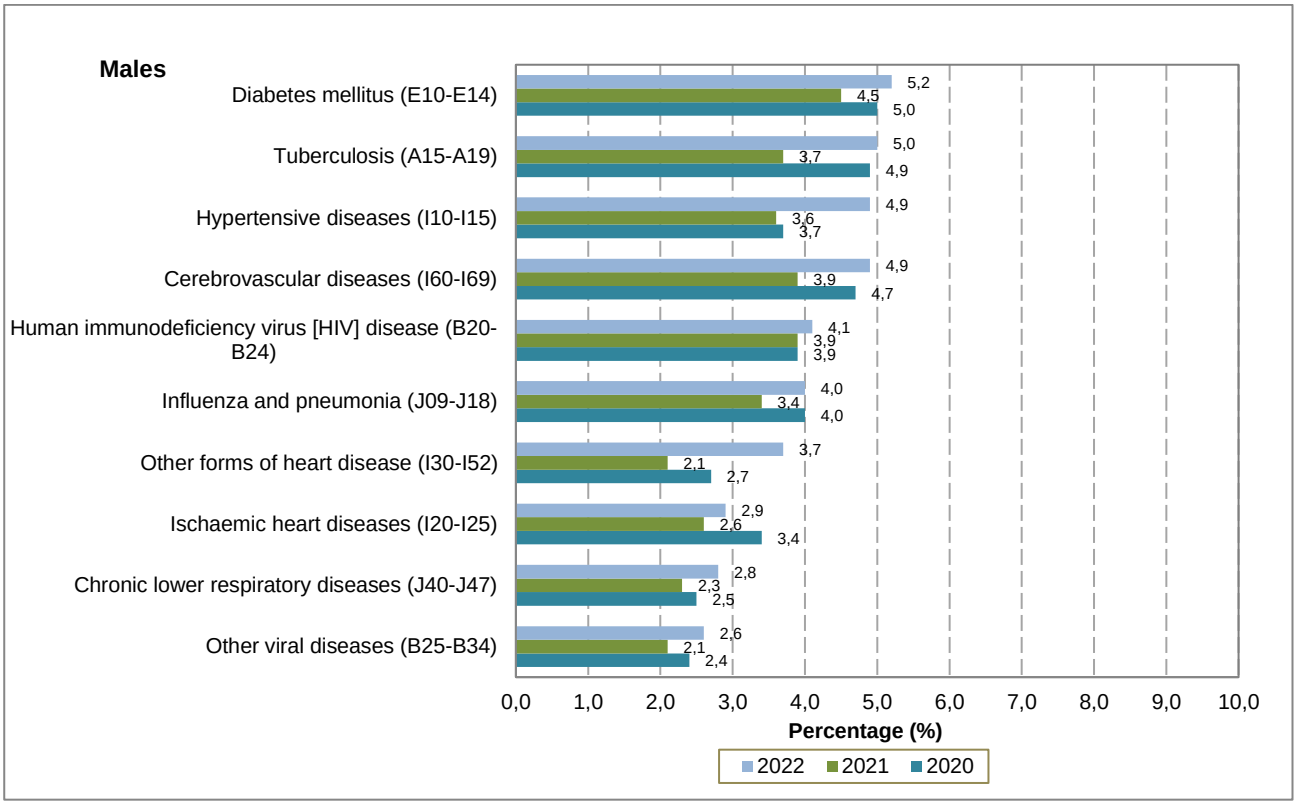
	Male			Female		
Causes of death (based on ICD-10)	**Rank**	**Number**	**%**	**Rank**	**Number**	**%**
Diabetes mellitus (E10-E14)	1	13 429	5,2	1	19 433	8,6
Tuberculosis (A15-A19)**	2	13 028	5,0	7	7 334	3,2
Cerebrovascular diseases (I60-I69)	3	12 746	4,9	3	16 071	7,1
Hypertensive diseases (I10-I15)	3	12 652	4,9	2	18 577	8,2
Human immunodeficiency virus [HIV] disease (B20-B24)	5	10 599	4,1	5	10 182	4,5
Influenza and pneumonia (J09-J18)	6	10 303	4,0	6	9 392	4,2
Other forms of heart disease (I30-I52)	7	9 576	3,7	4	10 797	4,8
Ischaemic heart diseases (I20-I25)	8	7 488	2,9	9	5 648	2,5
Chronic lower respiratory diseases (J40-J47)	9	7 206	2,8	…	…	…
Other viral diseases (B25-B34)	10	6 810	2,6	8	6 328	2,8
Malignant neoplasms of female genital organs (C51-C58)	…	…	…	10	5 470	2,4
Other Natural		104 920	40,4		103 290	45,7
Non-natural		50 902	19,6		13 572	6,0
Total		**259 659**	**100,0**		**226 094**	**100,0**

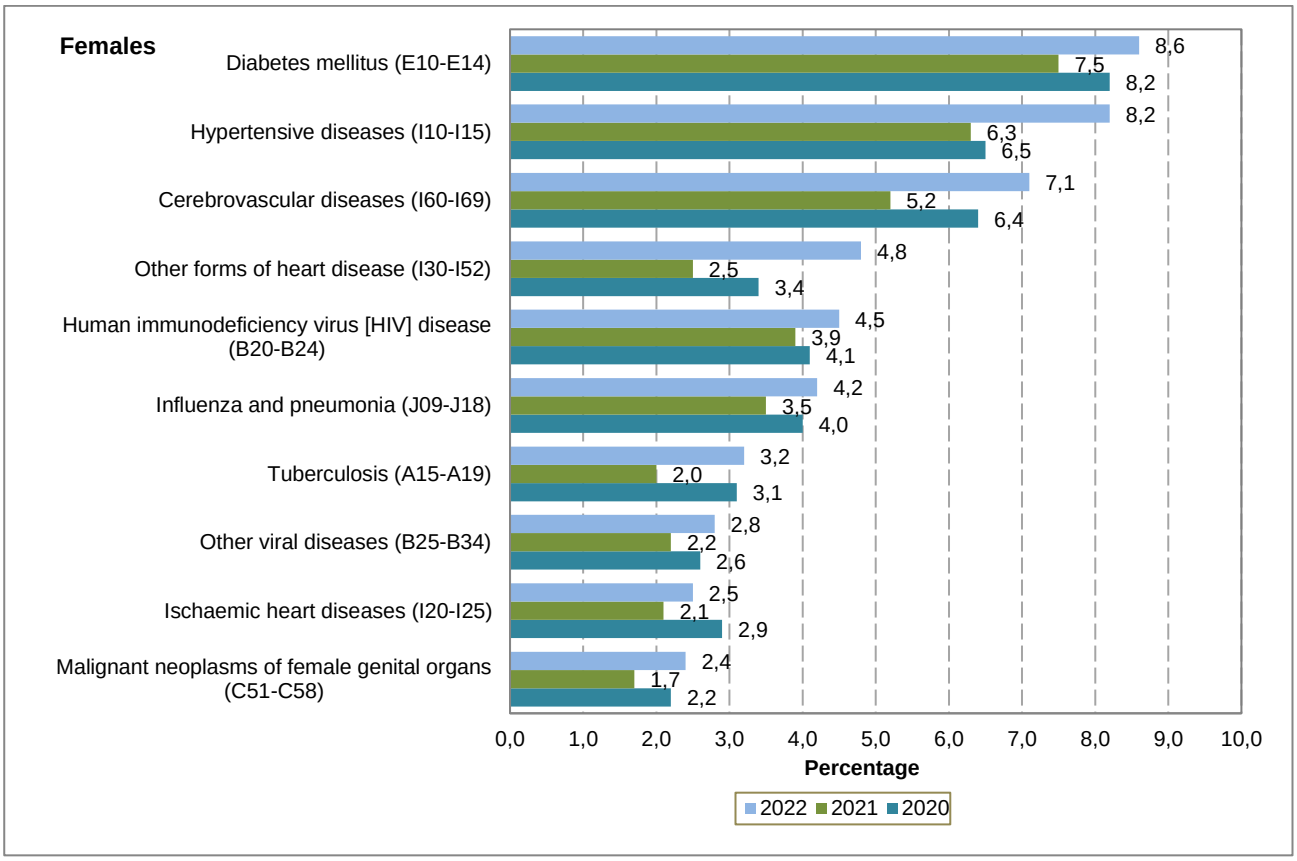
* Excluding deaths with unspecified sex **Including deaths due to *MDR-TB* and *XDR-TB* …Category not in top ten

Figure 4.6 shows the percentage distribution of deaths associated with the ten leading causes of death classified by sex for the period 2020–2022. The most notable change is the absence of *COVID-19* deaths on the top ten leading causes of death for both sexes in 2022. For males, *other forms of heart diseases* were on the top ten in 2020 but not in 2021 were in the top ten in 2022. Similarly, *other viral diseases* which were not in the top ten in 2020 were in the top for both 2021 and 2022. *Diabetes mellitus* which was the leading cause of death for males has always been in the top ten leading underlying causes of death in the three-year period. In terms of patterns, there was no apparent in the distribution of underlying causes for the period 2020–2022 for males.

Among females, *diabetes mellitus* was amongst the ten leading causes of death over the three years and ranked the leading cause of death in 2022 responsible for 8,6% female deaths. It ranked second in 2021 responsible for 7,5% deaths while it was the leading cause in 2020 responsible for 8,2% female deaths. *Malignant neoplasm of female genital organs* was not amongst the ten leading underlying causes of death for both 2020 and 2021 and was the tenth leading underlying cause in 2022. Just as with male deaths, there was no apparent pattern in the distribution of underlying causes for the period 2020–2022 for females.

Figure 4.6 - Distribution of deaths for the leading causes of death by year of death and sex, 2020–2022*





*(1) Data for 2020–2021 have been updated with late registrations/delayed death notification forms processed in 2025/2026

(2) Including deaths due to *MDR-TB* and *XDR-TB*

4.6.3 Leading underlying natural causes of death by age

Analysis of the broad age groups (0, 1–14, 15–44, 45–64, and 65 years and older) is recommended by the World Health Organization (WHO) for classifying ages for international comparison (WHO, 2009). Table 4.7 shows the ten leading underlying natural causes of death for these age groups. Further decomposition of age and leading underlying natural causes of death are provided in Tables 4.8 (under 5 years) and 4.9 (15–24 years).

Influenza and pneumonia was the only underlying cause of death common for all age groups, although the ranking varied greatly by age. Deaths due to *influenza and pneumonia* were the third leading underlying cause of death for age 0 (6,5%), first leading underlying cause for age group 1–14 (6,8%), fourth for age group 15–44 (3,2%) and eighth for age group 45–64 (3,7%) and fifth for age group 65 years and older (4,4%). *Diabetes mellitus* and *other forms of heart diseases* were also part of the ten underlying causes of death in all age groups, except for infants. *Ischaemic heart disease* and *chronic lower respiratory diseases* were amongst the ten leading underlying causes of death only for those aged 45 years and older while *renal failure* and *malignant neoplasm of digestive organs* were on the top ten leading causes of death for only those aged 65 years and older.

The leading underlying cause of death for infant deaths (age 0) was *respiratory and cardiovascular disorders specific to the perinatal period,* responsible for 10,6% of deaths at this age. *Intestinal infectious diseases* was the second leading cause of death, accounting for 6,6% of deaths followed closely *by influenza and pneumonia* ranked third responsible for 6,5% deaths. *Intestinal infectious diseases* and *other bacterial diseases* were amongst the top ten leading underlying causes of death for only infants and age group 1–14 though they differ in proportions.

The leading underlying cause of death for age group 1–14 years was *influenza and pneumonia*, responsible for 6,8% of deaths in this age group, followed by *intestinal infectious diseases* with 5,1% of deaths. *Other forms of heart diseases* was the third leading cause of death (3,0%). *Cerebral palsy and other paralytic syndrome*s and *malnutrition* were amongst the leading underlying cause of death only in age group 1–14 responsible for 2,6% and 2,5% respectively in this age group.

The leading underlying cause of death for the age group 15–44 years was *human immune deficiency virus [HIV] diseases*, constituting 8,9% of deaths, followed by *tuberculosis*, accounting for 7,4% of deaths. *Other viral disease*s which ranked third accounting for 5,1% of deaths was the top ten leading underlying causes of death only in age group 15–44 and 45–64.

Seven of the ten leading causes of death for those 45–64 and 65 years and older were the same, with differences in rank and the contribution of each cause to the overall number of deaths in each age group. While *diabetes mellitus* was the leading cause of death among those aged 45–64, contributing 8,1% of deaths in this age group, it was the second leading cause of death among those aged 65 and older, accounting for 10,0% of deaths. Conversely, *hypertensive diseases* which was the leading cause of death for those aged 65 and older (10,9%), was the third leading underlying cause of death for those aged 45–64 (5,9%).

Three underlying causes of death in age group 65 years and older but were not in the age group 45–64 are *COVID-19*, *Renal failure* and *Malignant neoplasms of digestive organs*. *Human immunodeficiency virus [HIV] disease*, *tuberculosis* and *other viral diseases* were among the ten leading causes of death for the age group 45–64 age group, which were not listed for the age group 65 years and older. It is worth noting that the ten leading causes of death in these age groups are dominated by non-communicable diseases and the only exceptions were *tuberculosis*, *human immunodeficiency virus, other viral diseases* and *influenza and pneumonia*, which are communicable diseases.

Table 4.7 - The ten leading underlying natural causes of death for broad age groups, 2022

	0			1–14			15–44			45–64			65+		
Causes of death (based on ICD-10)	**Rank**	**Number**	**%**	**Rank**	**Number**	**%**	**Rank**	**Number**	**%**	**Rank**	**Number**	**%**	**Rank**	**Number**	**%**
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	1	2398	10,6	…	…	…	…	…	…	…	…	…	…	…	…
Intestinal infectious diseases (A00-A09)	2	1489	6,6	2	668	5,1	…	…	…	…	…	…	…	…	…
Influenza and pneumonia (J09-J18)	3	1468	6,5	1	884	6,8	4	3 985	3,2	8	4 908	3,7	5	8 460	4,4
Infections specific to the perinatal period (P35-P39)	4	1184	5,2	…	…	…	…	…	…	…	…	…	…	…	…
Disorders related to length of gestation and fetal growth (P05-P08)	5	1012	4,5	…	…	…	…	…	…	…	…	…	…	…	…
Other disorders originating in the perinatal period (P90-P96)	6	702	3,1	…	…	…	…	…	…	…	…	…	…	…	…
Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	7	655	2,9	…	…	…	…	…	…	…	…	…	…	…	…
Other diseases of the respiratory system (J95-J99)	8	639	2,8	…	…	…	…	…	…	…	…	…	…	…	…
Congenital malformations of the circulatory system (Q20-Q28)	9	592	2,6	…	…	…	…	…	…	…	…	…	…	…	…
Other bacterial diseases (A30-A49)	10	514	2,3	10	218	1,7	…	…	…	…	…	…	…	…	…
Other forms of heart disease (I30-I52)	…	…	…	3	394	3,0	5	2 950	2,4	6	5 316	4,0	4	11 294	5,9
Cerebral palsy and other paralytic syndromes (G80-G83)	…	…	…	4	337	2,6	…	…	…	…	…	…	…	…	…
Malnutrition (E40-E46)	…	…	…	5	331	2,5	…	…	…	…	…	…	…	…	…
Tuberculosis (A15-A19)*	…	…	…	6	282	2,2	2	9 227	7,4	5	7 373	5,5	…	…	…
Episodic and paroxysmal disorders (G40-G47)	…	…	…	7	247	1,9	10	1 349	1,1	…	…	…	…	…	…
Human immunodeficiency virus [HIV] disease (B20-B24)	…	…	…	8	233	1,8	1	11 154	8,9	4	7 836	5,8	…	…	…
Diabetes mellitus (E10-E14)	…	…	…	9	229	1,7	7	2 458	2,0	1	10 821	8,1	2	19 160	10,0
Other viral diseases (B25-B34)	…	…	…	…	…	…	3	6 434	5,1	7	5 147	3,8	…	…	…
Cerebrovascular diseases (I60-I69)	…	…	…	…	…	…	6	2 729	2,2	2	8 129	6,0	3	17 833	9,3
Hypertensive diseases (I10-I15)	…	…	…	…	…	…	8	2 118	1,7	3	7 888	5,9	1	20 787	10,9
COVID-19 (U071-U072)	…	…	…	…	…	…	9	1 823	1,5	…	…	…	10	4 192	2,2
Ischaemic heart diseases (I20-I25)	…	…	…	…	…	…	…	…	…	9	4 172	3,1	6	7 787	4,1
Chronic lower respiratory diseases (J40-J47)	…	…	…	…	…	…	…	…	…	10	3 940	2,9	7	6 698	3,5
Malignant neoplasms of digestive organs (C15-C26)	…	…	…	…	…	…	…	…	…	…	…	…	8	4 989	2,6
Renal failure (N17-N19)	…	…	…	…	…	…	…	…	…	…	…	…	9	4 369	2,3
Other Natural		11 125	49,2		5 523	42,2		38 097	30,5		57 029	42,4		79 890	41,8
Non-natural		851	3,8		3 746	28,6		42 708	34,2		11 813	8,8		5 457	2,9
Total		**22 629**	**100**		**13 092**	**100**		**125 032**	**100**		**134 372**	**100**		**190 916**	**100**

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

4.6.4 Leading underlying natural causes of death for children aged below five years by age groups

Ten leading causes of death for neonatal deaths (infants that died within the first 28 days of life), post-neonatal deaths (29 days to 11 months), all infant deaths (aged less than one year), and deaths among those aged 1–4 years are shown in Table 4.8. Infant deaths are composed of both neonatal and post-neonatal deaths.

Table 4.8 shows that *congenital malformations of the circulatory system* ranked ninth and was the only underlying cause of death common for all age groups, except age group 1–4 years. *Diabetes mellitus* and *tuberculosis* were only in the leading underlying causes of death for age group 1–4 years.

Neonatal deaths mainly resulted from *respiratory and cardiovascular disorders specific to the perinatal period*, which was the leading underlying cause of death among neonates, and responsible for 23,7% deaths. The second leading underlying cause of death for neonatal deaths was *infections specific to perinatal period* accounting for 11,8% of all neonatal deaths, followed by *disorders related to length of gestation and fetal growth,* responsible for 9,0% of deaths in this age group. The ten leading underlying causes of death during the neonatal period constituted 72,9% of deaths in this age group.

The leading cause of death for those who died during the post-neonatal period was *influenza and pneumonia* (11,0%), followed closely by *intestinal infectious diseases* (10,9%). These two causes were the highest contributors of post-neonatal deaths, accounting for 21,9% of deaths occurring during this period. *Other diseases of the respiratory system (3,8%)* was the third leading cause of death, and *malnutrition* was fourth responsible for 3,6% deaths in this age group.

Overall for infants (less than one year), the leading underlying cause of deaths was *respiratory and cardiovascular disorders specific to the perinatal period* (10,6%). *Intestinal infectious diseases* (6,6%) was ranked second. *Influenza and pneumonia* (6,5%), *infections specific to perinatal period* (5,2%) and *disorders related to length of gestation and fetal growth* (4,5%) were ranked third, fourth and fifth, respectively.

The three leading causes of death for those aged 1–4 years were *influenza and pneumonia* (8,5%), *intestinal infectious diseases* (7,4%) and *malnutrition* (4,5%) ranked first, second and third respectively. *Other forms of heart diseases* (3,3%) was the fourth leading underlying cause of death while *metabolic disorders* (2,2%) was the fifth leading underlying cause of death.

For under five ages, *respiratory and cardiovascular disorders specific to the perinatal period* was the leading underlying cause of death responsible for 8,1% of deaths, followed by *influenza and pneumonia* (7,0%) while *intestinal infectious diseases* accounted for 6,8% of deaths in this age group. *Infections specific to the perinatal period* was ranked the fourth leading underlying cause of death amongst the under-5 mortality, responsible for 4,0% of deaths.

Table 4.8 - The ten underlying natural causes of death for infants and children aged below five years, 2022

Causes of death (based on ICD-10)	Neonatal (0-28 days)			Post-neonatal (29 days to 11 months)			Less than 1 year			1-4 years			Under 5 years		
	Rank	Number	%	Rank	Number	%	Rank	Number	%	Rank	Number	%	Rank	Number	%
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	1	2 309	23,7	…	…	…	1	2 398	10,6	…	…	…	1	2 399	8,1
Infections specific to the perinatal period (P35-P39)	2	1 148	11,8	…	…	…	4	1 184	5,2	…	…	…	4	1 184	4,0
Disorders related to length of gestation and fetal growth (P05-P08)	3	875	9,0	…	…	…	5	1 012	4,5	…	…	…	5	1 013	3,4
Other disorders originating in the perinatal period (P90-P96)	4	694	7,1	…	…	…	6	702	3,1	…	…	…	8	702	2,4
Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	5	643	6,6	…	…	…	7	655	2,9	…	…	…	10	656	2,2
Haemorrhagic and haematological disorders of fetus and newborn (P50-P61)	6	325	3,3	…	…	…	…	…	…	…	…	…	…	…	…
Other respiratory diseases principally affecting the interstitium (J80-J84)	7	302	3,1	…	…	…	…	…	…	…	…	…	…	…	…
Digestive system disorders of fetus and newborn (P75-P78)	8	294	3,0	…	…	…	…	…	…	…	…	…	…	…	…
Congenital malformations of the circulatory system (Q20-Q28)	9	264	2,7	9	328	2,5	9	592	2,6	…	…	…	9	694	2,3
Other congenital malformations (Q80-Q89)	10	256	2,6	…	…	…	…	…	…	…	…	…	…	…	…
Influenza and pneumonia (J09-J18)	…	…	…	1	1 424	11,0	3	1 468	6,5	1	597	8,5	2	2 065	7,0
Intestinal infectious diseases (A00-A09)	…	…	…	2	1 406	10,9	2	1 489	6,6	2	519	7,4	3	2 008	6,8
Other diseases of the respiratory system (J95-J99)	…	…	…	3	487	3,8	8	639	2,8	9	119	1,7	7	758	2,6
Malnutrition (E40-E46)	…	…	…	4	468	3,6	…	…	…	3	315	4,5	6	788	2,7
Other bacterial diseases (A30-A49)	…	…	…	5	460	3,6	10	514	2,3	8	125	1,8	…	…	…
Metabolic disorders (E70-E90)	…	…	…	6	390	3	…	…	…	5	157	2,2	…	…	…
Other forms of heart disease (I30-I52)	…	…	…	7	377	2,9	…	…	…	4	230	3,3	…	…	…
Other acute lower respiratory infections (J20-J22)	…	…	…	8	364	2,8	…	…	…	…	…	…	…	…	…
Hypertensive diseases (I10-I15)	…	…	…	10	214	1,7	…	…	…	10	108	1,5	…	…	…
Diabetes mellitus (E10-E14)	…	…	…	…	…	…	…	…	…	6	128	1,8	…	…	…
Tuberculosis (A15-A19)	…	…	…	…	…	…	…	…	…	7	127	1,8	…	…	…
Other Natural		2 537	26,1		6 213	48,1		11 125	49,2		2 986	42,6		14 922	50,3
Non-natural		76	0,8		775	6,0		851	3,8		1 598	22,8		2 449	8,3
All causes		**9 723**	**100**		**12 906**	**100**		**22 629**	**100**		**7 009**	**100**		**29 638**	**100**

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

4.6.5 Leading underlying natural causes of death for the population aged 15–24 years

According to the WHO recommendations, the 15–24 age group must also be included in the analysis for international comparison (WHO, 1992). This analysis is provided in Table 4.9. In 2022, *tuberculosis* was the leading cause of death for those aged 15–24, accounting for 5,3% of deaths, followed by *human immunodeficiency virus [HIV] disease* (4,6%) and *Influenza and pneumonia* (3,1%). *Other viral diseases (2,8%), other forms of heart disease (2,0%)* and *episodic and paroxysmal disorders* (1,5%) were the fourth, fifth and sixth leading causes of death, respectively. The ten leading causes of death in this age group contributed just over a quarter (24,0%) of deaths in this age group.

Table 4.9 - The ten leading underlying causes of death for the population aged 15–24 years, 2022

	15–24		
Causes of death (based on ICD-10)	**Rank**	**Number**	**Percentage (%)**
Tuberculosis (A15-A19)*	1	1 100	5,3
Human immunodeficiency virus [HIV] disease (B20-B24)	2	958	4,6
Influenza and pneumonia (J09-J18)	3	641	3,1
Other viral diseases (B25-B34)	4	576	2,8
Other forms of heart disease (I30-I52)	5	423	2,0
Episodic and paroxysmal disorders (G40-G47)	6	304	1,5
Cerebrovascular diseases (I60-I69)	7	290	1,4
Diabetes mellitus (E10-E14)	8	264	1,3
Inflammatory diseases of the central nervous system (G00-G09)	9	211	1,0
COVID-19 (U071-U072)	10	203	1,0
Other Natural		5 495	26,4
Non-natural		10 341	49,7
All Causes		**20 806**	**100,0**

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

4.6.6 Leading underlying natural causes of death by province of death occurrence

Table 4.10 shows the ten leading underlying causes of death by province of death occurrence. Deaths that occurred outside South Africa and those where province of death occurrence was not specified in the death notification form, are not included in the table.

Diabetes mellitus was the leading underlying cause of death in four of the nine provinces in South Africa and was the second leading underlying cause of death in the four other provinces. In Northern Cape *hypertensive diseases* (8,2%) and *HIV diseases* (7,1%) ranked first and second leading underlying causes of death respectively. *Diabetes mellitus* was the leading cause of death in Western Cape (7,5%), KwaZulu-Natal (7,5%), Eastern Cape (7,0) and Gauteng (5,3%). It was the second leading underlying cause of death in Limpopo (8,2%), Mpumalanga (6,7%), Free State (6,4%) and North West (6,3%). It was the third leading underlying cause in Northern Cape (6,1%).

Hypertensive diseases was the leading underlying cause of death in North West (9,1%), Limpopo (8,3%), Northern Cape (8,2%), Mpumalanga (7,4%) and Free State (7,3%). Six underlying causes of death were common in all nine provinces, namely *diabetes mellitus, cerebrovascular diseases, HIV disease, hypertensive diseases, other forms of heart diseases* and *tuberculosis*.

However, the ranks of these causes of death differed between provinces. For example, *cerebrovascular diseases* ranked second in Kwa-Zulu Natal and Western Cape, third in Free State, North West, Mpumalanga and Limpopo and was fourth in Eastern Cape, Northern Cape, and Gauteng provinces. COVID-*19* deaths were only observed in KwaZulu-Natal and North West. It was ranked tenth in both provinces responsible for 2,0% deaths in KwaZulu-Natal and 1,7% deaths in North West.

Western Cape was the only province where *malignant neoplasms of respiratory and intrathoracic organs* was in the top ten leading underlying causes of death. It ranked ninth responsible for 3,6% deaths. This was the case with *renal failure*, it was amongst the top ten leading underlying causes of death only in Limpopo, ranked tenth and was responsible for 1,9% deaths in the province. *Intestinal infectious diseases* were in the top ten leading underlying causes of death only in Mpumalanga and Limpopo. They ranked ninth in Limpopo accounting for 2,3% deaths while they ranked tenth in Mpumalanga accounting for 2,4% deaths.

The underlying causes of death for all the provinces were a combination of communicable and non-communicable diseases. Western Cape had the highest number of non-communicable diseases with eight out of the ten being non-communicable diseases, followed by Eastern Cape which had seven non communicable diseases in the top ten. Northern Cape, Free State and Gauteng all had six non-communicable diseases in their top ten leading underlying causes. KwaZulu-Natal, North West, Mpumalanga and Limpopo had 50% of both in the top ten leading underlying causes.

Table 4.10 - The ten leading underlying natural causes of death in each province of death occurrence, 2022

Causes of death (based on ICD-10)	Western Cape			Eastern Cape			Northern Cape			Free State			KwaZulu-Natal			North West			Gauteng			Mpumalanga			Limpopo		
	Rank	No.	%	Rank	No.	%	Rank	No.	%	Rank	No.	%	Rank	No.	%	Rank	No.	%	Rank	No.	%	Rank	No.	%	Rank	No.	%
Diabetes mellitus (E10-E14)	1	4 154	7,5	1	5 386	7,0	3	920	6,1	2	1 958	6,4	1	6 831	7,5	2	2 066	6,3	1	5 653	5,3	2	2 148	6,7	2	3711,0	8,2
Cerebrovascular diseases (I60-I69)	2	3 743	6,7	4	4 578	5,9	4	776	5,1	3	1 769	5,8	2	5 694	6,3	3	1 891	5,8	4	5 249	4,9	3	1 712	5,4	3	3 369	7,4
Human immunodeficiency virus [HIV] disease (B20-B24)	3	3 313	5,9	5	4 547	5,9	2	1 074	7,1	4	1 727	5,7	6	3 309	3,7	7	1 187	3,6	9	2 429	2,3	6	1 326	4,2	5	1867,0	4,1
Hypertensive diseases (I10-I15)	4	3 277	5,9	2	5 280	6,8	1	1 236	8,2	1	2 230	7,3	3	4 711	5,2	1	2 960	9,1	2	5 357	5,0	1	2 357	7,4	1	3 789	8,3
Ischaemic heart diseases (I20-I25)	5	2 952	5,3	…	…	…	10	407	2,7	9	701	2,3	9	2 521	2,8	…	…	…	8	2 887	2,7	5	1 400	4,4	…	…	…
Tuberculosis (A15-A19)	6	2 564	4,6	3	4 949	6,4	5	724	4,8	7	1 041	3,4	4	3 720	4,1	6	1 439	4,4	6	3 054	2,9	9	1 132	3,6	7	1 736	3,8
Malignant neoplasms of digestive organs (C15-C26)	7	2 311	4,1	10	1 474	1,9	…	…	…	…	…	…	…	…	…	…	…	…	10	2 395	2,3	…	…	…	…	…	…
Chronic lower respiratory diseases (J40-J47)	8	2 250	4,0	8	2 689	3,5	9	480	3,2	10	700	2,3	…	…	…	9	643	2,0	…	…	…	…	…	…	…	…	…
Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	9	1 996	3,6	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Other forms of heart disease (I30-I52)	10	1 594	2,9	6	2 924	3,8	8	498	3,3	6	1 431	4,7	5	3 659	4,0	4	1 805	5,5	3	5 306	5,0	7	1 274	4,0	6	1847,0	4,1
Influenza and pneumonia (J09-J18)	…	…	…	7	2 708	3,5	6	589	3,9	5	1 526	5,0	7	3 063	3,4	5	1 474	4,5	5	4 730	4,4	4	1 532	4,8	4	2 834	6,2
Other viral diseases (B25-B34)	…	…	…	9	1 890	2,4	7	499	3,3	8	995	3,3	8	2 546	2,8	8	1 156	3,6	7	2 947	2,8	8	1 206	3,8	8	1 362	3,0
COVID-19 (U071-U072)	…	…	…	…	…	…	…	…	…	…	…	…	10	1 825	2,0	10	567	1,7	…	…	…	…	…	…	…	…	…
Intestinal infectious diseases (A00-A09)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	10	774	2,4	9	1 026	2,3
Renal failure (N17-N19)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	10	860	1,9
Other Natural		20 093	36,0		30 105	39,0		6 371	42,1		13 086	42,9		38 426	42,4		13 832	42,5		50 953	47,9		12 870	40,4		18 810	41,4
Non-natural		7 495	13,4		10 630	13,8		1 547	10,2		3 335	10,9		14 247	15,7		3 533	10,9		15 333	14,4		4 119	12,9		4 247	9,3
All causes		**55 742**	**100,0**		**77 160**	**100,0**		**15 121**	**100,0**		**30 499**	**100,0**		**90 552**	**100,0**		**32 553**	**100,0**		**106 293**	**100,0**		**31 850**	**100,0**		**45 458**	**100,0**

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

4.7 Non-natural causes of death

The focus of this subsection is on non-natural causes of death. Information on non-natural causes of death is important in South Africa, considering the high levels of violence experienced in the country. This section profiles non-natural causes of death based on all external causes of morbidity and mortality (V01-Y98) derived from the causes of death specified on the death notification forms.

On the death notification form, where insufficient details are provided to code the non-natural cause of death accurately, Stats SA codes such deaths *as other external causes of accidental injury or event of undetermined intent* in line with the recommendations of WHO in classifying unknown non-natural causes of death (WHO, 2009b). This therefore contributes to the high percentage of unspecified causes of non-natural deaths. Results on non-natural causes of death should therefore be interpreted by taking into account the fact that nearly three-quarters of non-natural causes of death were not adequately classified. The unexpected lower number of deaths due to *transport accidents, assault, complications of medical and surgical care, intentional self-harm or sequelae of external causes of morbidity and mortality* may have been partly the result of causes classified as *other external causes of accidental injury or event of undetermined intent.*

Just above thirteen percent (13,3%) of all deaths registered in 2022 (refer to Table 4.4) were due *to external causes of morbidity and mortality.* Table 4.11 below, shows the percentage distribution of broad groups of non-natural causes and the associated number of deaths. It is observed that the majority of non-natural causes of death resulted from *other external causes of accidental injury* (77,2%). In terms of all deaths, *other external causes of accidental injury* accounted for 10,3%. This group includes *discharge from other and unspecified firearms* as well as *other accidental hanging and strangulation*.

Assault was the second most common non-natural cause of death and accounted for 9,0% of non-natural causes and 1,2% of all reported deaths. The third most common cause of non-natural deaths was *transport accidents* at 7,1% and constituting 0,9% of all deaths, followed by *event of undetermined intent* (3,1%) and *complications of medical and surgical care* (2,9%). Deaths due to *intentional self-harm* and *sequelae of external causes of morbidity* and mortality contributed less than 1% of non-natural deaths combined.

Table 4.11 - Distribution of non-natural causes of death by broad groups, 2022

Causes of death (based on ICD-10, 2016)	Number	Percentage (%) of non-natural causes	Percentage of all causes (N = 486 041)
Other external causes of accidental injury (W00-X59)	49 845	77,2	10,3
Assault (X85-Y09)	5 816	9,0	1,2
Transport accidents (V01-V99)	4 590	7,1	0,9
Event of undetermined intent (Y10-Y34)	1 986	3,1	0,4
Complications of medical and surgical care (Y40-Y84)	1 886	2,9	0,4
Intentional self-harm (X60-X84)	405	0,6	0,1
Sequelae of external causes of morbidity and mortality (Y85-Y89)	47	0,1	0,0
All non-natural	**64 575**	**100,0**	**13,3**

A breakdown of the 49 845 deaths due to *other external causes of accidental injury* identified in Table 4.11 is provided in Table 4.12 to provide information that can be used to better understand deaths due to this cause, which comprised nearly two-thirds of all non-natural deaths.

Table 4.12 below, shows that almost half of these deaths (47,3%) were due to *accidental exposure to other and unspecified factors.* This includes *exposure to unspecified factor causing fracture and exposure to other unspecified factors.* Majority of deaths in this group were from *exposure to an unspecified factor*. This was followed by deaths due to *exposure to inanimate mechanical forces* which were the second leading cause, responsible for 24,1% deaths in this group. This group includes *discharge from other and unspecified firearms* as well as *contact with knife or sword*. The third most common cause was *other accidental threats to breathing* (11,6%), which includes *accidental hanging and strangulation*. The fourth most commonly reported deaths due to other external causes of *accidental injury was exposure to smoke, fire and flames* (5,6%), followed by *accidental poisoning by and exposure to noxious substance* (5,1%).

Table 4.12 - Distribution of deaths due to other external causes of accidental injury, 2022

Cause of death (based on ICD-10)	Number	Percentage (%)
Accidental exposure to other and unspecified factors (X58-X59)	23 568	47,3
Exposure to inanimate mechanical forces (W20-W49)	12 018	24,1
Other accidental threats to breathing (W75-W84)	5 769	11,6
Exposure to smoke, fire and flames (X00 - X09)	2 786	5,6
Accidental poisoning by and exposure to noxious substance (X40-X49)	2 547	5,1
Accidental drowning and submersion(W65-W74)	1 971	4,0
Exposure to electric current, radiation and extreme ambient air temperature and pressure (W85-W99)	590	1,2
Exposure to forces of nature(X30 - X39)	312	0,6
Falls (W00-W19)	156	0,3
Exposure to animate mechanical forces (W50-W64)	49	0,1
Contact with venomous animals and plants(X20-X29)	44	0,1
Contact with heat and hot substances(X10-X19)	28	0,1
Overexertion, travel and privation(X50-X59)	7	0,0
Total	**49 845**	**100,0**

4.7.1 Non-natural causes of death by age and sex

This subsection looks at the distribution of non-natural causes of death by sex and broad age groups (0,1–14, 15–29, 30–44, 45–64 and 65+). For international comparison, age group 15–44 has been divided into two age groups (15–29 and 30–44) as recommended by the WHO (1992).

Table 4.13 shows the distribution of non-natural causes of death by sex and broad age groups (0, 1–14, 15–29, 30–44, 45–64 and 65 and older) for deaths that occurred in 2022. The absolute numbers and percentages for both sexes may not be similar to the results presented in Table 4.11, due to the exclusion of deaths with missing sex and age.

The first section of Table 4.13 showing both sexes indicates that for both sexes, the age group mostly affected by non-natural causes of death was age group 15–29, where 48,1% of all deaths in this age group were due to non-natural causes. The age group least affected by non-natural causes for both sexes was 65 years and older, where just 2,9% of deaths in this age group were due to non-natural causes. *Assault* was more common among those aged 15–29, accounting for 12,8% of non-natural deaths in this age group. *Complications of medical and surgical care* were highest amongst the elderly (14,5%).

Differentials by sex show higher proportions of non-natural deaths for males at 19,6% compared to 6,0% of female non-natural deaths. Moreover, for each of the age groups, males had higher proportions of deaths due to non-natural causes compared to females, with the gap much wider at age group 15–29 where as much as 59,9% of male deaths resulted from non-natural cause compared to 24,3% of females in the same age group. This is the only age group where the proportion of non-natural deaths is more than that of natural deaths for males.

Comparison between male and female deaths due to non-natural causes show that the proportion of deaths due to *assault* were high for males (10,1%) compared to females (4,7%). For both sexes, non-natural deaths due to *complications of medical and surgical care* were higher at infancy (those aged less than a year) as well as among the elderly (those aged 65 years and older). However, this cause of death was high amongst females compared to males, with the proportion of female deaths due to *complications of medical and surgical care* at 6,8% compared to 1,9% for males.

The proportion of non-natural deaths due to *transport accidents* were higher amongst females (8,6%) compared to males (6,7%). For each of the sexes, *intentional self-harm* and *sequelae of external causes of morbidity and mortality* were uncommon, each comprising less than 1% of deaths for each sex.
For all age groups, *other external cause of accidental injury* was the highest non-natural cause of death, followed by *event of undetermined intent* in these age groups. However, these broad groups do not give valuable information as they cover non-natural deaths not adequately classified.

Table 4.13 - Underlying non-natural causes of death by age group and sex, 2022

	Number							Percentage (%)						
Causes of death based on ICD-10	**0**	**1−14**	**15−29**	**30−44**	**45−64**	**65+**	**All ages**	**0**	**1−14**	**15−29**	**30−44**	**45−64**	**65+**	**All ages**
All sexes														
Transport accidents (V01-V99)	21	320	1 197	1 724	1 046	282	4 590	2,5	8,5	6,1	7,5	8,9	5,2	7,1
Other external causes of accidental injury (W00-X59)	760	3 145	14 935	18 013	8 939	4 053	49 845	89,3	84,0	76,1	78,0	75,7	74,3	77,2
Intentional self-harm (X60-X84)	0	11	163	151	66	14	405	0,0	0,3	0,8	0,7	0,6	0,3	0,6
Assault (X85-Y09)	6	68	2 513	2 337	731	161	5 816	0,7	1,8	12,8	10,1	6,2	3,0	9,0
Event of undetermined intent (Y10-Y34)	18	130	672	626	393	147	1 986	2,1	3,5	3,4	2,7	3,3	2,7	3,1
Complications of medical and surgical care (Y40-Y84)	45	71	128	229	624	789	1 886	5,3	1,9	0,7	1,0	5,3	14,5	2,9
Sequelae of external causes of morbidity and mortality (Y85-Y89)	1	1	12	8	14	11	47	0,1	0,0	0,1	0,0	0,1	0,2	0,1
Sub total	**851**	**3 746**	**19 620**	**23 088**	**11 813**	**5 457**	**64 575**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**
Non-natural causes	851	3 746	19 620	23 088	11 813	5 457	64 575	3,8	28,6	48,1	27,4	8,8	2,9	13,3
Natural causes	21 778	9 346	21 170	61 154	122 559	185 459	421 466	96,2	71,4	51,9	72,6	91,2	97,1	86,7
All causes	**22 629**	**13 092**	**40 790**	**84 242**	**134 372**	**190 916**	**486 041**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**
Males														
Transport accidents (V01-V99)	10	168	896	1 392	773	175	3 414	2,1	7,5	5,5	7,1	8,4	5,9	6,7
Other external causes of accidental injury (W00-X59)	430	1 923	12 505	15 505	7 122	2 230	39 715	90,1	85,8	76,7	78,6	77,5	74,8	78,0
Intentional self-harm (X60-X84)	0	5	108	112	47	6	278	0,0	0,2	0,7	0,6	0,5	0,2	0,5
Assault (X85-Y09)	5	44	2 287	2 112	615	100	5 163	1,0	2,0	14,0	10,7	6,7	3,4	10,1
Event of undetermined intent (Y10-Y34)	13	59	415	477	279	87	1 330	2,7	2,6	2,5	2,4	3,0	2,9	2,6
Complications of medical and surgical care (Y40-Y84)	18	42	75	113	340	379	967	3,8	1,9	0,5	0,6	3,7	12,7	1,9
Sequelae of external causes of morbidity and mortality (Y85-Y89)	1	1	11	8	9	5	35	0,2	0,0	0,1	0,0	0,1	0,2	0,1
Sub total	**477**	**2 242**	**16 297**	**19 719**	**9 185**	**2 982**	**50 902**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**
Non-natural causes	477	2 242	16 297	19 719	9 185	2 982	50 902	4,0	31,4	59,9	37,2	11,8	3,6	19,6
Natural causes	11 558	4 892	10 910	33 344	68 803	79 250	208 757	96,0	68,6	40,1	62,8	88,2	96,4	80,4
All causes	**12 035**	**7 134**	**27 207**	**53 063**	**77 988**	**82 232**	**259 659**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**
Females														
Transport accidents (V01-V99)	11	151	300	331	272	106	1 171	3,0	10,1	9,1	9,9	10,4	4,3	8,6
Other external causes of accidental injury (W00-X59)	328	1 221	2 403	2 473	1 805	1 821	10 051	88,2	81,3	73,1	74,3	69,1	73,7	74,1
Intentional self-harm (X60-X84)	0	6	55	39	19	8	127	0,0	0,4	1,7	1,2	0,7	0,3	0,9
Assault (X85-Y09)	1	24	219	222	114	60	640	0,3	1,6	6,7	6,7	4,4	2,4	4,7
Event of undetermined intent (Y10-Y34)	5	71	255	148	114	60	653	1,3	4,7	7,8	4,4	4,4	2,4	4,8
Complications of medical and surgical care (Y40-Y84)	27	29	53	116	283	410	918	7,3	1,9	1,6	3,5	10,8	16,6	6,8
Sequelae of external causes of morbidity and mortality (Y85-Y89)	0	0	1	0	5	6	12	0,0	0,0	0,0	0,0	0,2	0,2	0,1
Sub total	**372**	**1 502**	**3 286**	**3 329**	**2 612**	**2 471**	**13 572**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**
Non-natural causes	372	1 502	3 286	3 329	2 612	2 471	13 572	3,5	25,3	24,3	10,7	4,6	2,3	6,0
Natural causes	10 128	4 444	10 233	27 775	53 739	106 203	212 522	96,5	74,7	75,7	89,3	95,4	97,7	94,0
All causes	**10 500**	**5 946**	**13 519**	**31 104**	**56 351**	**108 674**	**226 094**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**

Excluding cases with unspecified age and sex.

4.7.2 Non-natural causes of death by province of death occurrence

The distribution of the underlying non-natural causes of death by province of death occurrence for the year 2022 are depicted in Table 4.14. KwaZulu-Natal (15,7%), Gauteng (14,4%), Eastern Cape (13,8%) and Western Cape (13,4%) had the highest proportion of deaths due to non-natural causes. The lowest percentage of deaths due to non-natural causes were observed in Limpopo (9,3%). KwaZulu-Natal has consistently been the province with the highest proportion of non-natural deaths in the previous years.

The most common underlying cause of non-natural deaths in all provinces was *other external causes of accidental injury* where more than half of non-natural deaths resulted from this broad group in each province, except for Northern Cape (49,8%). The proportion of deaths due to *other external causes of accidental injury* was highest in Gauteng (82,4%), Mpumalanga (81,7%) and KwaZulu-Natal (79,7%) followed closely by Western Cape at 78,1%.

It is worth noting that for the first time in recent years, Western Cape was the second province with the highest number of deaths due to *assault* (12,0%). In 2022, Northern Cape had the highest proportion of deaths due to *assault* than any other province accounting for 15,4% of all non-natural deaths in the province. Eastern Cape was the third accounting for 11,7% non-natural deaths. Deaths due to *assault* were lowest in Gauteng (6,7%) and Mpumalanga (6,8%).

Deaths due to *transport accidents* were highest in Northern Cape responsible for 24,7% of non-natural deaths followed closely by Limpopo at 21,1% and North West at 15,6%. Traditionally, Limpopo and Northern Cape have always had the highest proportion of *transport accidents* in South Africa. Gauteng had the least proportion of deaths due to transport accidents at 1,9%. *Complications of medical and surgical care, intentional self-harm and sequelae of external causes of morbidity and mortality* were the least common, each contributing under 5,0% or less of non-natural deaths in each province.

Table 4.14 - Underlying non-natural causes of death by province, 2022

	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
Causes of death (based on ICD-10)	**No.**	**%**	**No.**	**%**	**No.**	**No.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Transport accidents (V01-V99)	299	4,0	735	6,9	382	24,7	250	7,5	935	6,6	552	15,6	295	1,9	239	5,8	894	21,1
Other external causes of accidental injury (W00-X59)	5 854	78,1	8 142	76,6	771	49,8	2 561	76,8	11 358	79,7	2 390	67,6	12 640	82,4	3 367	81,7	2 693	63,4
Intentional self-harm (X60-X84)	29	0,4	55	0,5	70	4,5	30	0,9	096	0,7	28	0,8	60	0,4	021	0,5	15	0,4
Assault (X85-Y09)	901	12,0	1 248	11,7	238	15,4	280	8,4	1 209	8,5	307	8,7	1 027	6,7	282	6,8	321	7,6
Event of undetermined intent (Y10-Y34)	147	2,0	241	2,3	46	3,0	134	4,0	323	2,3	153	4,3	675	4,4	136	3,3	127	3,0
Complications of medical and surgical care (Y40-Y84)	257	3,4	200	1,9	039	2,5	077	2,3	316	2,2	101	2,9	624	4,1	072	1,7	197	4,6
Sequelae of external causes of morbidity and mortality (Y85-Y89)	8	0,1	9	0,1	1	0,1	3	0,1	10	0,1	2	0,1	12	0,1	2	0,0	0	0,0
SubTotal	**7 495**	**100,0**	**10 630**	**100,0**	**1 547**	**100,0**	**3 335**	**100,0**	**14 247**	**100,0**	**3 533**	**100,0**	**15 333**	**100,0**	**4 119**	**100,0**	**4 247**	**100,0**
Non-Natural causes	7 495	13,4	10 630	13,8	1 547	10,2	3 335	10,9	14 247	15,7	3 533	10,9	15 333	14,4	4 119	12,9	4 247	9,3
Natural causes	48 247	86,6	66 530	86,2	13 574	89,8	27 164	89,1	76 305	84,3	29 020	89,1	90 960	85,6	27 731	87,1	41 211	90,7
Total	**55 742**	**100,0**	**77 160**	**100,0**	**15 121**	**100,0**	**30 499**	**100,0**	**90 552**	**100,0**	**32 553**	**100,0**	**106 293**	**100,0**	**31 850**	**100,0**	**45 458**	**100,0**

*Excluding deaths that occurred outside South Africa and deaths with unspecified province of death.

4.8 Comparison between immediate, contributing and underlying causes of death

This subsection provides information on the total number of causes of death reported on each form. As previously mentioned in section 4.2, the death notification form provides for the recording of multiple causes of death. Section G of both death notification forms (BI-1663 and DHA-1663) makes provision for several causes to be reported on the form (see Appendix B). A maximum number of six causes can be recorded on the death notification form. These causes are recorded as immediate, contributing or underlying causes of death (see definitions in Appendix A).

This subsection provides information on the total number of causes of death entered on each form when reporting the cause of death. It aggregates the total number of causes mentioned on each form, and these are then grouped by broad groups of underlying causes of death. The broad groups of underlying causes of death were then ranked, and the twenty leading causes based on all causes of death recorded on each form are shown in Table 4.15. The list includes both natural and non-natural causes, as well as deaths due to symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified to indicate the frequency of mentioning any cause on the death notification form.

Other forms of heart diseases were the most frequently recorded cause of death in 2022, mentioned in 81 239 (16,7%) death notification forms, followed by *hypertensive diseases* mentioned in 70 437 (14,5%) forms. For 51 344 (10,6%) death notification forms, there were *other external causes of accidental injury causes of mortality* followed closely by *ill-defined and unknown causes of mortality* mentioned 50 285 times in the form. *Influenza and pneumonia* was mentioned 44 396 times and was the fifth most commonly recorded cause of death.

Table 4.15 - Distribution of the 20 most commonly reported causes of death, 2022

Rank	Causes of death (based on ICD-10)	Number of deaths in which the causes was reported	Percentage (%) of all deaths
1	Other forms of heart disease (I30-I52)	81 239	16,7
2	Hypertensive diseases (I10-I15)	70 437	14,5
3	Other external causes of accidental injury (W00-X59)	51 344	10,6
4	Ill-defined and unknown causes of mortality (R95-R99)	50 285	10,3
5	Influenza and pneumonia (J09-J18)	44 396	9,1
6	Diabetes mellitus (E10-E14)	40 868	8,4
7	Cerebrovascular diseases (I60-I69)	38 960	8,0
8	Renal failure (N17-N19)	35 002	7,2
9	Tuberculosis (A15-A19)	34 596	7,1
10	Other bacterial diseases (A30-A49)	33 264	6,8
11	Human immunodeficiency virus [HIV] disease (B20-B24)	22 289	4,6
12	Other viral diseases (B25-B34)	21 483	4,4
13	Ischaemic heart diseases (I20-I25)	20 324	4,2
14	Other diseases of the respiratory system (J95-J99)	19 517	4,0
15	Chronic lower respiratory diseases (J40-J47)	19 252	4,0
16	Metabolic disorders (E70-E90)	16 381	3,4
17	Malignant neoplasms of ill-defined, secondary and unspecified sites (C76-C80)	13 247	2,7
18	Other acute lower respiratory infections (J20-J22)	12 085	2,5
19	Intestinal infectious diseases (A00-A09)	10 802	2,2
20	Malignant neoplasms of digestive organs (C15-C26)	10 533	2,2

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

All the natural underlying causes of death that appeared among the ten leading causes of death also appeared among the twenty-five most commonly mentioned causes. The ten leading underlying natural causes of death shown in Table 4.5 are presented in Table 4.16 to show 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.

Within each category, the counts of underlying causes and immediate or contributing causes are not duplicated, so that they can be summed up to equal the total number of times a specific cause of death was recorded on a death notification form. For example, 32 863 deaths had *diabetes mellitus* as the underlying cause and another 6 733 deaths had it as an immediate or contributing cause. This gives a total of 39 596 death notification forms that had *diabetes mellitus* mentioned on them. The percentage distributions show that human immunodeficiency virus [HIV] disease was selected in 93,6% of cases as the underlying cause where the disease was reported on the form. Furthermore, where *diabetes mellitus* was reported on the form, it was selected as the underlying cause in 83,0% of the forms while *tuberculosis* was selected as the underlying cause in 59,7% of the forms. The causes of death which, when mentioned, were least selected as the underlying causes were *other forms of heart diseases* (30,2%) and hypertensive diseases (44,8%).

Table 4.16 - Number and percentage (%) of deaths selected as underlying or reported as immediate or contributing causes of death, 2022

Causes of death (ICD-10)	Under-lying rank	Number of deaths			Percentage of any mention		
		Underlying	Immediate or contributing	Total recorded	Underlying	Immediate or contributing	Total recorded
Diabetes mellitus (E10-E14)	1	32 863	6 733	39 596	83,0	17,0	**100,0**
Hypertensive diseases (I10-I15)	2	31 230	38 478	69 708	44,8	55,2	**100,0**
Cerebrovascular diseases (I60-I69)	3	28 819	9 206	38 025	75,8	24,2	**100,0**
Human immunodeficiency virus [HIV] disease (B20-B24)	4	20 784	1 425	22 209	93,6	6,4	**100,0**
Other forms of heart disease (I30-I52)	5	20 375	47 041	67 416	30,2	69,8	**100,0**
Tuberculosis (A15-A19)	6	20 372	13 733	34 105	59,7	40,3	**100,0**
Influenza and pneumonia (J09-J18)	7	19 705	23 801	43 506	45,3	54,7	**100,0**
Other viral diseases (B25-B34)	8	13 139	8 228	21 367	61,5	38,5	**100,0**
Ischaemic heart diseases (I20-I25)	9	13 137	5 831	18 968	69,3	30,7	**100,0**
Chronic lower respiratory diseases (J40-J47)	10	11 838	6 735	18 573	63,7	36,3	**100,0**

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

5. Conclusion

Information on mortality and causes of death is an indication of the population's health status and assist in the formulation of evidence-based health policies and decision-making. Where this information is well captured, it provides timely information for implementation of interventions during health emergencies as well as preventive and curative measures within the health system. The underlying causes of deaths provide data on leading causes of deaths in the population based on civil registration.

This statistical release provides information on mortality and causes of death for deaths that occurred in 2022 and previous years and were registered with Department of Home Affairs (DHA) in 2022. A total of 486 041 deaths that occurred in 2022 were registered at the DHA and processed by Statistics South Africa (Stats SA). The release further presents information on the leading underlying natural causes of death, patterns and trends in non-natural underlying causes of death. Deaths for the years 1997 to 2021 are also included to provide information on trends in the occurrence of deaths.

The emergence the COVID-19 epidemic challenged public health systems all over the world and in South Africa. After a protracted decline in mortality over a number of years, increases of 25,3% between 2020 and 2021 were observed. Deaths that occurred in 2022 show a reversal of the pattern seen in the last two years, with mortality declining by almost 21%.

Overall, there were more male deaths than female deaths in 2022 from infancy until age 65–69, after which there were more female deaths than male deaths. The highest number of deaths were among those aged 70-74 (8,9%) for females and 8,8% for males aged 60-64, while the lowest number was observed among those aged 5–9 and 10–14 years for both sexes. Another noticeable trend was the continued increase in deaths due to non-communicable diseases after a slight decline observed in 2021. Almost 60% of deaths were due to non-communicable diseases in 2022, while communicable disease accounted for just 28% of deaths.

Analysis of the ten leading causes of death in 2022 showed that the three top causes of deaths were due to non-communicable diseases, with diabetes accounting for 6,8% of the deaths, followed by hypertensive diseases and cerebrovascular diseases at 6,4% and 5,9% respectively. The most notable change in rank was the movement of COVID-19 out of the ten leading causes. Diabetes was also a leading cause of death for both males and females accounting for 5,2% and 8,6% respectively. For females the top four leading underlying causes of deaths were due to non- communicable diseases, while for males, tuberculosis appeared among the top four in the second place at 5%.

Consistent with previous years, influenza and pneumonia was the only underlying cause of death common among the five broad age groups. Other forms of heart diseases were part of the ten underlying causes of death in all age groups, except for infants, while intestinal infectious diseases was among the ten leading underlying causes of death only for children, accounting for 6,6%% of infant deaths and 5,1% of deaths to children 1–14 years. The leading underlying cause of death for infants (age 0) was respiratory and cardiovascular disorders specific to the perinatal period, responsible for 10,6% deaths. Influenza and

pneumonia was the leading underlying cause of death for age group 1–14 years, accounting for 6,8% deaths. Among those 15–44 years the leading causes of death was HIV virus at 8,9% while diabetes diseases was a leading cause of death among those 45–64 years, responsible for 8,1% deaths. Hypertensive diseases was the leading cause of death for those aged 65 and older.

The highest proportion of deaths occurred in Gauteng (20,2%), followed by KwaZulu-Natal (18,2%) and then Eastern Cape (16,7%). While the lowest proportion of deaths occurred in Northern Cape (3,1%). Non-communicable diseases were the leading causes of death in all provinces in 2022. Diabetes was the leading cause of death in four provinces, namely Western Cape (7,5%), Eastern Cape (7,0%), KwaZulu-Natal (7,5%) and Gauteng (5,3%). Hypertensive diseases was a leading cause of death in five provinces, including Northern Cape (8,2%), North West (9,1%), Free State (7,3%), Mpumalanga (7,4%) and Limpopo (8,3%).

Most non-natural underlying natural causes were allocated to other external causes of accidental injury accounting for 77% of deaths followed by Assault at 9%. Males had a higher proportion of deaths attributed to non-natural causes, at 19,8% compared to females at 6%. Males aged 15–29 remained the group most burdened by deaths due to non-natural causes compared to females, with almost 60% of male deaths resulting from non-natural causes compared to 24% of females in the same age group. Males 15–29 years also had the highest proportion of deaths due to assault, accounting for 14% of deaths in this age group.

An assessment of mortality from major disease factors, injuries and risk factors indicated that there continue to be more deaths due to non-communicable diseases compared to communicable diseases. Differences by sex and age show that the proportion of deaths due to non-communicable diseases gradually increase with age from age 55 for males and age 40 for females. The proportion of deaths due to external causes of death was high for males compared to females for all age groups. Although improvements have been made in the reporting of causes of death and completeness of death registration, further improvement is needed in the reduction of unspecified and unknown cases

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Appendices

Appendix A: Glossary

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.

COVID-19 a highly contagious infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

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), 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 in relation to a child, means the birth of a child born alive.

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.

Perinatal deaths are a combination of stillbirths and infants who die in the first week after birth (early neonatal deaths).

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

Population group: according to the Population Registration Act Repeal Act (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.
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 B: Death Notification form

Please refer to the Mortality and causes of death in South Africa: Findings from death notification, 2016 on pages 59–64 for copies of both the BI–1663 and DHA–1663 forms (Stats SA, 2018).

Appendix C: Assessment of the quality of data

The gold standard in mortality statistics is to have real-time data on the number of deaths and corresponding medically certified causes of death (WHO, 2013). However, the information needs to be of the highest quality in terms of completeness of death registration, timeliness of death registration and publication of death statistics, and accuracy of information provided embedded in deaths with correct information on characteristics of deceased, accurate causes of deaths and lower proportions of deaths with ill-defined or unspecified causes of deaths. In this regard, data quality confrontation has to be undertaken for improvements in mortality statistics to be realised. Improvements in quality of mortality data are essential in more effective policies and programmes concerning people's health and quality of life with the aim of leaving no one behind.

Completeness of death registration

The proportion of all deaths that occurred in a specific period and were covered by the civil registration of a country (referred to as completeness) was estimated at 96% for adult deaths (15 years and older) for the intercensal period 2011–2016. For the 2022 adult death registration, the 96% completeness level is adopted. The completeness level for male adult deaths was estimated at 97% whereas for females it was slightly lower at 95%. Revised estimates will be provided after the analysis of Census 2022 data. The methods used to derive the level of completeness for the intercensal period 2011-2016 were the Generalised Growth Balance (GGB) as proposed by Hill (1987), and the Synthetic Extinct Generation method (SEG) by Bennett and Horiuchi (1981, 1984). For the underlying assumptions and method followed, refer to Stats SA (2014). The extent of completeness of child deaths registration (0–14 years) is less certain, given the lack of completeness level estimates.

Timeliness of death registration

In South Africa, the Regulations for the Registration of Births and Deaths published in 2014 mandate that a death must be registered within 72 hours (3 days) of occurrence (Republic of South Africa, 2014). Timeliness in death registration indicates that all deaths are registered within the legally stipulated time allowance (UN, 2014). In general, timeliness of death registration refers to the interval between the date of death occurrence and the date it was registered with the Department of Home Affairs (DHA).

The number of days it took for deaths to be registered at DHA offices in 2022 is shown in Table C.1. For deaths that occurred in 2022, 15,6% were registered within a day of occurrence, 29,9% a day after the death had occurred, 18,1% on the second day after death occurrence and 13,0% on the third day. The proportion of deaths which were registered within the 72 hours (3 days) stipulated by the regulations was 76,6%.

Table C.1 – Distribution of deaths by the number of days it took to register the death, 2022

Number of days	Number of deaths	Percentage	Cumulative percentage
Within a day of death	75 714	15,6	15,6
1 day	145 336	29,9	45,5
2 days	87 949	18,1	63,6
3 days	63 366	13,0	76,6
4 days	38 316	7,9	84,5
5 days	22 083	4,5	89,0
6 days	13 068	2,7	91,7
7-13 days	24 372	5,0	96,7
14-20 days	3 708	0,8	97,5
21-30 days	2 305	0,5	98,0
31-364 days	9 329	1,9	99,9
1 year+	495	0,1	100,0
Total	**486 041**	**100,0**	

Timeliness of publication of statistics

The United Nations (UN) recommends that a one-year time lapse from the end of the reference period to publication and dissemination of death statistics from the civil registration be maintained in order for vital statistics to be considered timely (UN, 2014). This statistical release fell short of this recommendation as it is published 72 months from the time the event occurred. Since civil registration deaths are continuously updated, the proportion of total registrations that are delayed or late provide an estimate of under-reporting in previous time periods.

Table C.2 shows the number of deaths published in the 2022 mortality and causes of death report for the years 2001 to 2021, and late or delayed death registrations processed during the 2025/2026 processing year. The table shows that 12 712 additional death notification forms for deaths that occurred between 2001 and 2021 were processed during the 2025/2026 processing phase. Majority (6 674) of the additional forms were for deaths that occurred in 2021. The distribution of deaths for 2001 to 2022 updated for late or delayed death notification forms is provided in Appendix D.

Table C.2 – Number of deaths published in 2021 publication and late registrations processed during the 2024/2025 processing phase by year of death, 2001–2021

Year of death	Number of deaths published in 2021 publication	Additional forms received in the 2025/2026 processing phase	Total number of deaths
2001	456 801	41	**456 842**
2002	503 991	82	**504 073**
2003	559 048	60	**559 108**
2004	578 993	47	**579 040**
2005	600 166	49	**600 215**
2006	614 728	36	**614 764**
2007	606 742	40	**606 782**
2008	598 776	54	**598 830**
2009	584 580	45	**584 625**
2010	553 321	46	**553 367**
2011	520 698	76	**520 774**
2012	498 115	102	**498 217**
2013	479 574	141	**479 715**
2014	479 993	78	**480 071**
2015	477 900	198	**478 098**
2016	474 473	447	**474 920**
2017	469 211	477	**469 688**
2018	470 785	603	**471 388**
2019	467 064	537	**467 601**
2020	513 012	2 879	**515 891**
2021	613 720	6 674	**620 394**
Total	**11 121 691**	**12 712**	**11 134 403**

Data confrontation

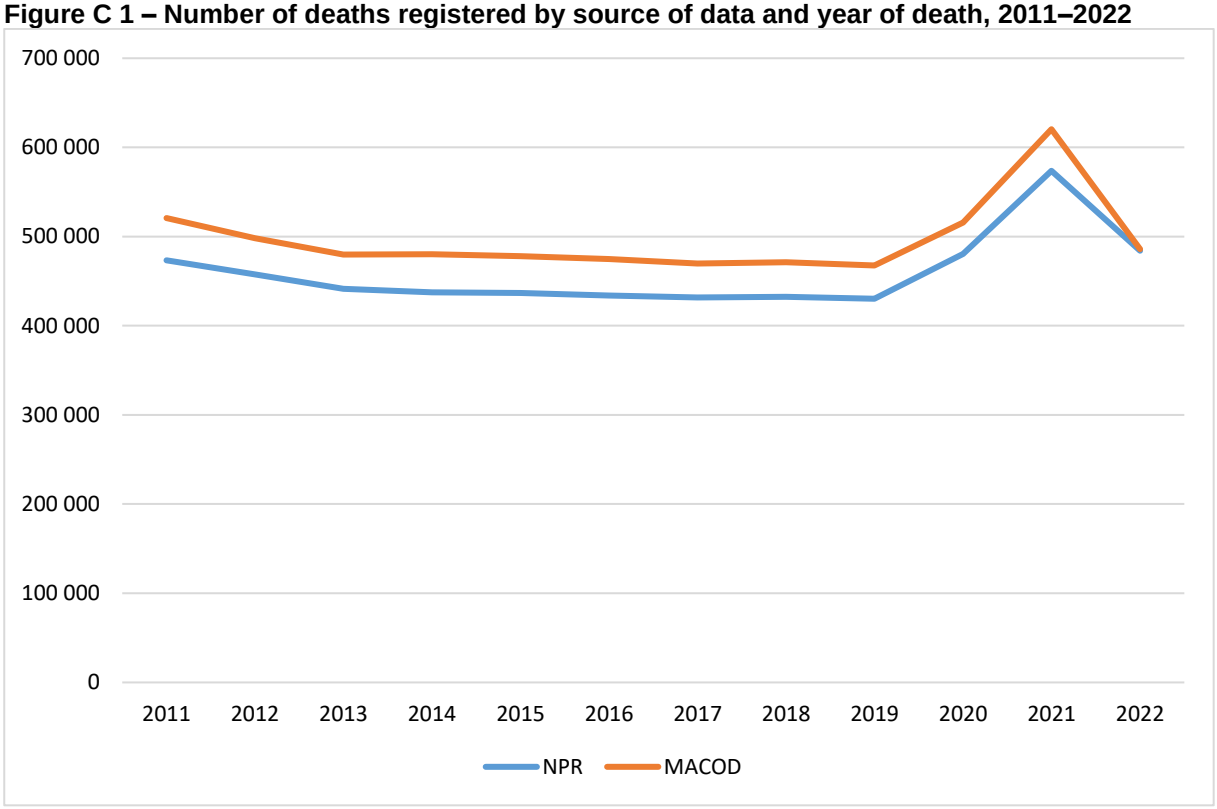
Figure C.1 presents the number of registered deaths processed by Stats SA and those recorded on the National Population Register (NPR) maintained by the DHA from 2011–2022. Comparing data from the two systems provides another means of evaluating the quality in terms of completeness of deaths from the civil registration system over time. Trends in the number of deaths from Stats SA and those from the DHA (NPR) follow a similar pattern over time, however, the numbers from Stats SA are always expected to be higher than those from the DHA (NPR). This is attributed to two reasons:

- The DHA (NPR) includes South African citizens and permanent residents whose birth records already exist on the DHA (NPR). In contrast, the number of deaths processed by Stats SA also includes deaths eligible to be included on the DHA (NPR), deaths of foreign citizens and South African citizens whose births were not registered on the DHA (NPR).

- Stats SA reports on all deaths registered at the DHA, but the number of deaths processed are less than the deaths that may have been registered at the DHA because they did not reach Stats SA in time for processing. Consequently, the magnitude of the difference between the two data sources may be affected by the delayed transmission of forms to Stats SA.

Figure C.1 shows that across all years, the number of deaths processed by Stats SA (MACOD) has been consistently higher than the deaths recorded by DHA (NPR). The trend analysis reveals that both data sources had consistent and steady differences between 2011 and 2019. There was a significant increase in both data sources between 2020-2021, with the 2021 spike likely due to late registrations from 2020. In 2022 the numbers drop from the 2021 peak, although there were marginal differences between the two sources.

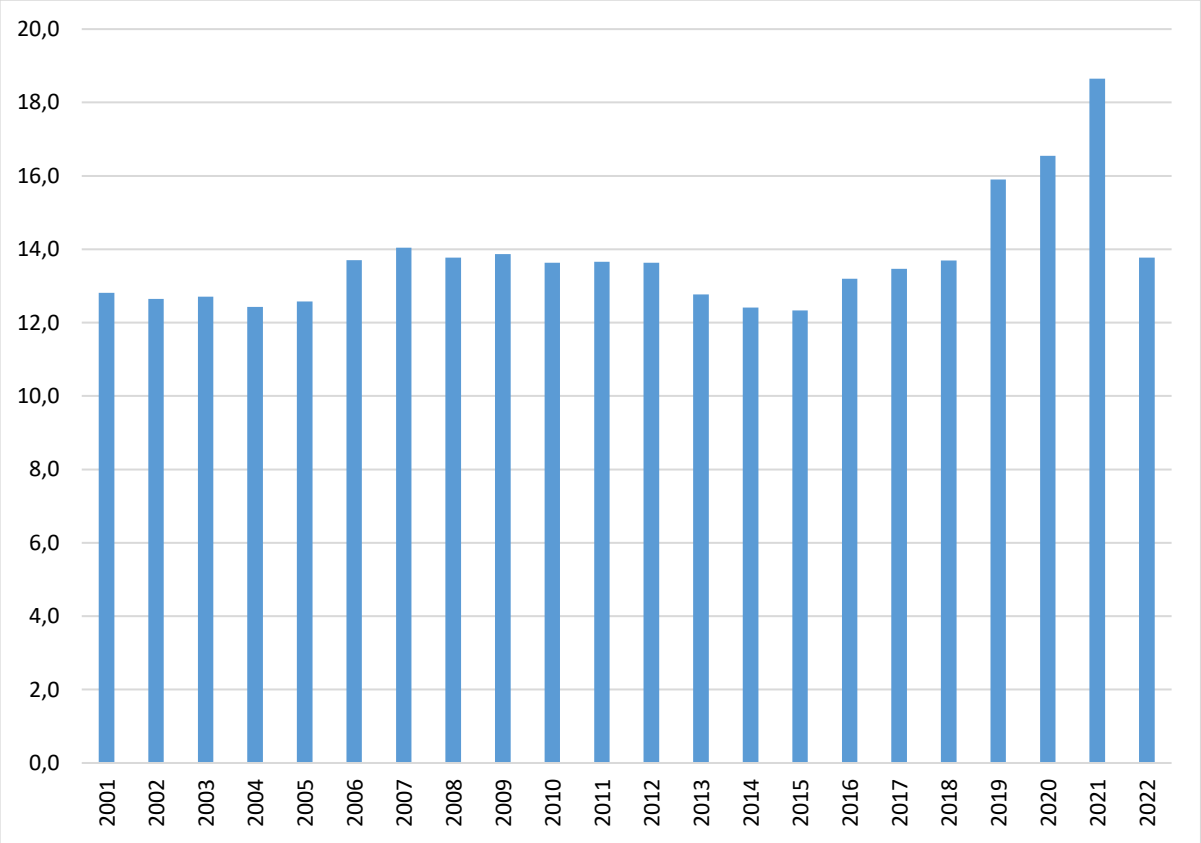
Figure C 1 – Number of deaths registered by source of data and year of death, 2011–2022



Quality of causes of death information

Quality information on the underlying causes of death is critical to guide decision-making in public health. As such, it is important that this information is assessed from data processing through to the data analysis phase in order to measure the extent to which the data may be used for health policies and programmes. Figure C.2 provides the assessment of the quality of causes of death data based on the percentage distribution of ill-defined causes of death. The ill-defined causes refer to diagnoses that are vague, non-specific and have insufficient details to be of value in promoting preventive and curative health interventions. Although ill-defined causes still help to provide the overall mortality due to broad diseases, they fail to provide a concise picture as they poorly attribute the underlying cause.

Figure C 2 – Percentage distribution of deaths assigned to symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified and year of death 2001–2022*



*Data for 2001–2021 have been updated with late registrations/delayed death notification forms processed in 2025/2026.

Assessment framework for death registration data

This statistical release adopts the assessment framework proposed by Mahapatra et al. (2007) to assess the quality of the 2022 death registration data received from the civil registration system. The framework proposed two categories, namely general vital statistics and causes-of-death statistics. Both categories measure quality in terms of level of accuracy, relevance, comparability, timeliness and accessibility.

The results of the Mahapatra et al. 2007 assessment framework for the 2022 mortality and causes of death data from the South African civil registration system are shown in Table C.3 and Table C.4. Table C.3 shows the percentage of key variables with unknown or unspecified information and forms part of the accuracy criteria in the assessment framework for the year 2022. The unknown cases refer to cases where more than one option was selected on the form or where the information could not be classified according to specified categories while unspecified cases refer to missing data for that variable.

Table C.3 shows that 0,0% of deaths had unknown/unspecified sex and age of deceased and only 0,2% unknown/unspecified province of death occurrence. Province of usual residence was 1,0% in 2022. The information on province of birth occurrence increased from 24,7% in 2021 to 27,1% in 2022. Missing information for marital status declined from 22,8% in 2021 to 21,9% in 2022.

The results further indicate that 11,4%of the deaths had unknown or unspecified information on population group declining from 14,1% in 2021. This variable has been improving in the recent years considering that over the period 1997 to 2014 missing information on this variable was constant at around 25%.

In this release, no analyses were undertaken for all variables where almost half or more of the deaths had unknown or unspecified information. In 2022, education level (53,0%); industry (88,1%) and pregnancy status (76,9%) remained the variables with almost half or more of the information classified as unknown or unspecified. However, a dataset containing unit records on mortality and causes of death 2022, which include variables not covered in this release due to poor reporting, is available on request from Stats SA.

Table C.3 – Percentage (%) of deaths classified as unknown/unspecified for selected variables, 2022

Variables	Applicable group	Percentage unknown or unspecified
Sex	All	0,0
Age	All	0,0
Province of death occurrence	All	0,2
Province of usual residence of deceased	All	1,0
Province of birth	All	27,1
Population group	All	11,4
Place or institution of death occurrence	All	28,3
Method used to ascertain cause of death	All	4,0
Marital Status	All	21,9
Smoking status	Aged 12 and older	34,1
Education	Aged 5 and older	53,0
Occupation	Aged 15 and older	0,0
Industry	Aged 15 and older (economically active)	88,1
Pregnancy status	Females aged 10–55	76,9

In addition, for the accuracy dimension, Table C.4 indicates that 96% of adult (15 years and older) death registrations were reported for the 2011–2016 intercensal period. The table also shows that the relevance and comparability of general vital statistics is regarded as complete.

The table further shows that for causes-of-death-statistics, 42,1% of the 2022 deaths occurred within a health-care facility. This approximates the percentage of deaths whose causes are more likely to be detailed enough for the underlying cause to be derived. Cause-of-death-statistics are regarded as completely relevant as they are based on routine tabulations by sex and five-year age groups as well as the fact that tabulation of cause-of-death information is provided for the nine provinces and 52 district municipalities in the country. The tools used in coding causes of death (International Classification of Diseases 10th revision) for 2022, and the variables analysed were similar to those in previous years. Therefore, comparability over time and with other countries is also regarded as complete.

Table C.4 – Assessment of the 2022 South African death statistics from civil registration system using the framework proposed by Mahapatra et al. (2007)

General vital statistics		Cause-of-death statistics	
Criteria and indicators	**Measure**	**Criteria and indicators**	**Measure**
Accuracy		**Accuracy**	
Completeness of death registration	96%	Proportion of deaths that occurred in healthcare facilities	42,1%
Missing data	See Appendix C - Table C3	Proportion of deaths assigned to symptoms and signs of disease not elsewhere classified	13,8%
Relevance		**Relevance**	
Routine tabulations by sex and 5-year age groups	100%	Routine tabulation by sex and 5-year age groups	100%
Deaths in children under five years tabulated by 0 and 1-4-year age group	100%	Number of cause-of-death tabulation areas	9 provinces and 52 district municipalities
Comparability		**Comparability**	
Stability of key definitions over time	100%	Consistency of cause specific mortality proportions over consecutive years	100%
Uniformity of definitions across areas	100%	ICD coding for certification and coding of causes of death, revision used and code level to which tabulations are published	Coding causes of death using the 10th revision at 3/4-digit level
Timeliness			
Processing time	10 months		
Mean time from end of reference period to publication	32 months		
Accessibility			
Media - number of formats in which data are released	Data portal on website		
Metadata	Data portal on the website and available on request		
Availability of user service	Email: info@statssa.gov.za / Tel: 012 310 8600 / Fax (012) 310 8500 / 8495		