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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 in 2021 calendar year. Deaths for the years 2000–2020 are also included to show trends in mortality and causes of death, using updated information that 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 as 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
COVID-19	Corona Virus Disease of 2019
CVRS	Civil Registration and Vital Statistics
DHA	Department of Home Affairs
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
NPR	National Population Register
Stats SA	Statistics South Africa
TB	Tuberculosis
WHO	World Health Organization
XDR-TB	Extensively Drug-Resistant Tuberculosis

1. Introduction

1.1 Background

Countries use civil registration systems to record vital events such as birth, marriage, divorce, adoption, death and cause of death, which serve as the main source of vital statistics. Information on births and deaths by location, age, sex and cause is the cornerstone of public health and social development planning. Registration of vital events provide a basis for social inclusion and individual legal identity, which is a human right and allows countries to identify their most pressing health and social issues such as fertility rates or resolution of criminal cases.

In South Africa, civil registration is a mandate of the Department of Home Affairs (DHA). The Births and Deaths Registration Act 1992 (Act No. 51 of 1992), last amended in 2010, governs the registration of births and deaths in the country (Republic of South Africa, 1992; Republic of South Africa, 2010). The Act states that notice of death should be given as soon as practicable. To better enforce the registration of deaths, the 2014 regulations of the Act mandate the registration of deaths within 72 hours (three days) from date of occurrence (Republic of South Africa, 2014).
After death registration is completed, a death certificate is issued to the informant. All death notification forms are then collected by Statistics South Africa (Stats SA) regularly for capturing, processing, assessment, analysis and dissemination of statistical releases and datasets on mortality and causes of death.

South Africa has experienced a remarkable improvement both in terms of coverage and timely registration of deaths; data quality, and continuous production and dissemination of vital statistics. Stats SA, in collaboration with DHA, National Department of Health (NDoH) and other stakeholders has ensured continued 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 mandate of Stats SA (Statistics Act [Act No. 6 of 1999]) is the provision of 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). The DHA's primary need revolves around a complete and accurate national death register (Republic of South Africa, 1992) while the NDoH envisages advances in health outcomes through access to comprehensive quality health care services (NDoH, 2015).

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. This statistical release has two main objectives:

- To outline emerging trends spanning a 21-year period (2000–2021) and differentials in mortality by selected socio-demographic and geographic characteristics for deaths that occurred in 2021; and
- To present statistics on the causes of death for deaths that occurred in 2021, 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 2021 or earlier that reached Stats SA during the 2024/2025 processing phase are covered. However, the main focus is on deaths that occurred in 2021. Deaths that occurred during the period 2000 to 2020 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. The third section 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 2021 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). It also includes special analysis on COVID-19 deaths. Finally, the last section presents a summary of the findings and concluding remarks.

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 accumulated 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. Data from 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.

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 on the NPR. 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 613 720 deaths that occurred in 2021 and 43 751 late death registrations for 1997 to 2020 that were registered at the DHA and reached Stats SA in time for the 2024/2025 processing phase.

2.2 Data processing

The processing of the completed death notification forms from DHA 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 sociodemographic 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 derived 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 and derivation of underlying cause of death) for 2021 deaths.

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 investigation. In addition, two electronic tools both developed by WHO: Analyzing 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, respectively). 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 2021 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.

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 2021 causes of death data. This section presents a summary of the results of this assessment. A detailed discussion of the 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 analysis 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 number of deaths received the same rank, and a rank was skipped for the next cause. For example, if two causes of death had the same frequency 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

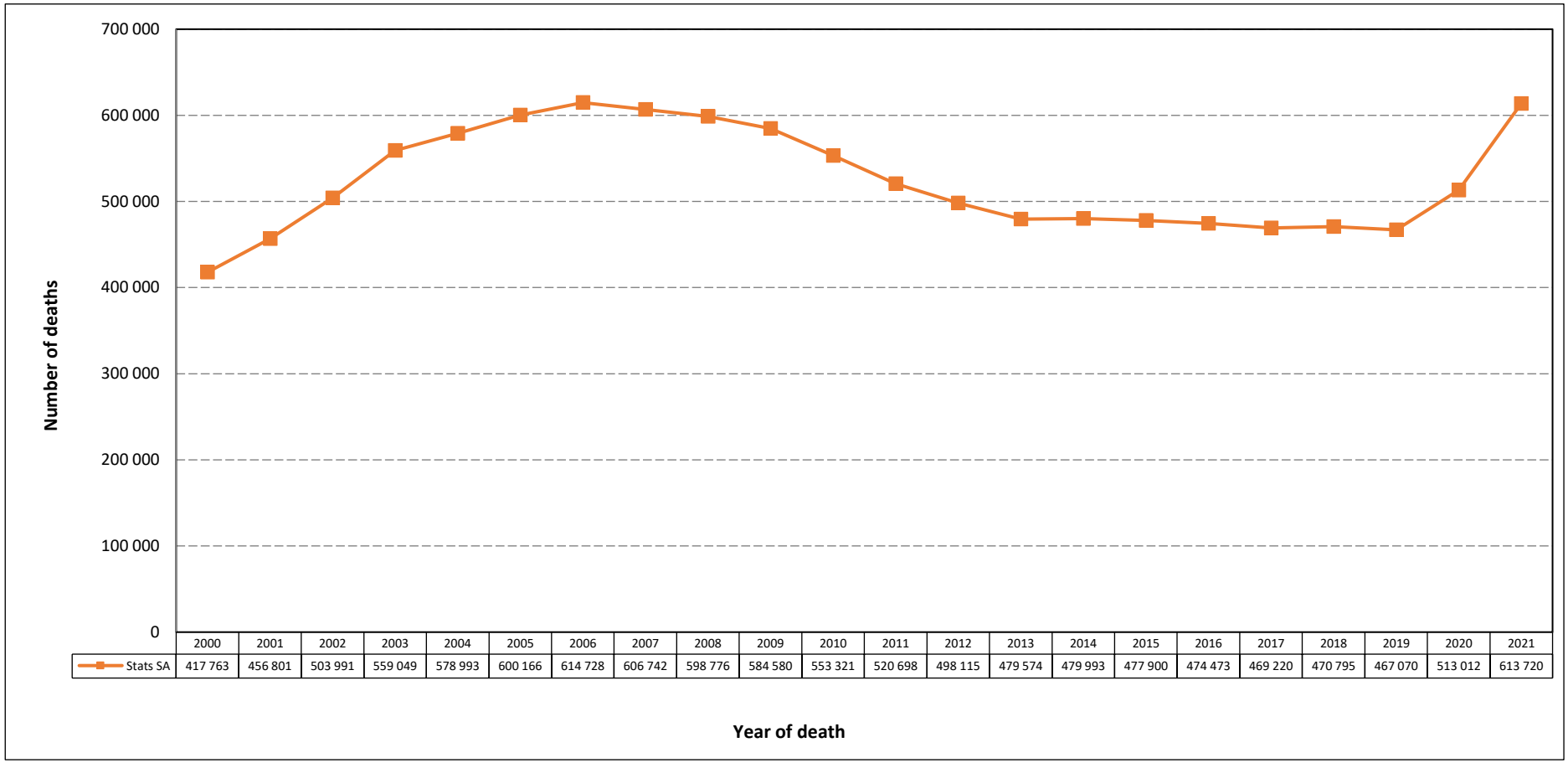
This chapter provides analysis on the distribution of 2021 registered deaths that reached Statistics South Africa (Stats SA) during the 2024/2025 processing phase. The section mainly focuses on absolute numbers and percentage distributions of 2021 deaths by selected background characteristics of the deceased such as age, sex, place/institution of death and geographic information. Levels and trends of registered deaths over the period 2000−2021 are also included.

3.1 Levels and trends of mortality in 2021

Figure 3.1 shows that the total number of deaths that occurred and were registered at the Department of Home Affairs and processed by Stats SA in 2021 were 613 720, indicating an increase when compared with 513 012 deaths that were processed in 2020. This significant increase was largely driven by excess deaths from COVID-19.

The general trend in the number of registered deaths processed by Stats SA indicates an increase from 2000 to 2006 when the number of deaths peaked at 614 728, and a decrease thereafter. A significant increase in the number of deaths was observed in 2020 (513 012) increasing to 613 720 deaths in 2021.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, 2021 forms in particular, and for the previous years will still be received for processing at Stats SA. Updated information will be provided in the next statistical release.

Figure 3.1 - Number of registered deaths by year of death, 2000–2021*



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Stats SA	417 763	456 801	503 991	559 049	578 993	600 166	614 728	606 742	598 776	584 580	553 321	520 698	498 115	479 574	479 993	477 900	474 473	469 220	470 795	467 070	513 012	613 720

*Data for 2000–2020 have been updated with late registrations / delayed death notification forms processed in 2024/2025

3.2 Age differentials

Table 3.1 shows the number and percentage distribution of deaths by age for deaths that occurred in 2021. The highest proportion of deaths were amongst those aged 65–69 years (9,7%), closely followed by those aged 60–64 years and 70–74 years, both at 9,3%. The age groups which contributed the least number of deaths was individuals aged 5–9 years (0,4%) followed by age group 10–14 years (0,6%). Infants (age zero years) constituted 3,6% of the registered deaths.

Table 3.1 - Number and percentage (%) distribution of deaths by age group, 2021

Age group	Number	Percentage (%)
0	22 074	3,6
1−4	6 025	1,0
5−9	2 761	0,4
10−14	3 452	0,6
15−19	6 821	1,1
20−24	13 363	2,2
25−29	21 201	3,5
30−34	27 962	4,6
35−39	32 980	5,4
40−44	32 120	5,2
45−49	35 890	5,8
50−54	39 958	6,5
55−59	50 660	8,3
60−64	57 295	9,3
65−69	59 385	9,7
70−74	57 102	9,3
75−79	46 944	7,6
80−84	42 315	6,9
85−89	27 878	4,5
90+	27 534	4,5
Total	**613 720**	**100,0**

Figure 3.2 shows the percentage distribution of deaths by age groups and year of death between 2017 and 2021. The 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 for both years 2020 and 2021.

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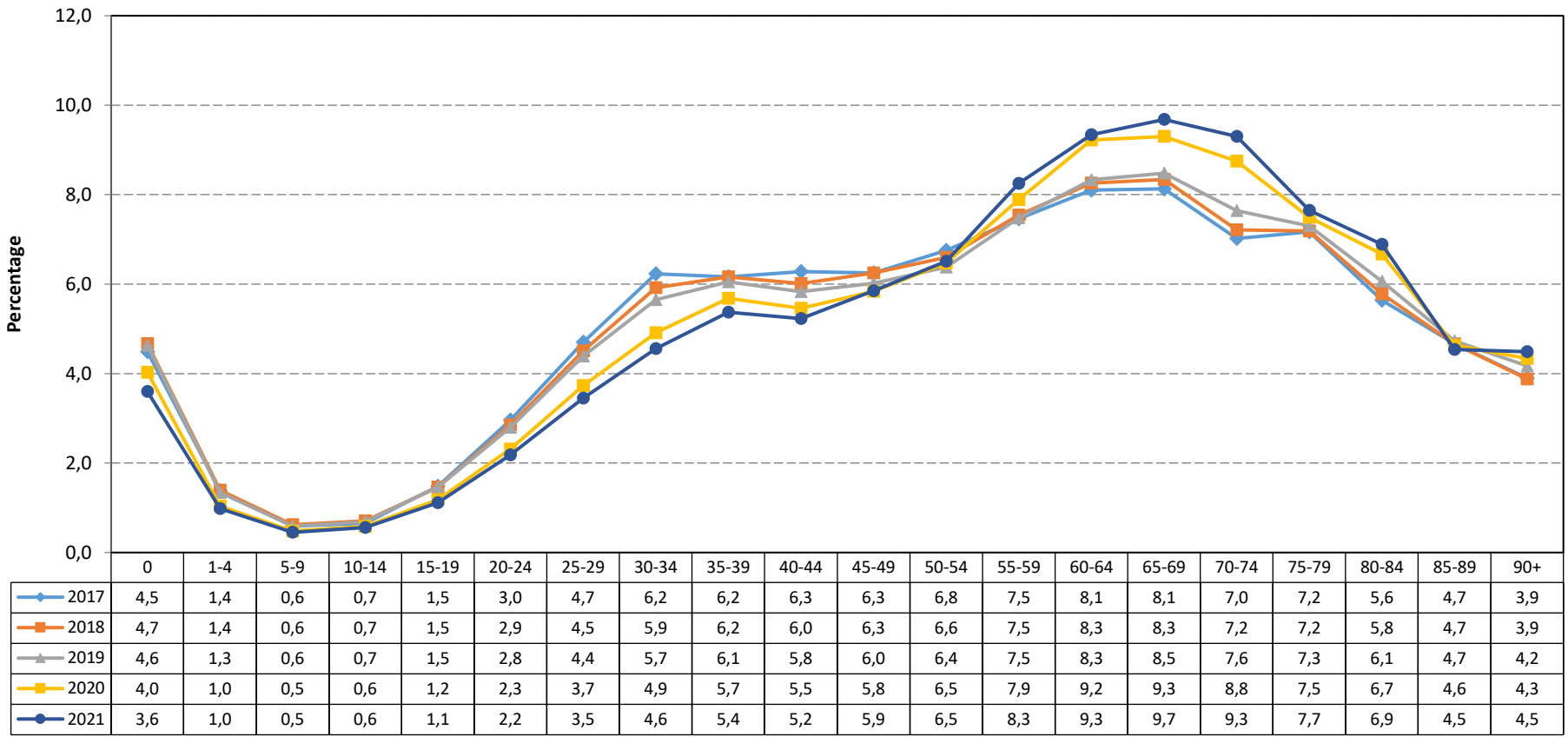
Figure 3.2 - Percentage (%) distribution of deaths by age group and year of death, 2017–2021*



	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+
2017	4,5	1,4	0,6	0,7	1,5	3,0	4,7	6,2	6,2	6,3	6,3	6,8	7,5	8,1	8,1	7,0	7,2	5,6	4,7	3,9
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	7,6	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	8,8	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	5,2	5,9	6,5	8,3	9,3	9,7	9,3	7,7	6,9	4,5	4,5

*Excluding deaths with unspecified age

Data for 2017–2020 have been updated with late registrations / delayed death notification forms processed in 2024/2025

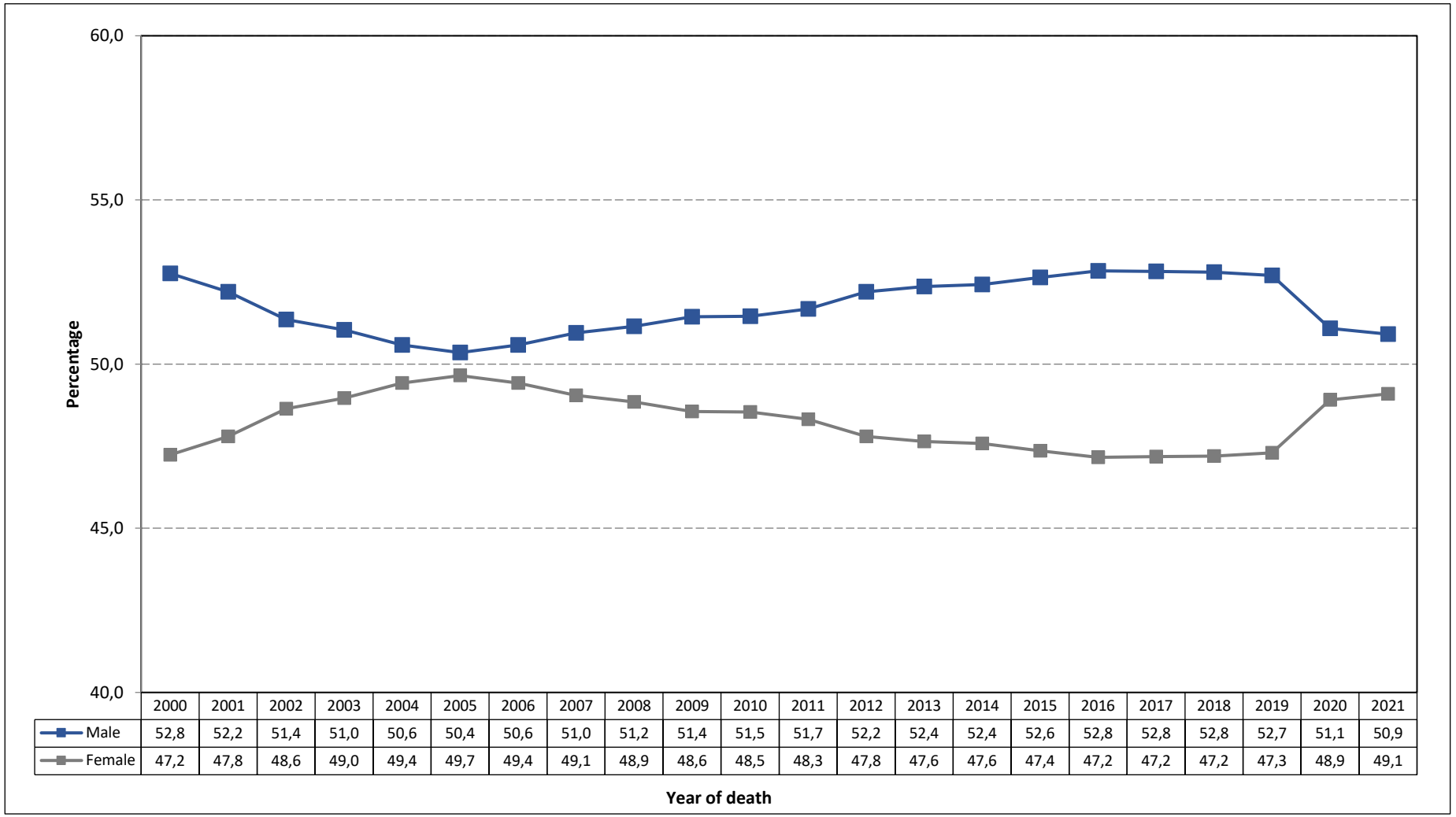
3.3 Sex differentials

Figure 3.3 shows the percentage distribution of deaths by age and sex from 2000 to 2021. A general observation is that there were consistent and persistent disparities in mortality characterised by more male deaths over the period. Similarly to previous years, there were slightly more male (50,9%) than female deaths (49,1%) in 2021. The distribution of the deaths shows that there was a huge gap in the proportion of male and female deaths in 2000 (5,6 percentage points), but this narrowed yearly until 2005 (0,7 percentage points) and broadened again thereafter, reaching a male excess of 5,6 percentage points in 2016.

The pattern reversed from 2006 to 2021, where the proportion of male deaths increased yearly from 50,6% in 2006 to a high of 52,8 in 2018. Conversely, the percentage of female deaths increased from 49,7% in 2005 to a low of 47,2% 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.

The annual percentage changes in the number of deaths by sex from 1997–2020 are shown in Appendix E. Appendix F provides Age-specific Death Rates (ASDRs) for the years 2017 to 2021 to show differentials in mortality by age group, taking into account the population size of each age group. The ASDRs provided should be interpreted with caution as they are based on the observed number of deaths that have not been adjusted for incomplete death registration, which may vary by age group.

Figure 3.3 - Percentage (%) distributions of deaths by sex and year of death, 2000–2021*



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Male	52,8	52,2	51,4	51,0	50,6	50,4	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	50,9
Female	47,2	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

*Excluding deaths with unspecified sex

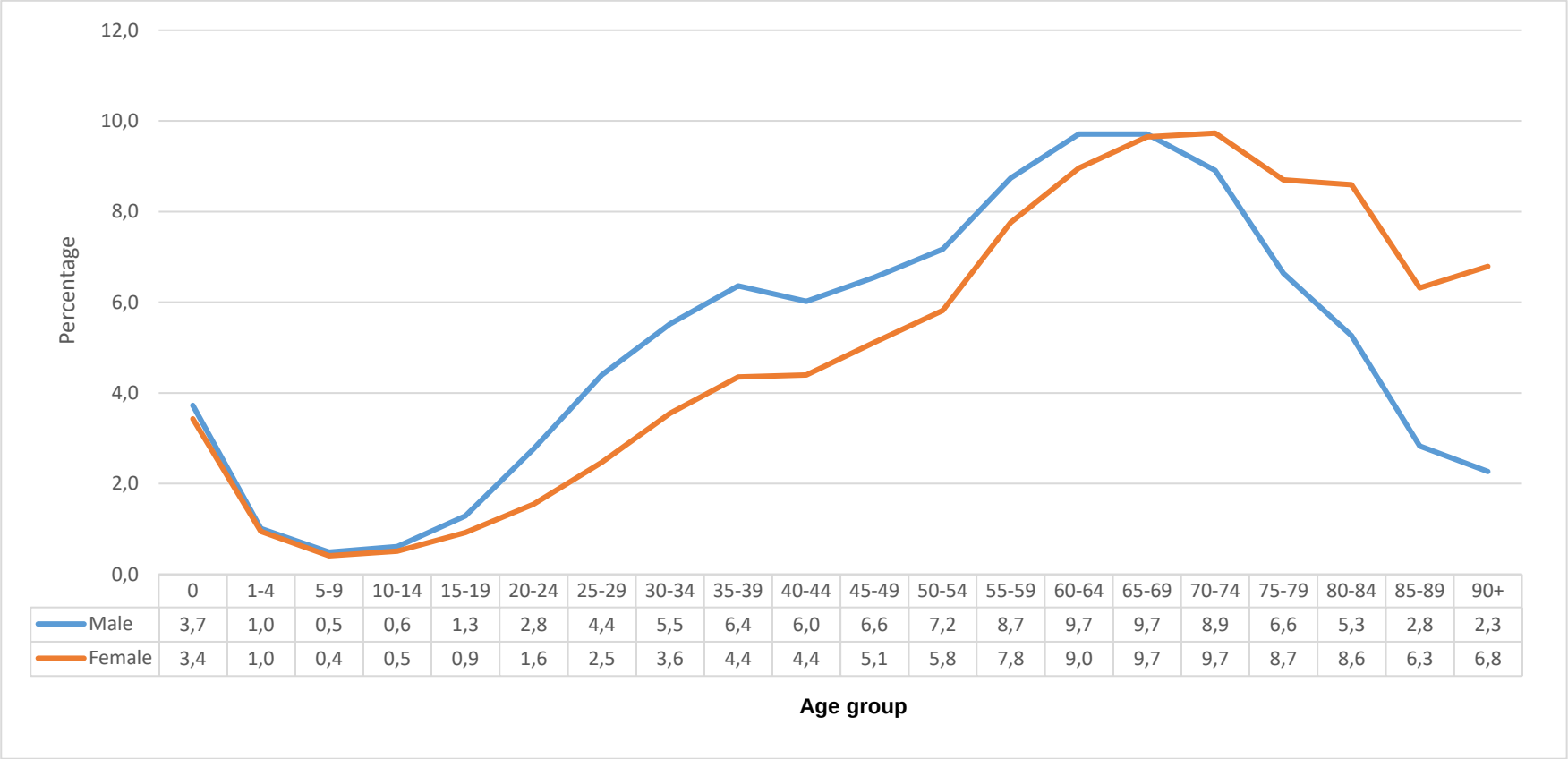
Data for 2000–2020 have been updated with late registrations / delayed death notification forms processed in 2024/2025

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 2021 (absolute numbers are presented in Appendix D. 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. Overall, the male deaths exceeded those of females from age group zero up to 65–64 years. From ages 70 years and above there were slightly more female than male deaths. The gap in the proportion for male and female deaths was highest between age groups 75–79 up to 90 years and above, where female deaths surpassed male deaths by 3,3% at age group 80–84 and by 3,5% at age groups 85 and above.

Figure 3.4 - Percentage (%) distribution of deaths by age group and sex, 2021*



	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	3,7	1,0	0,5	0,6	1,3	2,8	4,4	5,5	6,4	6,0	6,6	7,2	8,7	9,7	9,7	8,9	6,6	5,3	2,8	2,3
Female	3,4	1,0	0,4	0,5	0,9	1,6	2,5	3,6	4,4	4,4	5,1	5,8	7,8	9,0	9,7	9,7	8,7	8,6	6,3	6,8

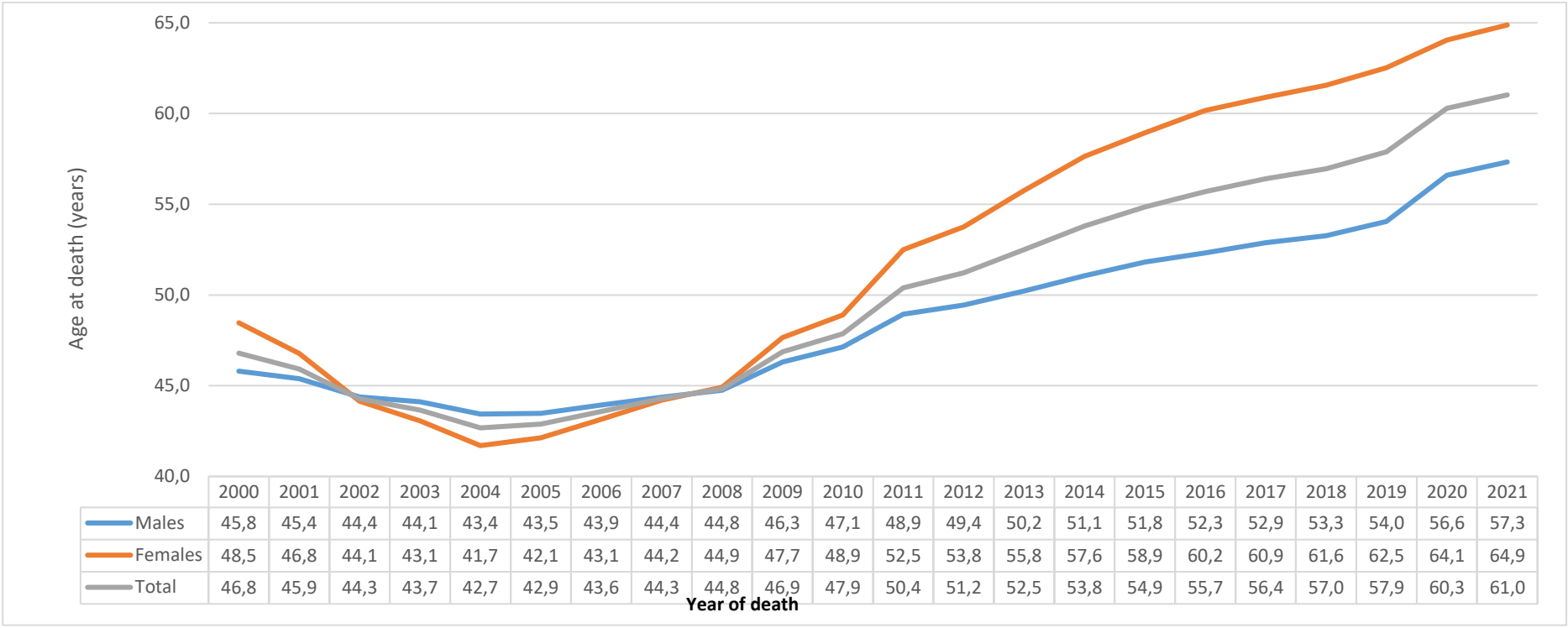
*Excluding deaths with unspecified sex

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 2000 to 2021 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 death 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 2000 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 46,8 years in 2000, to a low average age of 42,7 years in 2004 and went on to increase in 2005 reaching a high of 61,0 years in 2021. The median ages at death for males decreased from 45,8 years in 2000 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. This reflects improvement in male mortality. Similarly, the median ages for female deaths decreased prior to 2005, from 48,5 years in 2000 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 64,9 years in 2021.

Figure 3.5 - Median ages at death by sex and year of death, 2000–2021*



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Males	45,8	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
Females	48,5	46,8	44,1	43,1	41,7	42,1	43,1	44,2	44,9	47,7	48,9	52,5	53,8	55,8	57,6	58,9	60,2	60,9	61,6	62,5	64,1	64,9
Total	46,8	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

*Data for 2000–2021 have been updated with late registrations / delayed death notification forms processed in 2024/2025

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 males than female deaths, the sex ratio is above 100 and excess female deaths are indicated by a sex ratio at death that is less than 100.

Sex ratio at death by age and year of death for the period 2017–2021 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 these age groups sex ratios decline with increasing age.

The results indicate that from age group 5−9 years with the exception of 2021, sex ratios increase consistently until age group 20–24 years where the highest ratios were observed over the last five years. In the five-year period, the highest sex ratio (186 male deaths per 100 female deaths) in the age group 20–24 was for the years 2019 and 2021.

In 2021, for the age group 65–69 there were almost equal numbers of male and female deaths at 104 male deaths per 100 female deaths. Beyond this age group, female deaths were consistently more than male deaths from age group 70−74 years to 90 years and older for the years under observation. It is further observed that those aged 90 and older had the lowest sex ratio at death for all the years. The sex ratios ranged between 35 and 37 male deaths per 100 female deaths in the five-year period.

Figure 3.6 - Sex ratios by age group and year of death, 2017–2021*

	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+
2017	117	111	136	136	144	168	156	144	145	145	142	141	137	130	121	102	81	60	46	37
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	102	82	61	46	37
2020	119	113	134	132	140	172	161	151	146	140	132	126	122	115	108	96	80	63	46	35
2021	113	111	124	123	145	186	184	161	152	142	133	128	117	112	104	95	79	64	46	35

*Excluding deaths with unspecified age and sex

Data for 2017–2020 have been updated to include late registrations/death notification forms processed in 2024/2025

3.5 Population group differences in mortality

Table 3.2 shows the distribution of the 2021 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 65,6% of the total deaths, followed by the white population group (9,9%) and then the coloured population group (7,7%). The Indian/Asian population group (2,6%) accounted for the least percentage of registered deaths. The proportions observed are somewhat indicative of the variations in population size by population group.

The percentage of deaths within the entire population indicates that the black African population group has a higher proportion of deaths. The death rate by population group which was calculated as the number of deaths in a given period divided by the population exposed to risk of death shows that death rate is higher among the white population group at 13,2%, followed by the Indian/Asian population groups (10,0%) and the coloured population group (9,1%). Among the black African population group, the death rate was 8,2%, this was the lowest amongst all the population groups in 2021.

The discussion and distribution of underlying causes of death by population group are provided in Appendices Q and Q1.

Table 3.2 - Number and percentage (%) distribution of deaths by population group, 2021

Population group	Number of deaths	Percentage of deaths	Population group size	Percentage of total population	Deaths per thousand population
Black African	402 640	65,6	49 240 863	81,2	8,2
White	60 835	9,9	4 623 838	7,6	13,2
Indian/Asian	15 899	2,6	1 592 561	2,6	10,0
Coloured	47 096	7,7	5 184 280	8,5	9,1
Other	1 014	0,2			*
Unknown or unspecified	86 236	14,1			*
Total	**613 720**	**100,0**	**60 641 542**	**100,0**	

*Other and unknown/unspecified population groups are not reported in 2020 mid–year population estimates

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 (33,8%) occurred amongst the people that had never been married, followed by those who are married (25,1%) and the widowed (10,9%). About 2,2% of the deaths occurred among people that were divorced. Caution should be exercised when interpreting the results, as 28,0% 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, 2021

Marital status	Number	Percentage
Never married	207 152	33,8
Married	154 123	25,1
Widowed	67 133	10,9
Divorced	13 667	2,2
Unknown/unspecified/not applicable	171 645	28,0
Total	**613 720**	**100,0**

3.7 Differences in mortality by smoking status of the deceased

The number and percentage distribution of 2021 registered deaths classified by smoking status of the deceased is depicted in Table 3.4. 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 (42,4%) while approximately 16,3% of the deaths occurred among people who were smoking. The table also shows that 34,8% of registered deaths in 2021 had smoking status classified as unknown or unspecified. The high proportion of deaths with missing information on smoking status shows a poor reporting of this information on the death notification forms. The condition showed marginal difference when compared to 2020 where the proportion was 36,4%, representing a 1,6% improvement.

Table 3.4 - Number and percentage (%) distribution of deaths by smoking status among those aged 16 and older, 2021

Smoking status	Number	Percentage
Yes	94 422	16,3
No	245 171	42,4
Do not know	37 448	6,5
Unknown or unspecified	201 259	34,8
Total	**578 300**	**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 2021 is shown in Table 3.5. The results indicate that 41,1% of the deaths took place in hospitals, 1,9% were emergency room or outpatient facility deaths and 1,3% died in nursing homes. These three places of death occurrence account for 44,2 % of total deaths that occurred within a health care facility. A total of 26,0% of all deaths occurred at home in 2021, while 2,3% were amongst people who had already died by the time they reached the hospital. Only 25,4% of the death notification forms had unknown or unspecified information on place or institution of death of the deceased.

Table 3.5 - Number and percentage (%) distribution of deaths by place of death occurrence, 2021

Place of death	Number	Percentage
Hospital	252 017	41,1
Emergency room / Out patient	11 578	1,9
Nursing home	7 918	1,3
Dead on arrival	13 788	2,3
Home	159 769	26,0
Other	12 507	2,0
Unknown/ unspecified	156 143	25,4
Total	**613 720**	**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 residences. The information was derived based on the 2016 municipal boundaries. The number and percentage distribution of deaths by province of the deceased are provided in Appendix I (absolute numbers and percentages, respectively); Appendix J presents the sex distribution of these.

3.9.1 Differences by province, age and sex

Table 3.6 shows the distribution of 2021 deaths by province of death occurrence and province of usual residence of the deceased at the time of death. 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 (22,6%) occurred in Gauteng, followed by KwaZulu-Natal and Eastern Cape each comprising 18,6% and 14,1%, respectively. The same pattern was observed for deaths that occurred and were registered in 2020. 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 (21,8%) had the highest proportion of deaths, followed by KwaZulu-Natal (18,4%) and Eastern Cape (14,0%). The lowest percentage was Northern Cape at 3,0%.

A cross tabulation of province of death occurrence and province of usual residence of the deceased is given in Appendix H. 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, 2021

	Province of death occurrence		Province of usual residence of deceased	
Province	**Number**	**Percentage**	**Number**	**Percentage**
Gauteng	138 765	22,6	133 982	21,8
KwaZulu-Natal	113 876	18,6	112 884	18,4
Eastern Cape	86 668	14,1	86 172	14,0
Western Cape	69 589	11,3	68 232	11,1
Limpopo	61 573	10,0	62 527	10,2
North West	43 501	7,1	44 291	7,2
Mpumalanga	40 684	6,6	41 969	6,8
Free State	39 433	6,4	39 063	6,4
Northern Cape	18 906	3,1	18 651	3,0
Unspecified	47	0,0	4 782	0,8
Unknown	678	0,1	1 167	0,2
Total	**613 720**	**100,0**	**613 720**	**100,0**

The number and percentage distribution of deaths by age, province, and district of death occurrence are shown in Appendix I.

Appendix J shows the sex distribution of the deceased by the province and district municipality of death occurrence.

4. Causes of death

This section presents information on causes of death for all registered deaths that occurred in 2021, as well as comparisons with data for the previous years (2000–2020). A summary of causes of death by age, sex and province of occurrence is also included. The section comprises nine sub-sections, namely: reported causes of death, methods 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, a comparison between underlying, immediate and contributing causes of death, and COVID-19 in South Africa.

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 the 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 (NCDs) pose a major barrier to health, quadrupling the burden of disease, as such, this necessitated the inclusion of analysis on the Global Burden of Diseases which is a critical resource for informed policymaking, as it provides a tool to quantify and compare the effects of different diseases in a population).

4.1 Reported causes of death

Table 4.1 provides information on the number of causes of death reported on each death notification form for deaths that occurred in 2021. It is observed that only 706 of the forms had no cause of death indicated on them. There are two possible circumstances under which no cause of death is indicated on the form. Firstly, in instances where a doctor has ticked on the form to show that the death was of natural cause but did not provide a specific cause. Secondly, where a death was still under investigation when the form was completed and causes of death had not yet been established, or the page with causes of death information was missing.

All these causes were subsequently coded to other ill-defined and unspecified causes of mortality (R99) or other conditions originating in the perinatal period (P96), depending on the age of the deceased. If the deceased was aged 28 days or younger, the cause of death was finally reported as other conditions originating in the perinatal period (P96), while for ages greater than 28 days it was reported as other ill-defined and unspecified causes of mortality (R99).
About half of the death notifications (50,7%) had one cause recorded, followed by 26,5% of death notification forms which had two causes of death recorded and 14,3% which 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, 2021

Number of the reported causes of death	Number of death notification forms	Percentage (%)
No cause	706	0,0
One cause	310 627	50,7
Two causes	162 595	26,5
Three causes	87 564	14,3
Four or more causes	52 228	8,5
Total	**613 720**	**100,0**

4.2 Method of ascertaining cause of death

The death notification form makes provision for a certifying official to indicate the method that was used to ascertain the cause of death. Table 4.2 shows the eight options available on the form for method used to ascertain the death.

The opinion of the attending medical practitioner at 54,0% was the most common method of ascertaining causes of death. It was followed by the opinion of the attending medical practitioner on duty at 14,4% and interview of family member at 13,2%. Autopsy was performed in 8,3% of the deaths. There were 4,1% forms that had unspecified method of ascertainment, while 3,9% of forms indicated that cause of death was ascertained through post mortem examination.

Table 4.2 - Number and percentage (%) distribution of deaths by method used to ascertain the cause of death, 2021

Method of ascertaining the cause of death	Number	Percentage (%)
Autopsy	50 639	8,3
Post mortem examination	24 008	3,9
Opinion of attending medical practitioner	331 184	54,0
Opinion of attending medical practitioner on duty	88 087	14,4
Opinion of registered professional nurse	5 242	0,9
Interview of family member	80 757	13,2
Other	5 421	0,9
Autopsy results may be available later*	51	0,0
Autopsy not performed*	1 717	0,3
Unknown	1 250	0,2
Unspecified	25 364	4,1
Total	**613 720**	**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:

1. 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.
2. Chapter 21: *Factors influencing health status and contact with health services (Z00-Z99)*. These are only used in morbidity coding.
3. Chapter 22: *Codes for special purpose*s. 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.

Stats SA adopted the inclusion of COVID-19 as an additional chapter to the existing 22 chapters for ease of analysis as well as aligning with other countries who have adopted 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 2021 was *symptoms and signs not elsewhere classified*, comprising 18,6% of all deaths. This main group consists mainly of information about various symptoms and signs that may not fit into other categories; for example, some common conditions under this group include abnormal heart sounds (R01) and abnormal blood chemistry (R79). The second most common main group of causes of death was *COVID-19*, accounting for 15,1% of deaths.

The third and fourth most reported main group of causes of death was *diseases of the circulatory system* and *certain infectious and parasitic diseases* accounting for 15,0% and 11,4% of deaths respectively. The rest of the groups contributed less than 10,0% to deaths in 2021. Among these were *external causes of morbidity and mortality* (9,8%), *diseases of the respiratory system* (7,8%), *endocrine, nutritional and metabolic diseases* (7,0%) and *neoplasms* (6,7%).

Table 4.3 – Number and percentage distribution of deaths by main causes of death, 2021

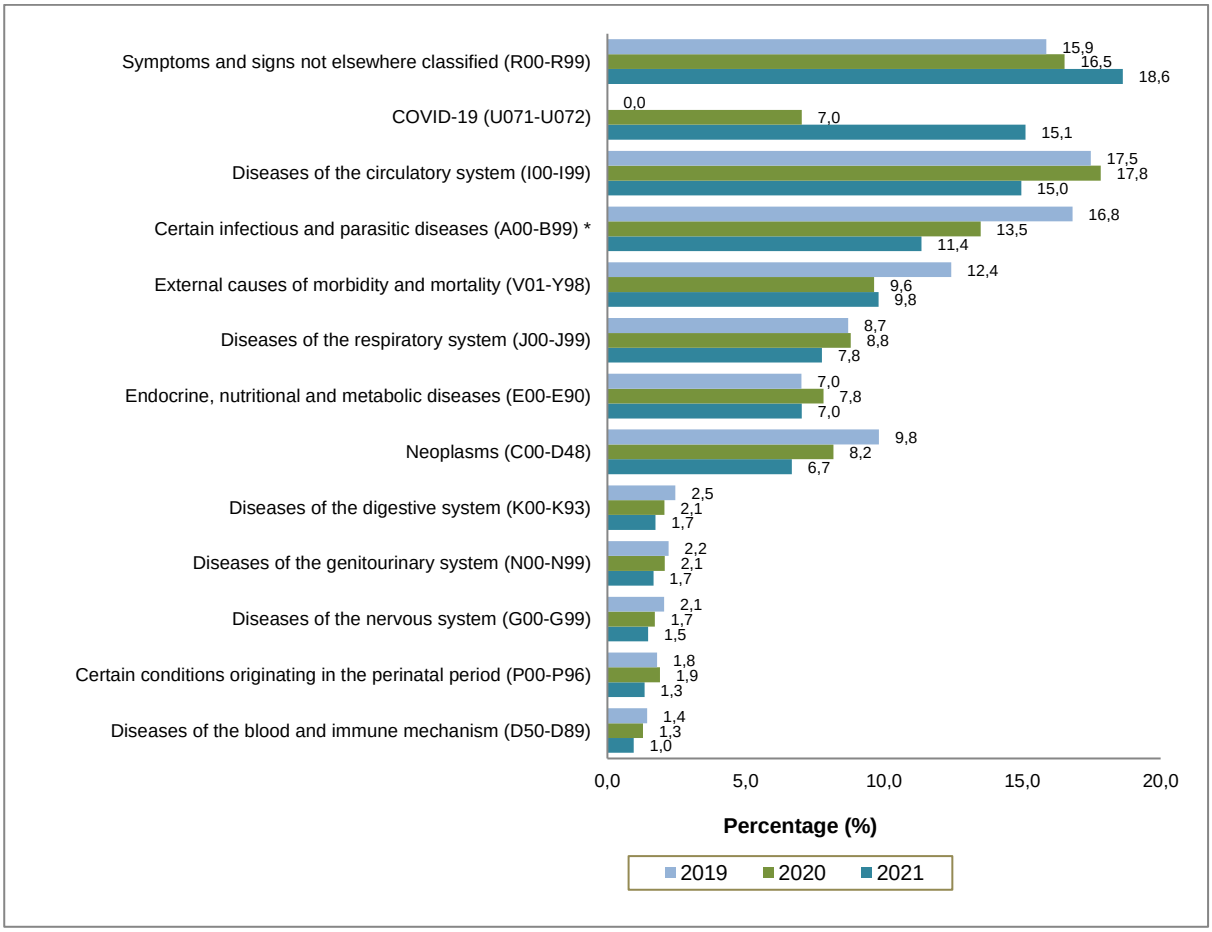
No.	Main groups of underlying causes of death (based on ICD-10)	Number	Percentage (%)
18	Symptoms and signs not elsewhere classified (R00-R99)	114 350	18,6
	COVID-19 (U07-U09)	92 438	15,1
9	Diseases of the circulatory system (I00-I99)	91 866	15,0
1	Certain infectious and parasitic diseases (A00-B99) *	69 673	11,4
20	External causes of morbidity and mortality (V01-Y98)	60 116	9,8
10	Diseases of the respiratory system (J00-J99)	47 702	7,8
4	Endocrine, nutritional and metabolic diseases (E00-E90)	43 205	7,0
2	Neoplasms (C00-D48)	40 929	6,7
11	Diseases of the digestive system (K00-K93)	10 723	1,8
14	Diseases of the genitourinary system (N00-N99)	10 266	1,7
6	Diseases of the nervous system (G00-G99)	9 052	1,5
16	Certain conditions originating in the perinatal period (P00-P96)	8 237	1,3
3	Diseases of the blood and immune mechanism (D50-D89)	5 863	1,0
17	Congenital malformations (Q00-Q99)	2 667	0,4
5	Mental and behavioural disorders (F00-F99)	2 255	0,4
13	Diseases of the musculoskeletal system etc. (M00-M99)	2 247	0,4
12	Diseases of the skin and subcutaneous tissue (L00-L99)	1 325	0,2
15	Pregnancy, childbirth and puerperium (O00-O99)	732	0,1
7	Diseases of the eye and adnexa (H00-H59)	38	0,0
8	Diseases of the ear and mastoid process (H60-H95)	36	0,0
	Total	**613 720**	**100,0**

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

A three-year (2019–2021) trend analysis on the distribution of deaths by selected main groups of causes of death was undertaken and the results are shown in Figure 4.1. It is observed that the rankings of the main groups of causes of death by year have remained more or less the same during the period 2019–2021. *Certain infectious and parasitic diseases, diseases of the circulatory system, COVID-19* and *symptoms and signs not elsewhere classified* accounted for more than 10,0% of deaths observed in 2021.

A slight and gradual decline in the reference years was observed for five main groups namely: *diseases of the blood and immune mechanism, diseases of the nervous system, diseases of the genitourinary system, diseases of the digestive system, and neoplasms.* Five main groups that contributed the least to the causes of death for the observed years are, *diseases of the blood and immune mechanism, certain conditions originating in the perinatal period, diseases of the nervous system, diseases of the genitourinary system, and diseases of the digestive system.*

Figure 4.1 - Percentage (%) distribution of deaths by main groups of causes of death, 2019–2021*



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

Data for 2019–2020 have been updated with late registrations/delayed death notification forms processed in 2024/2025

4.4 Natural and non-natural causes of death

This section discusses both natural and non-natural causes of death. The information reported in this release were 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 2000, the number of deaths due to natural causes were higher than the number of deaths due to non-natural causes. Between 2000 and 2006, there was a consistent increase in the number of natural deaths, after which a decline was observed until 2019 followed by an increase in 2020 and 2021. Further, it can be observed that there was an inconsistent pattern in the number of deaths due to non-natural causes. However, the number of deaths due to non-natural causes had increased consistently between 2012 and 2019. In 2020, the number of non-natural deaths decreased, and increased again in 2021 – recording the highest number of non-natural deaths in the reference period.

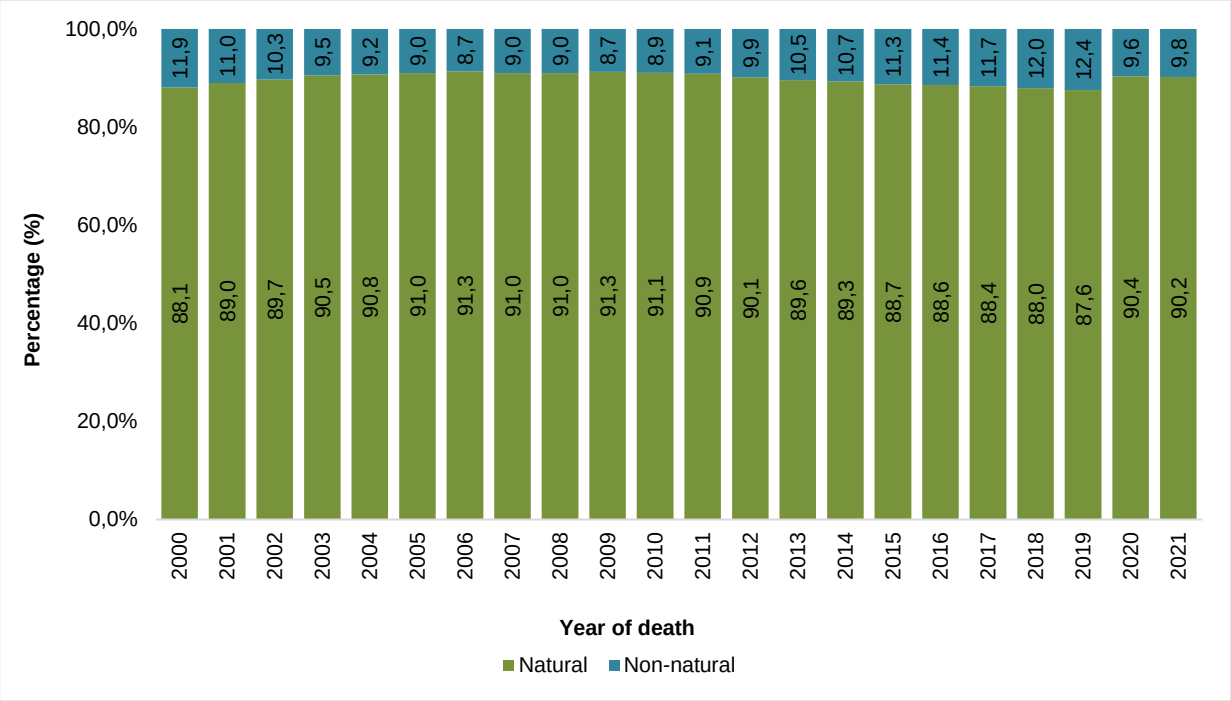
Table 4.4 - Number of natural and non-natural deaths by year of death occurrence, 2000–2021*

Year of death	Number of natural deaths	Number of non-natural deaths	Total
2000	367 903	49 860	**417 763**
2001	406 350	50 451	**456 801**
2002	452 174	51 817	**503 991**
2003	506 065	52 984	**559 049**
2004	525 514	53 479	**578 993**
2005	546 077	54 089	**600 166**
2006	561 404	53 324	**614 728**
2007	552 074	54 668	**606 742**
2008	545 065	53 711	**598 776**
2009	533 679	50 901	**584 580**
2010	503 832	49 489	**553 321**
2011	473 107	47 591	**520 698**
2012	448 880	49 235	**498 115**
2013	429 449	50 125	**479 574**
2014	428 673	51 320	**479 993**
2015	424 098	53 802	**477 900**
2016	420 336	54 137	**474 473**
2017	414 578	54 642	**469 220**
2018	414 116	56 679	**470 795**
2019	409 031	58 039	**467 070**
2020	463 581	49 431	**513 012**
2021	553 606	60 114	**613 720**

*Data for 2000–2020 have been updated with late registrations/delayed death notification forms processed in 2024/2025

Percentage distributions of natural and non-natural causes of death by year of death for the period 2000 to 2021 are shown in Figure 4.2. 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 2000 to 2006. In 2007, the proportion of deaths due to non-natural causes increased to 9,0% and remained at this level in 2008, then declined to 8,7% in 2009. From 2010 to 2019, deaths due to non-natural causes increased steadily while in 2020 they decreased to 9,6% and slightly increased to 9,8% in 2021.

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

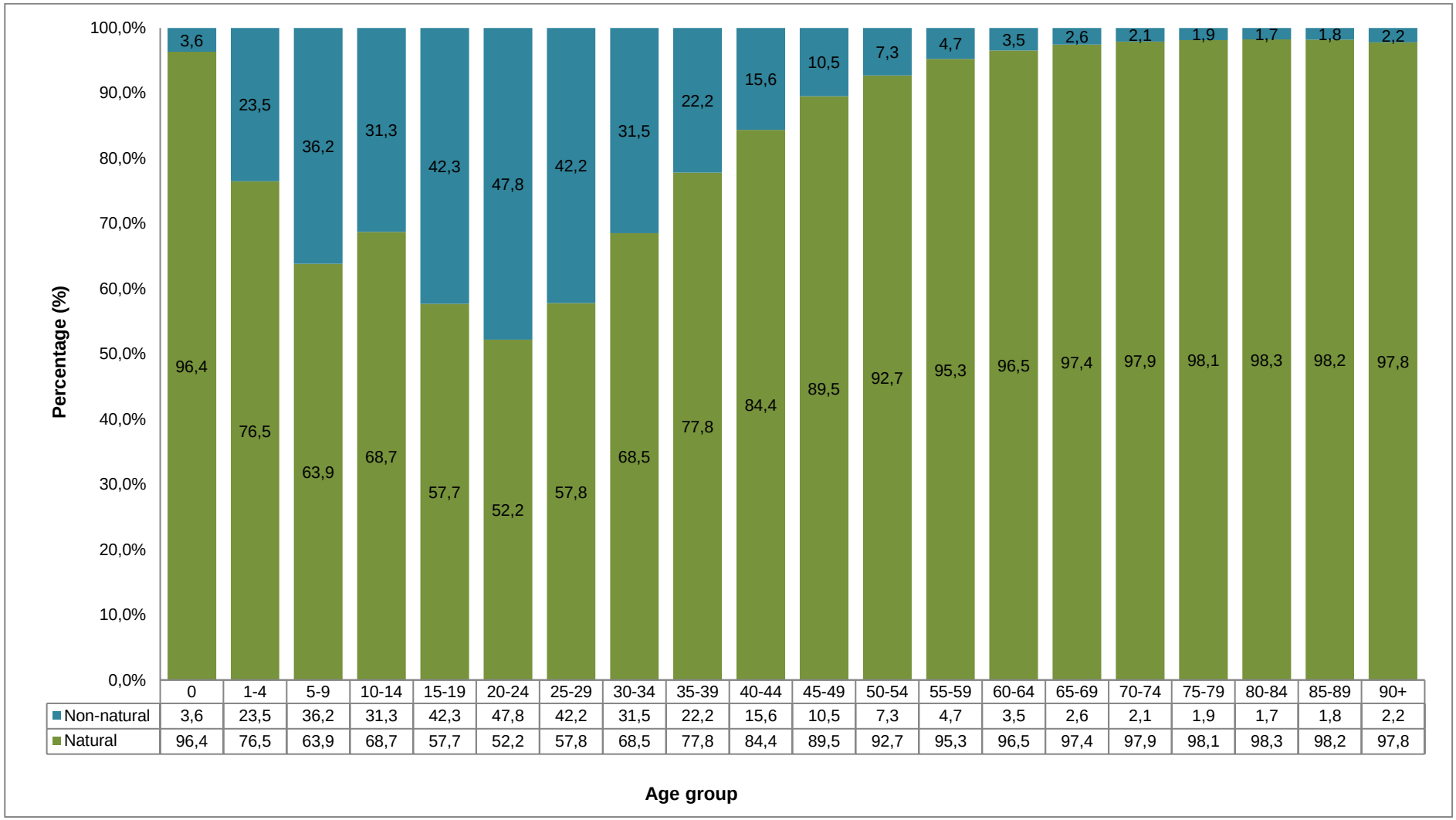


*Data for 2000–2020 have been updated with late registrations/delayed death notification forms processed in 2024/2025

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 2021 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 (3.6%) to age group 20–24 (47,8%), except for age group 10–14 (31,3%), and decreased thereafter. Figure 4.3 also shows that the age group 20–24 (47,8%) was the age mostly affected by non-natural causes. Other ages with higher proportions (over 30,0%) of deaths due to non-natural causes were age groups 5–9 (36,2%), 10–14 (31,3%), 15–19 (42,3%) and 25–29 (42,2%). Ages least affected by non-natural deaths were infancy (less than 0) and older ages (55 years and older) where less than 5,0% of the deaths in each of these age groups were due to non-natural causes of death. Over 90,0% of deaths occurring amongst individuals aged 50 and above, as well as age 0, were due to natural causes.

Figure 4.3 - Percentage (%) distribution of natural and non-natural causes of death by age, 2021



	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	3,6	23,5	36,2	31,3	42,3	47,8	42,2	31,5	22,2	15,6	10,5	7,3	4,7	3,5	2,6	2,1	1,9	1,7	1,8	2,2
Natural	96,4	76,5	63,9	68,7	57,7	52,2	57,8	68,5	77,8	84,4	89,5	92,7	95,3	96,5	97,4	97,9	98,1	98,3	98,2	97,8

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. 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 main groups of causes of death in ICD-10 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 haemorrhage, birth trauma*); and
- nutritional conditions (e.g., *protein-energy malnutrition*).

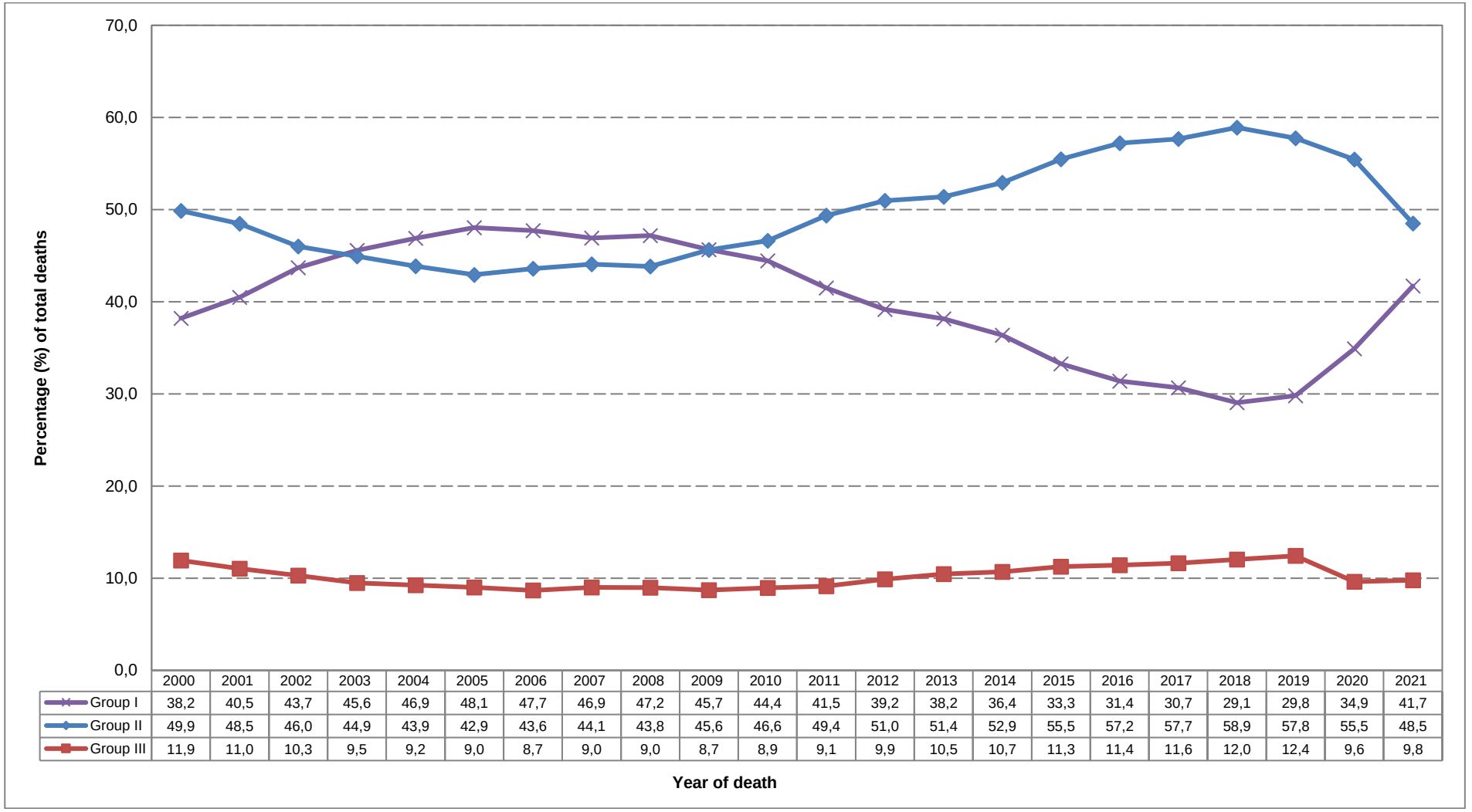
Group II: non-communicable diseases (e.g*., cancer, diabetes, heart disease* and *asthma*)

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

Communicable diseases are diseases caused by pathogenic micro-organisms, such as bacteria, viruses, parasites or fungi and can be spread, directly or indirectly, from one person to another. These include, among 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 and progress slowly and include, among 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 before 2003, there were more deaths from non-communicable diseases relative to communicable diseases, although the gap narrowed over time. Starting from the year 2003 up to 2008, deaths due to communicable diseases surpassed non-communicable deaths. In 2009, there was a similar proportion of deaths due to communicable and non-communicable diseases. From 2010 to 2018, the gap between communicable and non-communicable diseases became wider with more deaths resulting from non-communicable diseases. The recent pattern (2019–2021) indicates a narrowing gap between communicable and non-communicable diseases.

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, 2000–2021*



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Group I	38,2	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	41,7
Group II	49,9	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	55,5	48,5
Group III	11,9	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

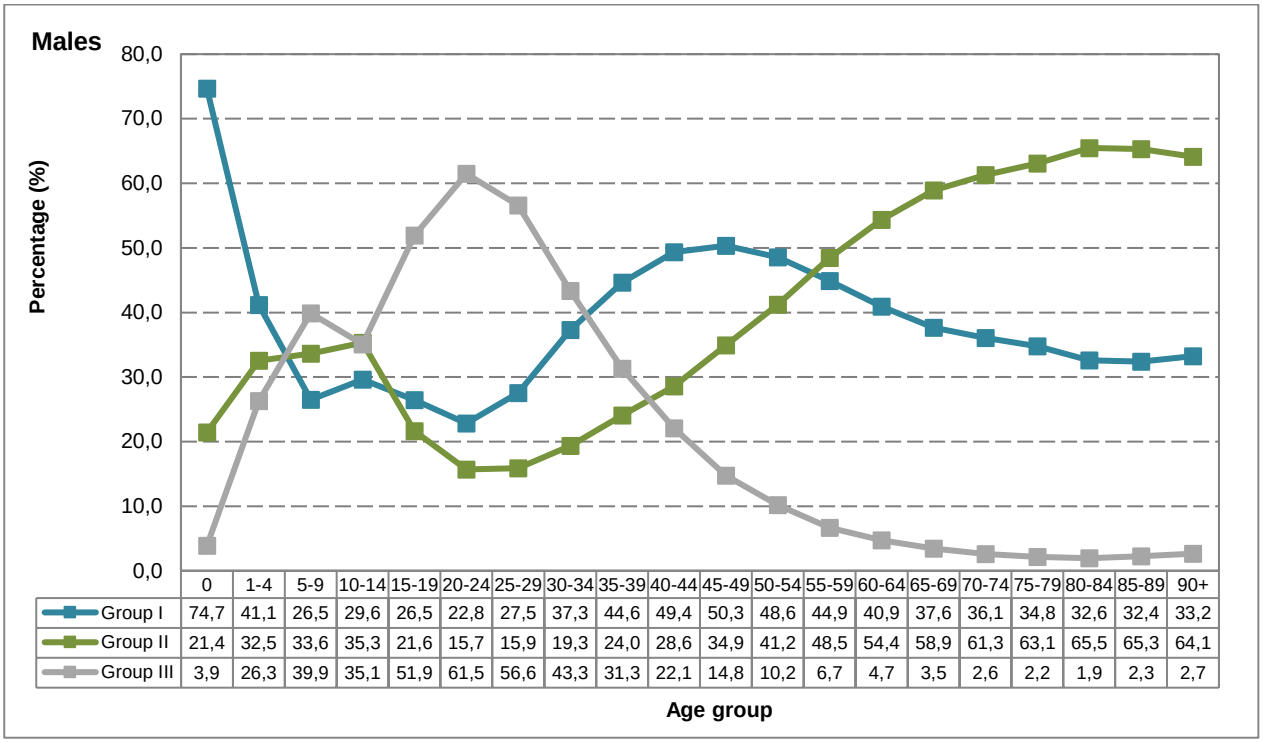
*Data for 2000–2020 have been updated with late registrations/delayed death notification forms processed in 2024/2025

Figure 4.5 shows the percentage distribution of causes of death by sex, group type and age group. For both sexes, the proportion of deaths due to communicable disease was high among children aged 0. Deaths due to communicable diseases peak again at ages 45–49 (50,3%) for males while it peaks again at ages 30–34 (61,4%) for females. The proportion of deaths due to communicable diseases declines gradually with age from the age of 50 for males and from the age of 35 for females.

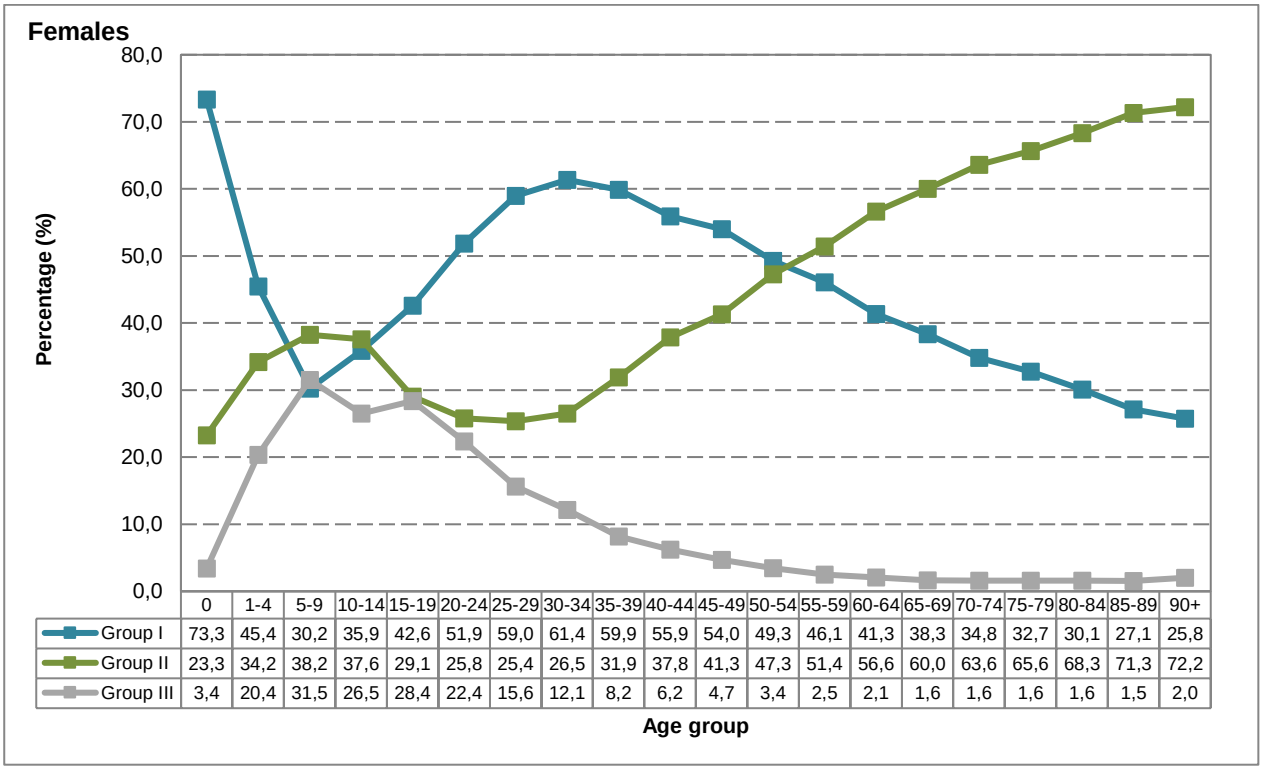
Deaths due to non-communicable diseases for females are lowest among children aged zero (23,3%), 25–29 (25,4%) and 20–24 (25,8%). While for males, deaths due to non-communicable diseases are lowest at the ages 20–24 (15,7%), 25–29 (15,9%) and 30–34 (19,3%). Deaths due to non-communicable diseases for other age groups among males accounted for more than 20,0% of deaths. From the age of 25 for males and 30 for females, deaths due to non-communicable diseases continue to increase with age.

The proportion of deaths due to external causes of death was higher for males compared to females at all ages. For males, the proportion of deaths due to this group was particularly high at ages 20–24 where at least 61,5% of deaths due to external causes exceeded deaths due to other causes. The proportion of deaths due to injuries decreased steadily with age from the age of 25 for males, and from the age of 20 for females.

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, 2021



	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+
Group I	74,7	41,1	26,5	29,6	26,5	22,8	27,5	37,3	44,6	49,4	50,3	48,6	44,9	40,9	37,6	36,1	34,8	32,6	32,4	33,2
Group II	21,4	32,5	33,6	35,3	21,6	15,7	15,9	19,3	24,0	28,6	34,9	41,2	48,5	54,4	58,9	61,3	63,1	65,5	65,3	64,1
Group III	3,9	26,3	39,9	35,1	51,9	61,5	56,6	43,3	31,3	22,1	14,8	10,2	6,7	4,7	3,5	2,6	2,2	1,9	2,3	2,7



	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+
Group I	73,3	45,4	30,2	35,9	42,6	51,9	59,0	61,4	59,9	55,9	54,0	49,3	46,1	41,3	38,3	34,8	32,7	30,1	27,1	25,8
Group II	23,3	34,2	38,2	37,6	29,1	25,8	25,4	26,5	31,9	37,8	41,3	47,3	51,4	56,6	60,0	63,6	65,6	68,3	71,3	72,2
Group III	3,4	20,4	31,5	26,5	28,4	22,4	15,6	12,1	8,2	6,2	4,7	3,4	2,5	2,1	1,6	1,6	1,6	1,6	1,5	2,0

4.6 Broad groups of natural causes of death

Information on the leading underlying natural causes of death for broad groups is presented in this subsection. 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 clinical and laboratory 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 period.

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 2019–2021. The years 2019 and 2020 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 eight of the ten leading causes of death in 2021 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 has since become the leading cause of death. *Diabetes mellitus* and *hypertensive diseases* came in second and third as leading underlying causes of death in 2021. The most notable change in rank was for *tuberculosis,* which moved from being ranked second in 2019 (accounting for 5,5% of deaths), fifth in 2020 (4,0%) to seventh in 2021 (accounting for 2,9% of deaths).

For a list of deaths by all broad groups of causes of death ranked by frequency (including non-natural causes and symptoms and signs not elsewhere classified) for 2021, refer to Appendix K. The breakdown of individual causes for the broad groups that were among the ten leading causes in 2021 is provided in Appendix L.

Table 4.5 – The ten leading underlying natural causes of death, 2019–2021*

Causes of death (based on ICD-10)	2019			2020			2021		
	Rank	Number	%	Rank	Number	%	Rank	Number	%
COVID-19 (U071-U072)	…	…	…	1	36 046	7,0	1	92 438	15,1
Diabetes mellitus (E10-E14)	1	26 498	5,7	2	33 737	6,6	2	36 752	6,0
Hypertensive diseases (I10-I15)	5	20 720	4,4	4	26 038	5,1	3	30 343	4,9
Cerebrovascular diseases (I60-I69)	3	23 423	5,0	3	28 194	5,5	4	27 848	4,5
Human immunodeficiency virus [HIV] disease (B20-B24)	4	22 310	4,8	7	20 350	4,0	5	23 814	3,9
Influenza and pneumonia (J09-J18)	6	17 541	3,8	6	20 610	4,0	6	21 264	3,5
Tuberculosis (A15-A19)	2	25 632	5,5	5	20 707	4,0	7	17 499	2,9
Ischaemic heart diseases (I20-I25)	7	16 022	3,4	8	16 189	3,2	8	14 731	2,4
Other forms of heart disease (I30-I52)	8	15 857	3,4	9	15 618	3,0	9	13 810	2,2
Other viral diseases (B25-B34)	9	13 332	2,9	10	12 979	2,5	10	13 415	2,2
Chronic lower respiratory diseases (J40-J47)	10	12 519	2,7	…	…	…	…	…	…
Other Natural		215 177	46,1	50	233 113	45,4		261 690	42,6
Non-natural		58 039	12,4	51	49 431	9,6		60 114	9,8
Total		**467 070**	**100,0**		**513 012**	**100,0**		**613 720**	**100,0**

*Data from 2019–2020 have been updated with late registrations/delayed death notification forms processed in 2024/2025

**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 by sex in 2021 is shown in Table 4.6 and indicates different patterns of underlying natural causes between males and females. The ten leading causes of male deaths contributed 44,0% of all male deaths while for females they contributed 51,4% of all deaths. All ten leading causes of death were the same for both sexes, with only two sharing the same rank.

COVID-19 was the leading cause of death among males (14,2%) and females (16,0%), while *diabetes mellitus* was the second leading cause of death for both sexes, accounting for 4,5% among males and 7,5% females. *Cerebrovascular diseases* ranked third for males at 3,9% and *Hypertensive diseases* ranked third for females at 6,3%.

Table 4.6 - The ten leading underlying causes of death for males and females, 2021*

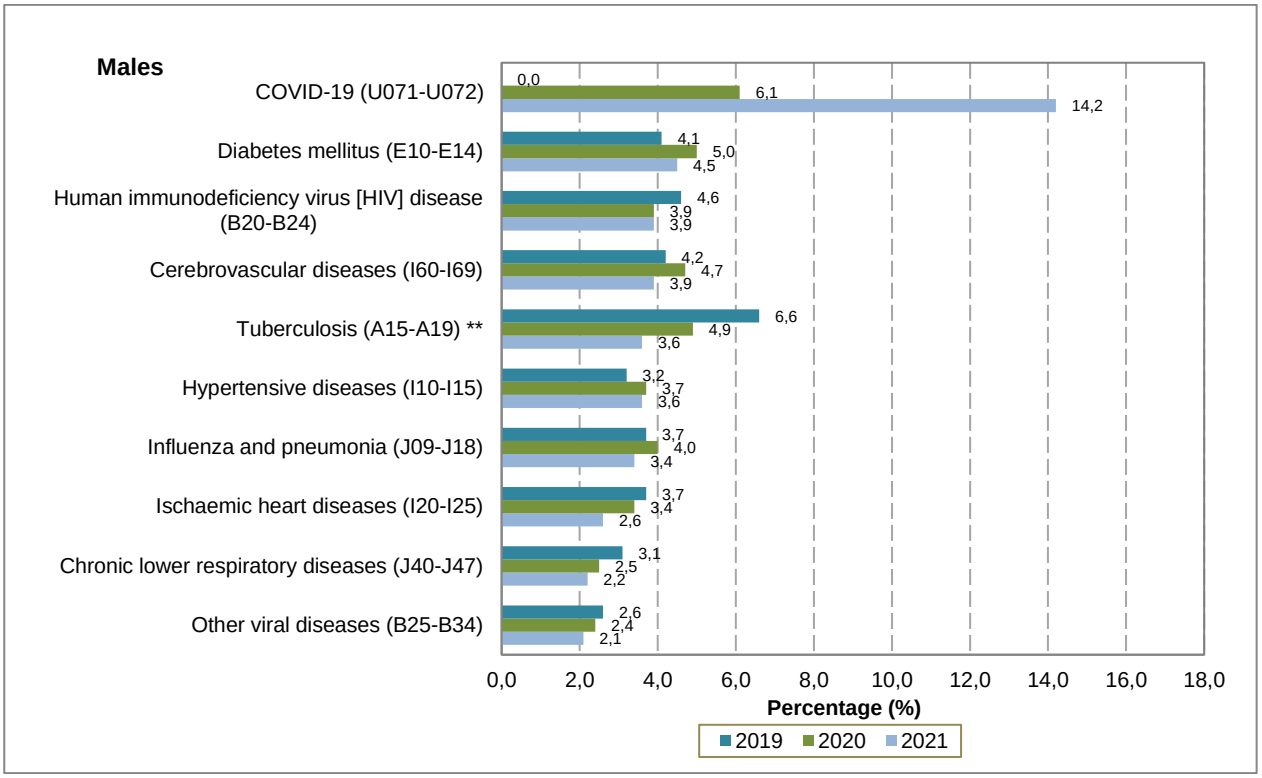
Causes of death (based on ICD-10)	Male			Female		
	Rank	Number	%	Rank	Number	%
COVID-19 (U071-U072)	1	44 234	14,2	1	48 186	16,0
Diabetes mellitus (E10-E14)	2	14 105	4,5	2	22 646	7,5
Cerebrovascular diseases (I60-I69)	3	12 111	3,9	4	15 734	5,2
Human immunodeficiency virus [HIV] disease (B20-B24)	4	12 043	3,9	5	11 769	3,9
Hypertensive diseases (I10-I15)	5	11 386	3,6	3	18 955	6,3
Tuberculosis (A15-A19) **	6	11 380	3,6	10	6 110	2,0
Influenza and pneumonia (J09-J18)	7	10 592	3,4	6	10 653	3,5
Ischaemic heart diseases (I20-I25)	8	8 243	2,6	9	6 486	2,2
Chronic lower respiratory diseases (J40-J47)	9	7 013	2,2	…	…	…
Other viral diseases (B25-B34)	10	6 657	2,1	8	6 755	2,2
Other forms of heart disease (I30-I52)	…	…	…	7	7 420	2,5
Other Natural		127 389	40,8		133 507	44,3
Non-natural		47 079	15,1		12 860	4,3
Total		**312 232**	**100,0**		**301 081**	**100,0**

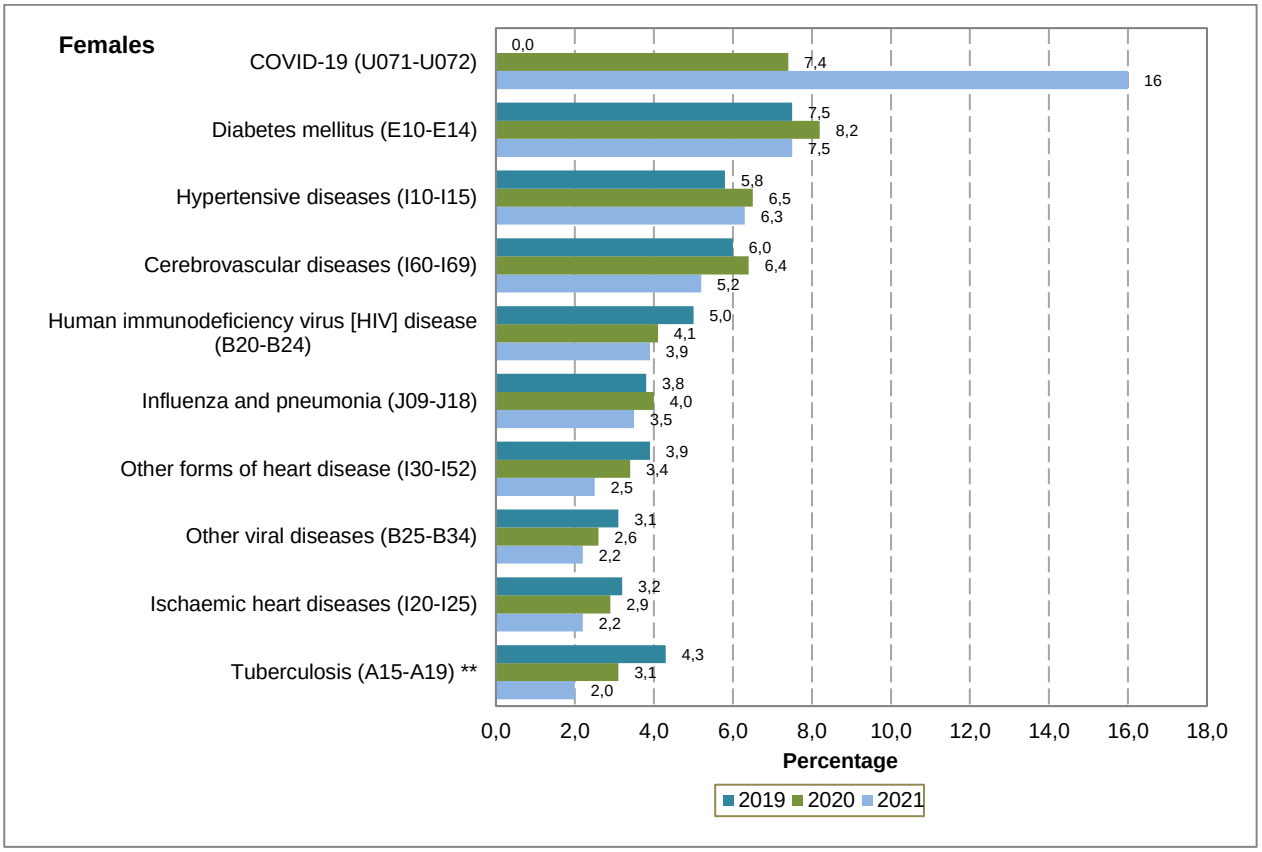
* Excluding deaths with unspecified sex

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

The percentage distribution of deaths associated with the ten leading causes of death classified by sex for the period 2019–2021 is shown in Figure 4.6. For both males (14,2%) and females (16,1%), deaths due to *COVID-19* ranked first. It is noteworthy that *tuberculosis, ischaemic heart diseases* and *chronic lower respiratory diseases* continued to decline for males in the three year period. Among females, *tuberculosis, other viral diseases, other forms of heart disease, ischaemic heart diseases* and *human immunodeficiency virus* continued to decline in 2021.

Figure 4.6 - Distribution of deaths for the leading causes of death by year of death and sex, 2019–2021*





*(1) Data for 2019–2020 have been updated with late registrations/delayed death notification forms processed in 2024/2025

** (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 and older) is recommended by the World Health Organization 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. For example, deaths due to *influenza and pneumonia* were the fourth leading underlying cause of death for age zero (5,5%), second for age group 1–14 (5,3%), fifth for age group 15–44 (3,0%) and seventh for age group 45–64 (3,4%) and fifth for age group 65 and older (3,5%). *COVID-19* was part of the ten underlying causes of death in all age groups, except infants. *Diabetes mellitus* and *cerebrovascular diseases* were among the ten leading underlying causes of death only for those aged 15 and older. *Hypertensive diseases*, *ischaemic heart disease* and *chronic lower respiratory diseases* were among the ten leading underlying causes of death only for those aged 45 and older.

The leading underlying cause of death for infant deaths (age zero) was *respiratory and cardiovascular disorders specific to the perinatal period*, responsible for 13,8% of deaths at this age. *Intestinal infectious diseases* was the second leading cause of death, accounting for 6,4% of deaths. *Infections specific to the perinatal period*, which constituted 5,5% of deaths in this age group, was the third leading cause of death. *Intestinal infectious diseases* ranked first for deaths of children aged 1–14 responsible for 5,7% of deaths.

The second leading underlying cause of death for age group 1–14 was *influenza and pneumonia*, responsible for 5,3% of deaths in this age group, followed by *cerebral palsy and other paralytic syndromes* with 2,6% of deaths. *COVID-19* and *tuberculosis* were both responsible for 2,1% deaths in this age group.

The leading underlying cause of death for the age group 15–44 was *human immunodeficiency virus* [HIV] diseases, constituting 9,7% of deaths, followed by *COVID-19,* accounting for 8,2% of deaths*. Tuberculosis* ranked third, accounting for 5,9% of deaths. *Other viral diseases* ranked fourth with 5,1% of deaths and *influenza and pneumonia* ranked fifth at 3,0%.

Seven of the ten leading causes of death for those aged 45–64 and 65 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 *COVID-19* was the leading cause of death in both groups, accounting for 20,0% among those aged 45-64 years and 17,0% among those aged 65 years and older. *Diabetes mellitus* was the second leading cause of death for both age groups, accounting for 7,0% of deaths among those aged 45–64, and accounting for 8,4% of deaths among those aged 65 and older.

The six underlying causes of death were not common between the two groups. *Tuberculosis*, *human immunodeficiency virus* and *other viral diseases* were on the ten leading causes of death for age group 45–64 and not for the age group 65 and older. While *other forms of heart disease, renal failure* as well as *malignant neoplasms of digestive organs* were on the ten leading causes of death for the 65 years and older age group, they were not listed for the 45–64 age group.

Table 4.7 - The ten leading underlying natural causes of death for broad age groups, 2021

Causes of death (based on ICD-10)	0			1–14			15–44			45–64			65+		
	Rank	Number	%	Rank	Number	%	Rank	Number	%	Rank	Number	%	Rank	Number	%
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	1	3 054	13,8	…	…	…	…	…	…	…	…	…	…	…	…
Intestinal infectious diseases (A00-A09)	2	1 402	6,4	1	695	5,7	…	…	…	…	…	…	…	…	…
Infections specific to the perinatal period (P35-P39)	3	1 224	5,5	…	…	…	…	…	…	…	…	…	…	…	…
Influenza and pneumonia (J09-J18)	4	1 209	5,5	2	649	5,3	5	4 013	3,0	7	6 233	3,4	5	9 160	3,5
Disorders related to length of gestation and fetal growth (P05-P08)	5	1 157	5,2	…	…	…	…	…	…	…	…	…	…	…	…
Other disorders originating in the perinatal period (P90-P96)	6	890	4,0	…	…	…	…	…	…	…	…	…	…	…	…
Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	7	771	3,5	…	…	…	…	…	…	…	…	…	…	…	…
Digestive system disorders of fetus and newborn (P75-P78)	8	588	2,7	…	…	…	…	…	…	…	…	…	…	…	…
Congenital malformations of the circulatory system (Q20-Q28)	9	586	2,7	…	…	…	…	…	…	…	…	…	…	…	…
Other bacterial diseases (A30-A49)	10	426	1,9	10	152	1,2	…	…	…	…	…	…	…	…	…
Cerebral palsy and other paralytic syndromes (G80-G83)	…	…	…	3	315	2,6	…	…	…	…	…	…	…	…	…
Tuberculosis (A15-A19) *	…	…	…	5	263	2,1	3	7 869	5,9	6	6 395	3,5	…	…	…
COVID-19 (U071-U072)	…	…	…	4	261	2,1	2	10 961	8,2	1	36 780	20,0	1	44 234	17,0
Human immunodeficiency virus [HIV] disease (B20-B24)	…	…	…	6	253	2,1	1	13 004	9,7	3	8 773	4,8	…	…	…
Malnutrition (E40-E46)	…	…	…	7	239	2,0	…	…	…	…	…	…	…	…	…
Episodic and paroxysmal disorders (G40-G47)	…	…	…	8	215	1,8	10	1 524	1,1	…	…	…	…	…	…
Inflammatory diseases of the central nervous system (G00-G09)	…	…	…	9	167	1,4	…	…	…	…	…	…	…	…	…
Other viral diseases (B25-B34)	…	…	…	…	…	…	4	6 837	5,1	8	5 195	2,8	…	…	…
Diabetes mellitus (E10-E14)	…	…	…	…	…	…	6	2 016	1,5	2	12 792	7,0	2	21 877	8,4
Cerebrovascular diseases (I60-I69)	…	…	…	…	…	…	7	1 982	1,5	4	7 695	4,2	4	18 086	6,9
Other forms of heart disease (I30-I52)	…	…	…	…	…	…	8	1 767	1,3	…	…	…	7	8 108	3,1
Certain disorders involving the immune mechanism (D80-D89)	…	…	…	…	…	…	9	1 707	1,3	…	…	…	…	…	…
Hypertensive diseases (I10-I15)	…	…	…	…	…	…	…	…	…	5	7 577	4,1	3	21 322	8,2
Ischaemic heart diseases (I20-I25)	…	…	…	…	…	…	…	…	…	9	4 518	2,5	6	9 001	3,4
Chronic lower respiratory diseases (J40-J47)	…	…	…	…	…	…	…	…	…	10	3 919	2,1	8	6 741	2,6
Malignant neoplasms of digestive organs (C15-C26)	…	…	…	…	…	…	…	…	…	…	…	…	9	5 011	1,9
Renal failure (N17-N19)	…	…	…	…	…	…	…	…	…	…	…	…	10	4 299	1,6
Other Natural		9 965	45,1		5 533	45,2		43 420	32,3		72 872	39,6		107 899	41,3
Non-natural		802	3,6		3 493	28,5		39 347	29,3		11 054	6,0		5 420	2,1
Total		**22 074**	**100,0**		**12 238**	**100,0**		**134 447**	**100,0**		**183 803**	**100,0**		**261 158**	**100,0**

*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

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

Table 4.8 shows that apart from *congenital malformations of the circulatory system* and *digestive system disorders of fetus and newborn,* there were no overlapping leading underlying causes of death for those who died during the neonatal and post-neonatal periods. *Congenital malformations of the circulatory system* was a common underlying cause of death for deaths occurring from 0 days up to five years of life. There were two common underlying causes of death for deaths occurring from 29 days and older to under five years of life: *influenza and pneumonia* and *intestinal infectious diseases*. Their contribution towards deaths within their age groups varied.

Neonatal deaths mainly resulted from *respiratory and cardiovascular disorders specific to the perinatal period*, which was responsible for 27,9% of deaths. The second leading underlying cause of death for neonatal deaths was *infections specific to the perinatal period* (11,2%), followed by *disorders related to length of gestation and fetal growth* (9,9%) and *other disorders originating in the perinatal period,* responsible for 8,2% of deaths in this age group. The ten leading underlying causes of death during the neonatal period constituted 79,5% of deaths in this age group.

The leading cause of death for those who died during the post-neonatal period was *intestinal infectious diseases* (11,7%), followed by *influenza and pneumonia* (10,2%) and *other diseases of the respiratory system* (3,3%). These three causes were the highest contributors of post-neonatal deaths, accounting for a quarter (25,2%) of deaths occurring during this period. *Other bacterial diseases* (3,1%) was the fourth leading cause of death, and *Malnutrition* (3,0%) was the fifth.

Overall, for infants (less than one year), the leading underlying cause of deaths was *respiratory and cardiovascular disorders specific to the perinatal period* (13,8%). *Intestinal infectious diseases* (6,4%) ranked second and *infections specific to the perinatal period* (5,5%) ranked third.

The three leading causes of death for those aged 1–4 were *intestinal infectious diseases* (7,9%), *influenza and pneumonia* (6,8%) and *malnutrition* (3,6%). *Cerebral palsy and other paralytic syndromes* and *tuberculosis* ranked fourth and fifth respectively, both accounting for 1,8% of deaths in the age group.

For those under five years, *respiratory and cardiovascular disorders specific to the perinatal period* was the leading underlying cause of death responsible for 10,9% of deaths, followed by *intestinal infectious diseases* (6,7%) and *influenza and pneumonia* which accounted for 5,8% of deaths in this age group.

Table 4.8 - The ten underlying natural causes of death for infants and children aged below five years, 2021

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	2 901	27,9	…	…	…	1	3 054	13,8	…	…	…	1	3 057	10,9
Infections specific to the perinatal period (P35-P39)	2	1 163	11,2	…	…	…	3	1 224	5,5	…	…	…	4	1 225	4,4
Disorders related to length of gestation and fetal growth (P05-P08)	3	1 028	9,9	…	…	…	5	1 157	5,2	…	…	…	5	1 160	4,1
Other disorders originating in the perinatal period (P90-P96)	4	855	8,2	…	…	…	6	890	4,0	…	…	…	6	891	3,2
Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	5	762	7,3	…	…	…	7	771	3,5	…	…	…	7	772	2,7
Haemorrhagic and haematological disorders of fetus and newborn (P50-P61)	6	400	3,8	…	…	…	…	…	…	…	…	…	…	…	…
Digestive system disorders of fetus and newborn (P75-P78)	7	361	3,5	9	227	1,9	8	588	2,7	…	…	…	9	588	2,1
Congenital malformations of the circulatory system (Q20-Q28)	8	310	3,0	7	276	2,4	9	586	2,7	7	94	1,6	8	680	2,4
Other congenital malformations (Q80-Q89)	9	288	2,8	…	…	…	…	…	…	…	…	…	…	…	…
Chromosomal abnormalities, not elsewhere classified (Q90-Q99)	10	193	1,9	…	…	…	…	…	…	…	…	…	…	…	…
Intestinal infectious diseases (A00-A09)	…	…	…	1	1 365	11,7	2	1 402	6,4	1	476	7,9	2	1 878	6,7
Influenza and pneumonia (J09-J18)	…	…	…	2	1 194	10,2	4	1 209	5,5	2	408	6,8	3	1 617	5,8
Other diseases of the respiratory system (J95-J99)	…	…	…	3	381	3,3	…	…	…	…	…	…	…	…	…
Other bacterial diseases (A30-A49)	…	…	…	4	361	3,1	10	426	1,9	…	…	…	…	…	…
Malnutrition (E40-E46)	…	…	…	5	346	3,0	…	…	…	3	218	3,6	10	569	2,0
Other acute lower respiratory infections (J20-J22)	…	…	…	6	315	2,7	…	…	…	9	87	1,4	…	…	…
Metabolic disorders (E70-E90)	…	…	…	8	253	2,2	…	…	…	8	87	1,4	…	…	…
COVID-19 (U071-U072)	…	…	…	10	162	1,4	…	…	…	10	85	1,4	…	…	…
Cerebral palsy and other paralytic syndromes (G80-G83)	…	…	…	…	…	…	…	…	…	4	111	1,8	…	…	…
Tuberculosis (A15-A19)*	…	…	…	…	…	…	…	…	…	5	111	1,8	…	…	…
Human immunodeficiency virus [HIV] disease (B20-B24)	…	…	…	…	…	…	…	…	…	6	103	1,7	…	…	…
Other Natural		2 026	19,5		6 104	52,3		9 965	45,1		2 829	47,0		13 444	47,8
Non-natural		105	1,0		697	6,0		802	3,6		1 416	23,5		2 218	7,9
Total		**10 392**	**100,0**		**11 682**	**100,0**		**22 074**	**100,0**		**6 025**	**100,0**		**28 099**	**100,0**

* 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 2021, *human immunodeficiency virus* [HIV] disease was the leading cause of death for those aged 15–24, accounting for 5,4% of deaths, followed by *tuberculosis* (4,4%) and *COVID-19* (3,9%). *Other viral diseases*, *influenza and pneumonia and episodic and paroxysmal disorders* were the fourth, fifth and sixth leading causes of death, respectively. The ten leading causes of death in this age group contributed just a quarter (24,7%) of deaths in this age group.

Table 4.9 - The ten leading underlying causes of death for the population aged 15–24 years, 2021

	15–24		
Causes of death (based on ICD-10)	**Rank**	**Number**	**Percentage (%)**
Human immunodeficiency virus [HIV] disease (B20-B24)	1	1 100	5,4
Tuberculosis (A15-A19) *	2	893	4,4
COVID-19 (U071-U072)	3	778	3,9
Other viral diseases (B25-B34)	4	608	3,0
Influenza and pneumonia (J09-J18)	5	532	2,6
Episodic and paroxysmal disorders (G40-G47)	6	299	1,5
Intestinal infectious diseases (A00-A09)	7	230	1,1
Other forms of heart disease (I30-I52)	8	201	1,0
Diabetes mellitus (E10-E14)	9	195	1,0
Inflammatory diseases of the central nervous system (G00-G09)	10	166	0,8
Other Natural		5 908	29,2
Non-natural		9 274	45,9
All Causes		**20 184**	**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

This section looks at province-level variations in mortality and causes of death. Table 4.10 shows the provincial variations in the ranking of the ten leading underlying causes of death for 2021. Across the nine provinces, *COVID-19* was the leading underlying cause of death, contributing to Western Cape (20,8%), Gauteng (19,5%), Northern Cape (17,0%), Free State (15,2%), KwaZulu-Natal (14,7%), North West (13,6%), Mpumalanga (11,4%), Eastern Cape (9,8%) and Limpopo (9,4%), whilst *diabetes mellitus* was the second cause of death in six provinces namely, Western Cape, Eastern Cape, KwaZulu-Natal, Gauteng, Limpopo and Mpumalanga.

Five underlying causes of death were common in all nine provinces, namely *COVID-19, diabetes mellitus, cerebrovascular diseases, HIV disease* and *hypertensive diseases*. However, the ranks of these causes of death differed between provinces with the exception of *COVID-19* that ranked first in all provinces. For example, *hypertensive diseases* ranked second in Northern Cape, Free State and North West. It ranked third in Eastern Cape, Gauteng, and Mpumalanga.

The proportion of deaths due to *cerebrovascular diseases* were high in Limpopo with 5,9% of deaths in the province, followed by the Western Cape with 5,6% and KwaZulu-Natal with 5,0% of deaths. It had the lowest proportions of deaths in Gauteng (3,2%) and North West (3,8%). Proportions of deaths due to *HIV disease* ranked third as the leading cause of death (6,4%) in Northern Cape and fourth in both Free State (5,5%) and Eastern Cape (5,1%).

Western Cape was the only province where *malignant neoplasms of digestive organs* (3,4%) and *malignant neoplasms of respiratory and intrathoracic organs* (2,9%) were in the top ten leading underlying causes of death. It was also the only province where *influenza and pneumonia* were not on the ten leading underlying causes of death. Additionally, Gauteng was the only province where tuberculosis was not in the top ten as it ranked eleventh. Limpopo and Mpumalanga had *intestinal infectious diseases* each contributing 2,2% of deaths in the top ten leading underlying causes, ranking ninth and tenth respectively.

Detailed information on the distribution of the ten leading underlying causes by province, sex and age is provided in Appendices M to M9.

Table 4.10 - The ten leading underlying natural causes of death in each province of death occurrence, 2021

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.	%
Covid-19 (U071-U072)	1	14 455	20,8	1	8 529	9,8	1	3 218	17,0	1	5 985	15,2	1	16 698	14,7	1	5 933	13,6	1	27 105	19,5	1	4 639	11,4	1	5 800	9,4
Diabetes mellitus (E10-E14)	2	4 866	7,0	2	5 185	6,0	4	938	5,0	3	2 363	6,0	2	7 591	6,7	3	2 428	5,6	2	6 383	4,6	2	2 690	6,6	2	4 297	7,0
Cerebrovascular diseases (I60-I69)	3	3 930	5,6	6	4 031	4,7	5	777	4,1	5	1 815	4,6	3	5 699	5,0	4	1 650	3,8	5	4 463	3,2	5	1 863	4,6	4	3 612	5,9
Ischaemic heart diseases (I20-I25)	4	3 412	4,9	…	…	…	10	429	2,3	10	735	1,9	8	2 713	2,4	…	…	…	7	3 206	2,3	6	1 684	4,1	…	…	…
Human immunodeficiency virus [HIV] disease (B20-B24)	5	3 380	4,9	4	4 383	5,1	3	1 201	6,4	4	2 181	5,5	5	4 117	3,6	5	1 641	3,8	8	3 092	2,2	7	1 633	4,0	6	2 181	3,5
Hypertensive diseases (I10-I15)	6	3 006	4,3	3	4 554	5,3	2	1 322	7,0	2	2 487	6,3	4	4 640	4,1	2	3 114	7,2	3	5 107	3,7	3	2 550	6,3	5	3 555	5,8
Malignant neoplasms of digestive organs (C15-C26)	7	2 358	3,4	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	10	2 316	1,7	…	…	…	…	…	…
Tuberculosis (A15-A19) *	8	2 295	3,3	5	4 286	4,9	6	639	3,4	9	881	2,2	7	3 381	3,0	8	1 322	3,0	…	…	…	9	1 005	2,5	8	1 435	2,3
Chronic lower respiratory diseases (J40-J47)	9	2 144	3,1	7	2 757	3,2	8	565	3,0	…	…	…	…	…	…	10	739	1,7	…	…	…	…	…	…	…	…	…
Malignant neoplasms of respiratory and intrathoracic organs (C30-C39)	10	1 987	2,9	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Influenza and pneumonia (J09-J18)	…	…	…	8	2 421	2,8	7	579	3,1	6	1 757	4,5	6	3 395	3,0	6	1 433	3,3	4	4 617	3,3	4	2 312	5,7	3	3 733	6,1
Other viral diseases (B25-B34)	…	…	…	9	1 973	2,3	9	472	2,5	8	986	2,5	9	2 609	2,3	7	1 351	3,1	9	2 672	1,9	8	1 208	3,0	7	1 595	2,6
Other forms of heart disease (I30-I52)	…	…	…	10	1 872	2,2	…	…	…	7	1 107	2,8	10	2 510	2,2	9	1 102	2,5	6	3 623	2,6	…	…	…	10	1 138	1,8
Intestinal infectious diseases (A00-A09)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	10	888	2,2	9	1 346	2,2
Other Natural		20 553	29,5		36 934	42,6		7 294	38,6		15 831	40,1		47 653	41,8		19 308	44,4		62 568	45,1		16 308	40,1		28 406	46,1
Non-natural		7 203	10,4		9 743	11,2		1 472	7,8		3 305	8,4		12 870	11,3		3 480	8,0		13 613	9,8		3 904	9,6		4 475	7,3
All causes		**69 589**	**100,0**		**86 668**	**100,0**		**18 906**	**100,0**		**39 433**	**100,0**		**113 876**	**100,0**		**43 501**	**100,0**		**138 765**	**100,0**		**40 684**	**100,0**		**61 573**	**100,0**

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

4.6.7 Underlying causes of death by district/metropolitan municipality of death occurrence

4.6.7.1 Main group

The main groups of underlying natural causes of death by district/metropolitan municipalities are provided in Appendices N to O2. The number of deaths by main groups of causes of death for each district/metropolitan municipality of death occurrence are provided in Appendices N, while Appendices O show the main groups of causes of death for each district/metropolitan municipality of death occurrence by their percentage distribution. Information at a geographic level lower than district is not provided in this release; however, it is available on request from Stats SA.

4.6.7.2 Broad groups

Appendix P shows information on the ten leading natural causes of death by district/metropolitan municipality.

4.6.7.3 Underlying natural causes of death by population group

Due to a large proportion of unknown or unspecified cases, the ten leading underlying natural causes of death by population group are not discussed in this section. The discussion and distribution of underlying causes of death by population group are provided in appendices Q and Q.1.

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 therefore on non-natural causes of death should therefore be interpreted mindful of 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.

Table 4.11 shows the number and percentage distribution of broad groups of non-natural causes of death. A proportion of 9,8% (refer to Table 4.3) of all deaths that occurred in 2021 were due to external causes of morbidity and mortality. It is observed that the majority of non-natural causes of death resulted from *other external causes of accidental injury* (67,8%). In terms of all deaths, *other external causes of accidental injury* accounted for 6,6%.

Assault was the second most common non-natural cause of death and accounted for 10,9% of non-natural causes and 1,1% of all reported deaths. The third most common cause of non-natural deaths was *transport accidents* at 10,5% and constituting 1,0% of all deaths, followed by *event of undetermined intent* (6,8%) and *complications of medical and surgical care* (3,0%). About 0,9% of non-natural deaths were due to *intentional self-harm* and 0,1% were due to *sequelae of external causes of morbidity and mortality*.

Table 4.11 – Number and percentage distribution of non-natural causes of death by broad groups, 2021

Causes of death (based on ICD-10, 2016)	Number	Percentage (%) of non-natural causes	Percentage of all causes (N = 613 720)
Other external causes of accidental injury (W00-X59)	40 753	67,8	6,6
Assault (X85-Y09)	6 571	10,9	1,1
Transport accidents (V01-V99)	6 296	10,5	1,0
Event of undetermined intent (Y10-Y34)	4 064	6,8	0,7
Complications of medical and surgical care (Y40-Y84)	1 776	3,0	0,3
Intentional self-harm (X60-X84)	569	0,9	0,1
Sequelae of external causes of morbidity and mortality (Y85-Y89)	87	0,1	0,0
All non-natural	**60 116**	**100,0**	**9,8**

A breakdown of the 40 753 deaths due to *other external causes of accidental injury* identified in Table 4.11 are shown in Table 4.12, for a better understanding of deaths due to this cause. The table shows that almost half of these deaths were due to *accidental exposure to other and unspecified factors*. This includes *exposure to unspecified factors causing fracture and exposure to other unspecified factors*.

The majority of deaths in this group were *accidental exposure to other and unspecified factors* (40,1%). This was followed by deaths due to *exposure to inanimate mechanical forces* which were the second leading cause, responsible for 24,9% of deaths in this group. This group includes discharge from other and unspecified firearms as well as contact with a knife or sword. The third most common cause was *other accidental threats to breathing* (13,9%), which includes accidental hanging and strangulation. The fourth most reported death due to other external causes of accidental injury was *exposure to smoke, fire and flames* (8,4%), followed by *accidental drowning and submersion* (3,9%).

Table 4.12 – Number and percentage distribution of deaths due to other external causes of accidental injury, 2021

Cause of death (based on ICD-10)	Number	Percentage (%)
Accidental exposure to other and unspecified factors (X58-X59)	16 337	40,1
Exposure to inanimate mechanical forces (W20-W49)	10 162	24,9
Other accidental threads to breathing (W75-W84)	5 672	13,9
Exposure to smoke, fire and flames (X00 - X09)	3 426	8,4
Accidental poisoning by and exposure to noxious substance(X40-X49)	2 293	5,6
Accidental drowning and submersion(W65-W74)	1 601	3,9
Exposure to electric current, radiation and extreme ambient air temperature and pressure (W85-W99)	579	1,4
Exposure to forces of nature (X30 - X39)	330	0,8
Falls (W00-W19)	213	0,5
Exposure to animate mechanical forces (W50-W64)	59	0,1
Contact with venomous animals and plants(X20-X29)	48	0,1
Contact with heat and hot substances(X10-X19)	28	0,1
Overexertion, travel and privation(X50-X59)	5	0,0
Total	**40 753**	**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 2021. The absolute numbers and percentages for both sexes may not be similar to the results presented in Table 4.11, as deaths with missing sex and age have been excluded.

The first section of Table 4.13 showing both sexes means that for both sexes combined, the age group mostly affected by non-natural causes of death was age group 15–29, where 44,0% 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 2,1% of deaths in this age group were due to non-natural causes. Assault was more common among those aged 15–29, accounting for 15,6% of non-natural deaths in this age group. Complications of medical and surgical care were highest among the elderly (15,0%), while transport accidents were highest among those aged 1–14 at 14,3%.

Differentials by sex show higher proportions of non-natural deaths for males at 15,1% compared to 4,3% of female non-natural deaths. Moreover, for each of the age groups, except for age zero, 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 57,5% of male deaths resulted from non-natural causes compared to 20,1% 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 shows that the proportion of deaths due to assault was high for males (12,4%) compared to females (5,6%). 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 and older). This cause of death was also high among females, with the proportion of female deaths due to complications of medical and surgical care at 7,0% compared to 1,9% for males.

The proportion of non-natural deaths due to transport accidents were higher among females (12,3%) compared to males (10,0%).

For all age groups, *other external cause of accidental injury* was the highest non-natural cause of death. 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, 2021

	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)	38	498	1 751	2 341	1 348	320	6 296	4,7	14,3	9,6	11,1	12,2	5,9	10,5
Other external causes of accidental injury (W00-X59)	682	2 625	12 046	14 113	7 496	3 791	40 753	85,0	75,2	66,1	66,8	67,8	70,0	67,8
Intentional self-harm (X60-X84)	0	22	215	206	97	29	569	0,0	0,6	1,2	1,0	0,9	0,5	0,9
Assault (X85-Y09)	11	58	2 849	2 657	800	196	6 571	1,4	1,7	15,6	12,6	7,2	3,6	10,9
Event of undetermined intent (Y10-Y34)	25	233	1 237	1 538	787	244	4 064	3,1	6,7	6,8	7,3	7,1	4,5	6,8
Complications of medical and surgical care (Y40-Y84)	46	54	108	252	501	815	1 776	5,7	1,5	0,6	1,2	4,5	15,0	3,0
Sequelae of external causes of morbidity and mortality (Y85-Y89)	0	3	14	20	25	25	87	0,0	0,1	0,1	0,1	0,2	0,5	0,1
Sub total	802	3 493	18 220	21 127	11 054	5 420	60 116	100	100	100	100	100	100	100
Non-natural causes	802	3 493	18 220	21 127	11 054	5 420	60 116	3,6	28,5	44,0	22,7	6,0	2,1	9,8
Natural causes	21 272	8 745	23 165	71 935	172 749	255 738	553 604	96,4	71,5	56,0	77,3	94,0	97,9	90,2
All causes	22 074	12 238	41 385	93 062	183 803	261 158	613 720	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Males														
Transport accidents (V01-V99)	25	283	1 321	1 856	1 011	205	4 701	5,5	13,4	8,7	10,4	11,8	7,0	10,0
Other external causes of accidental injury (W00-X59)	381	1 643	10 186	12 105	5 916	2 051	32 282	84,5	77,8	67,0	67,9	69,2	69,9	68,6
Intentional self-harm (X60-X84)	0	3	132	154	66	17	372	0,0	0,1	0,9	0,9	0,8	0,6	0,8
Assault (X85-Y09)	4	36	2 614	2 404	659	126	5 843	0,9	1,7	17,2	13,5	7,7	4,3	12,4
Event of undetermined intent (Y10-Y34)	12	112	874	1 187	606	160	2 951	2,7	5,3	5,8	6,7	7,1	5,4	6,3
Complications of medical and surgical care (Y40-Y84)	29	32	54	115	276	368	874	6,4	1,5	0,4	0,6	3,2	12,5	1,9
Sequelae of external causes of morbidity and mortality (Y85-Y89)	0	2	11	17	17	9	56	0,0	0,1	0,1	0,1	0,2	0,3	0,1
Sub total	451	2 111	15 192	17 838	8 551	2 936	47 079	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Non-natural causes	451	2 111	15 192	17 838	8 551	2 936	47 079	3,9	32,0	57,5	31,9	8,5	2,6	15,1
Natural causes	11 189	4 489	11 245	38 039	91 888	108 303	265 153	96,1	68,0	42,5	68,1	91,5	97,4	84,9
All causes	11 640	6 600	26 437	55 877	100 439	111 239	312 232	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Females														
Transport accidents (V01-V99)	13	215	427	481	333	115	1 584	3,7	15,6	14,3	15,1	13,5	4,6	12,3
Other external causes of accidental injury (W00-X59)	301	980	1 838	1 940	1 550	1 738	8 347	85,8	71,1	61,3	60,7	63,0	70,1	64,9
Intentional self-harm (X60-X84)	0	19	83	52	30	12	196	0,0	1,4	2,8	1,6	1,2	0,5	1,5
Assault (X85-Y09)	7	22	233	245	141	69	717	2,0	1,6	7,8	7,7	5,7	2,8	5,6
Event of undetermined intent (Y10-Y34)	13	120	358	336	173	83	1 083	3,7	8,7	11,9	10,5	7,0	3,3	8,4
Complications of medical and surgical care (Y40-Y84)	17	22	54	137	224	446	900	4,8	1,6	1,8	4,3	9,1	18,0	7,0
Sequelae of external causes of morbidity and mortality (Y85-Y89)	0	1	3	3	8	16	31	0,0	0,1	0,1	0,1	0,3	0,6	0,2
Sub total	351	1 379	2 997	3 194	2 459	2 480	12 860	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Non-natural causes	351	1 379	2 997	3 194	2 459	2 480	12 860	3,4	24,5	20,1	8,6	3,0	1,7	4,3
Natural causes	9 988	4 251	11 893	33 841	80 822	147 426	288 221	96,6	75,5	79,9	91,4	97,0	98,3	95,7
All causes	10 339	5 630	14 890	37 035	83 281	149 906	301 081	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 2021 is shown in Table 4.14. It is observed that KwaZulu-Natal (11,3%) was the province with the highest proportion of deaths due to non-natural causes and this was consistent with previous years. Eastern Cape had the second highest proportion of deaths due to non-natural causes at 11,2%, followed by Western Cape at 10,4%. Gauteng was the fourth with 9,8% while Mpumalanga ranked fifth at 9,6%. The lowest proportions of deaths due to non-natural causes were observed in and Limpopo (7,3%) and Northern Cape (7,8%).

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 (40,2%). The proportion of deaths due to *other external causes of accidental injury* was highest in Gauteng (73,4%), Mpumalanga (71,4%) and Free State (70,0). Northern Cape (17,1%) had the highest proportion of deaths due to *assault*, followed by Eastern Cape (14,9%) and Western Cape at 13,6%. Deaths due to *assault* were lowest in Gauteng and Mpumalanga both at 7,3%.

Deaths due to *transport accidents* were highest in Northern Cape, responsible for 29,2% of deaths, followed by Limpopo at 29,1% and North West at 20,1%. Traditionally, Limpopo has always had the highest proportion of *transport accidents* in South Africa compared to the rest of the other provinces.

Complications of medical and surgical care, intentional self-harm and *sequelae of external causes of morbidity and mortality* were the least common, each contributing 5% and below of non-natural deaths in each province, except for Northern Cape where 6,6% of non-natural deaths were due to *intentional self-harm*.

4.7.3 Non-natural causes of death by district municipalities

The proportion of deaths due to non-natural causes of death for each district is provided in Appendix O. Non-natural causes of death are in the column labelled external causes of morbidity and mortality (V01-Y98).

Table 4.14 - Underlying non-natural causes of death by province, 2021

Causes of death (ICD-10)	Western Cape		Eastern Cape		Northern Cape		Free State		KwaZulu-Natal		North West		Gauteng		Mpumalanga		Limpopo	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Transport accidents (V01-V99)	450	6,2	902	9,3	430	29,2	315	9,5	1 337	10,4	700	20,1	422	3,1	437	11,2	1 300	29,1
Other external causes of accidental injury (W00-X59)	4 989	69,3	6 683	68,6	592	40,2	2 315	70,0	8 942	69,5	2 024	58,2	9 987	73,4	2 787	71,4	2 394	53,5
Intentional self-harm (X60-X84)	45	0,6	67	0,7	97	6,6	42	1,3	121	0,9	62	1,8	85	0,6	037	0,9	11	0,2
Assault (X85-Y09)	983	13,6	1 450	14,9	251	17,1	372	11,3	1 484	11,5	361	10,4	989	7,3	284	7,3	395	8,8
Event of undetermined intent (Y10-Y34)	409	5,7	452	4,6	53	3,6	165	5,0	677	5,3	239	6,9	1 567	11,5	298	7,6	202	4,5
Complications of medical and surgical care (Y40-Y84)	318	4,4	179	1,8	045	3,1	094	2,8	279	2,2	090	2,6	544	4,0	059	1,5	168	3,8
Sequelae of external causes of morbidity and mortality (Y85-Y89)	9	0,1	10	0,1	4	0,3	2	0,1	30	0,2	4	0,1	19	0,1	2	0,1	5	0,1
SubTotal	7 203	100,0	9 743	100,0	1 472	100,0	3 305	100,0	12 870	100,0	3 480	100,0	13 613	100,0	3 904	100,0	4 475	100,0
Non-Natural causes	7 203	10,4	9 743	11,2	1 472	7,8	3 305	8,4	12 870	11,3	3 480	8,0	13 613	9,8	3 904	9,6	4 475	7,3
Natural causes	62 386	89,7	76 925	88,8	17 434	92,2	36 128	91,6	101 006	88,7	40 021	92,0	125 152	90,2	36 780	90,4	57 098	92,7
Total	69 589	100,0	86 668	100,0	18 906	100,0	39 433	100,0	113 876	100,0	43 501	100,0	138 765	100,0	40 684	100,0	61 573	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).

Table 4.15 aggregates the total number of causes mentioned on each form and groups these in broad groups of causes of death. The broad groups of causes of death were then ranked, and the 20 leading causes based on all causes of death recorded on each form. The list includes all causes of death both natural and non-natural, 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.

In 2021, the most frequently reported cause of death was Ill-defined and unknown causes of mortality and was recorded on 96 706 death notification forms. In terms of percentage distribution, about 15,8% of all death notification forms had *ill-defined and unknown causes of mortality* recorded as either an immediate or underlying cause of death. The second most reported cause was *hypertensive diseases*, mentioned on 94 522 forms. *COVID-1*9 (92 661), *influenza and pneumonia* (92 187) and *other forms of heart disease* (82 696) were the third, fourth and fifth most reported causes of death, respectively.

Table 4.15 - Distribution of the 20 most commonly reported causes of death, 2021

Rank	Causes of death (based on ICD-10)	Number of deaths in which the causes was reported	Percentage (%) of all deaths
1	Ill-defined and unknown causes of mortality (R95-R99)	96 706	15,8
2	Hypertensive diseases (I10-I15)	94 522	15,4
3	COVID-19 (U071-U072)	92 661	15,1
4	Influenza and pneumonia (J09-J18)	92 187	15,0
5	Other forms of heart disease (I30-I52)	82 696	13,5
6	Diabetes mellitus (E10-E14)	58 577	9,5
7	Other external causes of accidental injury (W00-X59)	42 410	6,9
8	Renal failure (N17-N19)	41 645	6,8
9	Cerebrovascular diseases (I60-I69)	39 323	6,4
10	Tuberculosis (A15-A19) *	31 708	5,2
11	Other bacterial diseases (A30-A49)	30 707	5,0
12	Human immunodeficiency virus [HIV] disease (B20-B24)	28 690	4,7
13	Other diseases of the respiratory system (J95-J99)	25 684	4,2
14	Ischaemic heart diseases (I20-I25)	23 935	3,9
15	Chronic lower respiratory diseases (J40-J47)	21 057	3,4
16	Other viral diseases (B25-B34)	19 904	3,2
17	Metabolic disorders (E70-E90)	18 075	2,9
18	Other acute lower respiratory infections (J20-J22)	16 953	2,8
19	Other respiratory diseases principally affecting the interstitium (J80-J84)	13 929	2,3
20	Intestinal infectious diseases (A00-A09)	12 367	2,0

*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 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, 36 752 deaths had d*iabetes mellitus* as the underlying cause and another 20 919 deaths had it as an immediate or contributing cause. This gives a total of 57 671 death notification forms that had *diabetes mellitus* mentioned on them. The table further shows that above 99,7% of death notification forms had *COVID-19* recorded on them, *HIV disease* (83,0%) and *cerebrovascular diseases* (72,4%) were selected as underlying causes. In less than half of the cases where *hypertensive diseases* (32,3%), *influenza and pneumonia* (23,3%) and *other forms of heart disease* (20,6%) were mentioned, they were selected as the underlying causes.

Table 4.16 - Number and percentage (%) of deaths selected as underlying or reported as immediate or contributing causes of death, 2021

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
COVID-19 (U071-U072)	1	92 438	292	92 730	99,7	0,3	100,0
Diabetes mellitus (E10-E14)	2	36 752	20 919	57 671	63,7	36,3	100,0
Hypertensive diseases (I10-I15)	3	30 343	63 512	93 855	32,3	67,7	100,0
Cerebrovascular diseases (I60-I69)	4	27 848	10 624	38 472	72,4	27,6	100,0
Human immunodeficiency virus [HIV] disease (B20-B24)	5	23 814	4 893	28 707	83,0	17,0	100,0
Influenza and pneumonia (J09-J18)	6	21 264	70 000	91 264	23,3	76,7	100,0
Tuberculosis (A15-A19) *	7	17 499	13 805	31 304	55,9	44,1	100,0
Ischaemic heart diseases (I20-I25)	8	14 731	7 704	22 435	65,7	34,3	100,0
Other forms of heart disease (I30-I52)	9	13 810	53 182	66 992	20,6	79,4	100,0
Other viral diseases (B25-B34)	10	13 415	7 223	20 638	65,0	35,0	100,0

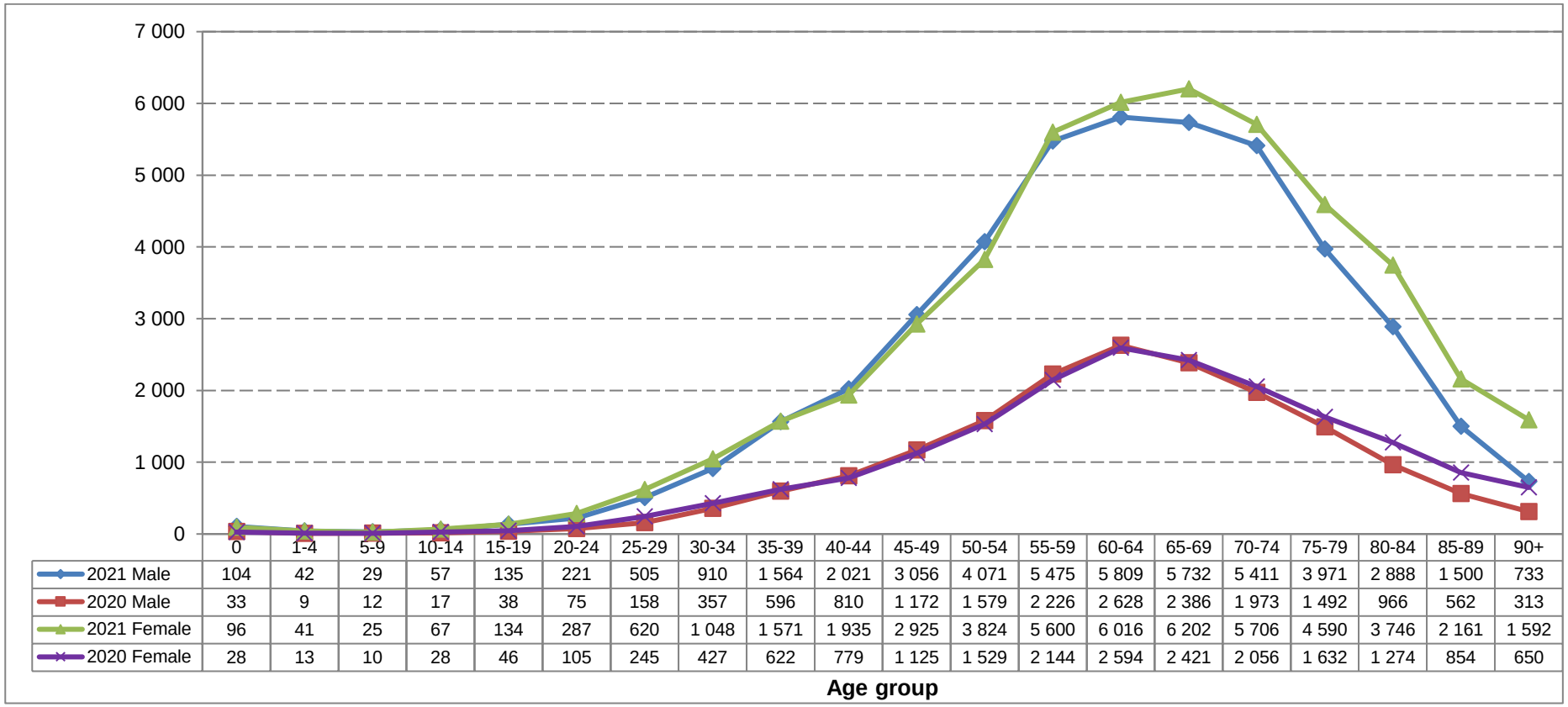
*Including deaths due to *MDR-TB* and *XDR-TB*.

4.9 COVID-19 in South Africa

South Africa, like many other countries, experienced the impact of the COVID-19 pandemic. On 5 March 2020, the Minister of Health made an official announcement of the first confirmed case of COVID-19 in South Africa with the first local death from the disease being reported on 27 March 2020 (Government of South Africa, 2020). Subsequently, the government took various measures to curb the spread of the virus, including lockdowns of varying severity, travel restrictions, and social distancing guidelines. In December 2020, South Africa experienced a second wave of COVID-19 infections, mostly with infections from the SARS-CoV-2 Beta variant (Network for Genomic Surveillance in South Africa [NGS-SA], 2022).

Figure 4.7 shows the COVID-19 mortality pattern across the different age groups by sex for the years 2020 and 2021. It is observed that deaths were relatively low during infancy and childhood (although slightly higher in age group zero years) up to 19 years. From age 20, deaths began to rise steadily for both sexes albeit being higher among females until age 39 and from ages 40–54, male deaths surpassed female deaths. Peak mortality also observed at age group 60–64 for both sexes in 2021. Although a steady decline is observed for both sexes from ages 65–90, there were more female deaths in the same age groups with a widening gap from age groups 70 and above. Overall, deaths were markedly higher in 2021 across all age groups and sexes.

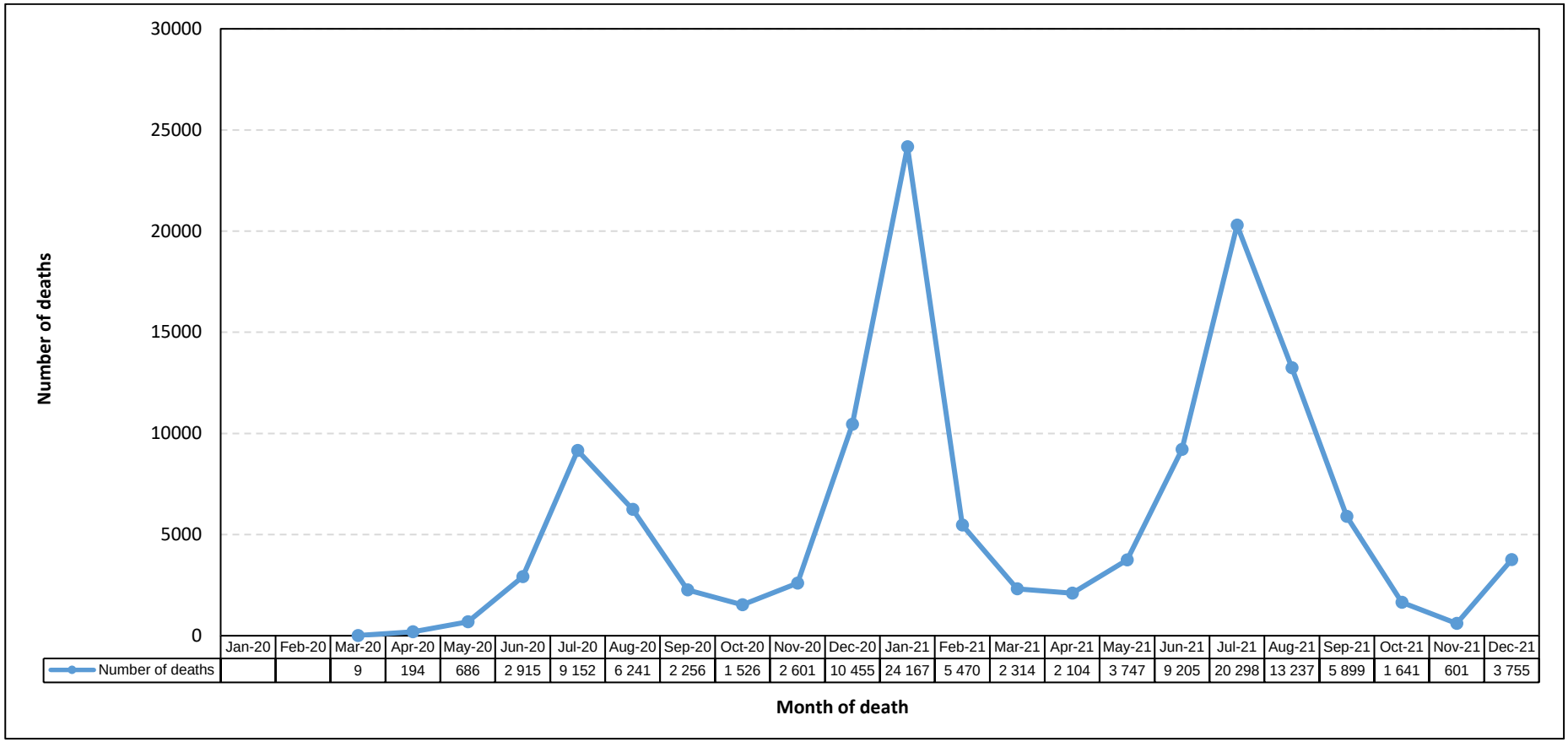
Figure 4.7 - Number of COVID-19 deaths by age and sex, 2020–2021



	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+
2021 Male	104	42	29	57	135	221	505	910	1 564	2 021	3 056	4 071	5 475	5 809	5 732	5 411	3 971	2 888	1 500	733
2020 Male	33	9	12	17	38	75	158	357	596	810	1 172	1 579	2 226	2 628	2 386	1 973	1 492	966	562	313
2021 Female	96	41	25	67	134	287	620	1 048	1 571	1 935	2 925	3 824	5 600	6 016	6 202	5 706	4 590	3 746	2 161	1 592
2020 Female	28	13	10	28	46	105	245	427	622	779	1 125	1 529	2 144	2 594	2 421	2 056	1 632	1 274	854	650

Figure 4.8 shows the distribution of deaths from COVID-19 by month of occurrence and year of death between 2020 and 2021. The graph shows that in the early stage of the outbreak in 2020, deaths were relatively low with only nine deaths occurring in March. By the end of April, deaths had rapidly increased to 194, rising fourfold by May and June to 686 and 2 915, respectively, and reaching first mortality peak in July with 9 153 deaths. From August, a sharp decline in mortality was observed with 6 241 deaths, followed by a further decline in September with mortality levels reaching their lowest in October at 1 526 deaths. A second increase was observed from November with 2 600 deaths which increased fourfold in December to 10 455 deaths. This was the period during which South Africa was entering the second wave of the outbreak. Deaths in 2021 started high in January with 24 167 deaths, highlighting the pandemic's escalation. They dropped sharply by February to 5 470 and reached a low in April with 2 104 deaths. A gradual increase was observed from May with a peak occurrence in July of 20 298 deaths. A sharp decline was observed from August, 13 237 to a low of 601 in November, rising again in December to 3 755.

Figure 4.8 - Number of COVID-19 deaths by month of death, 2020-2021



	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
Number of deaths			9	194	686	2 915	9 152	6 241	2 256	1 526	2 601	10 455	24 167	5 470	2 314	2 104	3 747	9 205	20 298	13 237	5 899	1 641	601	3 755

Table 4.17 shows the number and percentage distribution of COVID-19 deaths by province of death. In 2020 the majority of deaths occurred in Eastern Cape (25,5%), followed by Gauteng (21,7%), Western Cape (18,5%) and KwaZulu-Natal (17,7%). Comparatively, in 2021 Gauteng experienced most deaths (29,3%) followed by KwaZulu-Natal (18,1%) and Western Cape (15,6%).

Table 4.17 - Number and percentage (%) distribution of COVID-19 deaths by province of death, 2020-2021

	2020		2021	
Province of death	**Number of deaths**	**Percentage (%)**	**Number of deaths**	**Percentage (%)**
Western Cape	6 682	18,5	14 455	15,6
Eastern Cape	9 194	25,5	8 529	9,2
Northern Cape	779	2,2	3 218	3,5
Free State	2 239	6,2	5 985	6,5
KwaZulu-Natal	6 399	17,7	16 698	18,1
North West	1 205	3,2	5 933	6,4
Gauteng	7 780	21,7	27 105	29,3
Mpumalanga	869	2,4	4 639	5,0
Limpopo	826	2,3	5 800	6,3
Outside South Africa	14	0,1	72	0,1
Unspecified	48	0,2	4	0,0
Total	**36 035**	**100,0**	**92 438**	**100,0**

5. Conclusion

This statistical release provides information on registered deaths for 2021 in South Africa based on data from the South African civil registration system maintained by the DHA. The report includes levels, trends and patterns in mortality and causes of deaths by demographic and geographic characteristics. 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 results showed that the total number of deaths registered at the Department of Home Affairs and processed by Stats SA for deaths that occurred in 2021 were 613 720, which indicates an increase from 513 012 deaths that occurred in 2020. This is mainly attributed to COVID-19 deaths that occurred in 2021. Overall, mortality trends showed that mortality levels were declining in the country before COVID-19.

While the occurrence of deaths in the country continued to decline (except 2020 and 2021) it differed by age and sex. Differentials by sex and age show that for both sexes, the proportion of deaths were high in infancy at 3,7% for males and 3,4% for females. This was followed by a decline from age 1-14 years with the lowest proportions of deaths observed in age groups 5–9 and 10–14, each contributing less than 1,0% of the deaths which occurred in 2021. From age 15, mortality rates start to increase with increasing age with the age group 65–69 having had the highest proportion of deaths at 9,7% for both males and females. From age 70 and older there were more female than male deaths.

Mortality differentials by province of death showed that the distribution of deaths by province of death followed the population distribution patterns of the country. The highest proportion of deaths occurrence in Gauteng (22,6%), followed by KwaZulu-Natal (18,6%) and then Eastern Cape (14,1%). While the lowest proportion of deaths occurred in Northern Cape (3,1%). Similarly, the population group differentials were reflective of the distribution of population groups in South Africa. Black Africans had the highest proportion of deaths (65,6%) in 2021, followed by the white population group at 9,9%.

Since 2009, the proportion of deaths due to non-natural causes had been on an increase from 8,7% in 2009 to 12,4% in 2019. However, for 2020, there was a notable decline to a low of 9,6% and a slight increase to 9,8% in 2021. Non-natural causes of death by age show that the age group 20–24 was the age group mostly affected, accounting for 47,8% deaths.

The assessment of mortality from major disease factors, injuries and risk factors indicated that for the period 2010 to 2021, there were more deaths due to non-communicable diseases compared to communicable diseases. Differences by sex and age show that the proportion of deaths due to communicable diseases gradually declines with age from age 50 for males and age 35 for females.

The proportion of deaths due to external causes of death was high for males compared to females for all age groups.

In 2021, five of the top ten leading underlying natural causes of death were non-communicable diseases, while the remainder were communicable diseases. *COVID-19* (15,1%) was the leading underlying natural cause of death followed by *diabetes mellitus* with 6,0% deaths. The same pattern was observed in 2020. *COVID-19* was the leading cause of death for both males (14,2%) and females (16,0%) while diabetes mellitus ranked second for both sexes, responsible for 4,5% of male deaths and 7,5% of female deaths. Nine of the top ten leading underlying causes of death were the same for both sexes though it differed greatly by proportion. *Chronic lower respiratory diseases* did not form part of the top 10 leading causes for females and was replaced by *other forms of heart diseases.*

Leading causes of death by province show that *COVID-19* was the leading cause of death across all provinces. By age differentials, *COVID-19* was the leading cause of death only for age groups 45–64 and 65+, responsible for 20,0% and 17,0%, respectively, of the deaths in this age groups. For age group 1–14, intestinal infectious diseases remained the leading cause of death with 5,7% deaths, whereas *respiratory and cardiovascular disorders specific to the perinatal period* were the leading causes for infants at 13,8%.

Statistics on mortality and causes of death are important for planning, monitoring and evaluation of interventions and programmes aimed at improving the health and survival of the population at large. As such, efforts need to be made to enhance the completeness and quality of information. Addressing gaps in deaths data will go a long way towards providing quality death statistics to inform intervention programmes and projects. The data on causes of death is still of high quality and invaluable for the country.

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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 accurateness 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 2020 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 (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 2001–2007 and 2007–2011 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), however, 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 2021 is shown in Table C.1. For deaths that occurred in 2021, 17,8% were registered within a day of occurrence, 32,1% a day after the death had occurred, 18,0% on the second day after death occurrence and 12,3% on the third day. The proportion of deaths which were registered within the 72 hours (3 days) stipulated by the Regulations legislative framework was 80,3%.

Table C.1 – Distribution of deaths by the number of days it took to register the death, 2021

Number of days	Number of deaths	Percentage	Cumulative percentage
Within a day of death	109 259	17,8	17,8
1 day	196 927	32,1	49,9
2 days	110 579	18,0	67,9
3 days	75 755	12,3	80,3
4 days	42 476	6,9	87,2
5 days	23 914	3,9	91,1
6 days	13 983	2,3	93,4
7-13 days	25 313	4,1	97,5
14-20 days	3 700	0,6	98,1
21-30 days	2 203	0,4	98,4
31-364 days	9 045	1,5	99,9
1 year+	566	0,1	100,0
Total	**613 720**	**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 2021 mortality and causes of death report for the years 2000 to 2020, and late or delayed death registrations processed during the 2024/2025 processing year. The table shows that 43 151 additional death notification forms for deaths that occurred between 2000 and 2020 were processed during the 2024/2025 processing phase. The majority (23 268) of the additional forms were for deaths that occurred in 2020. The distribution of deaths for 1997 to 2021 updated for late or delayed death notification forms is provided in Appendices D.

Table C.2: Number of deaths published in 2020 publication and late registrations processed during the 2023/2024 processing phase by year of death, 1997–2020

Year of death	Number of deaths published in 2020 publication	Additional forms received in the 2023/2024 processing phase	Total number of deaths
2000	417 616	147	417 763
2001	456 649	152	456 801
2002	503 818	173	503 991
2003	558 860	189	559 049
2004	578 829	164	578 993
2005	600 020	146	600 166
2006	614 578	150	614 728
2007	606 605	137	606 742
2008	598 647	129	598 776
2009	584 448	132	584 580
2010	552 521	800	553 321
2011	519 248	1 450	520 698
2012	496 656	1 459	498 115
2013	478 317	1 257	479 574
2014	478 719	1 274	479 993
2015	475 936	1 964	477 900
2016	472 878	1 595	474 473
2017	467 333	1 887	469 220
2018	467 569	3 226	470 795
2019	463 618	3 452	467 070
2020	489 744	23 268	513 012
Total	**10 882 609**	**43 151**	**10 925 760**

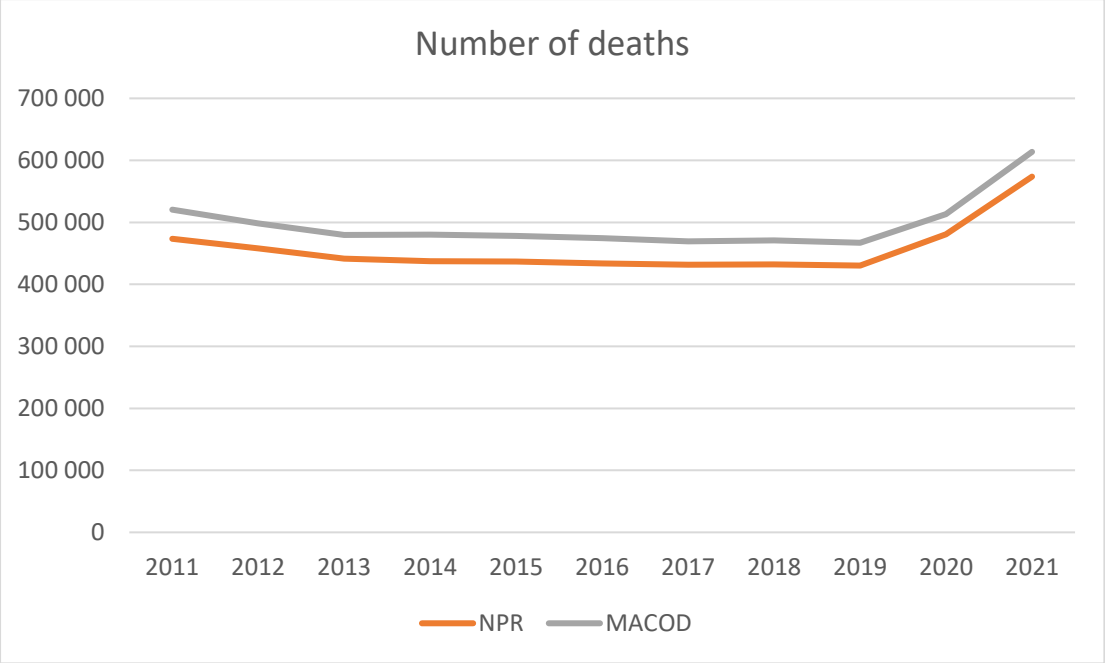
Data confrontation

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 2011–2021. 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 the number of deaths processed by Stats SA (MACOD) has been higher than that recorded on the DHA (NPR). The trend analysis reveals that both data sources had consistent and steady differences between 2011 and 2019. There was an increase in 2020 between both sources followed by another sharp increase in 2021 due to late registrations from 2020.

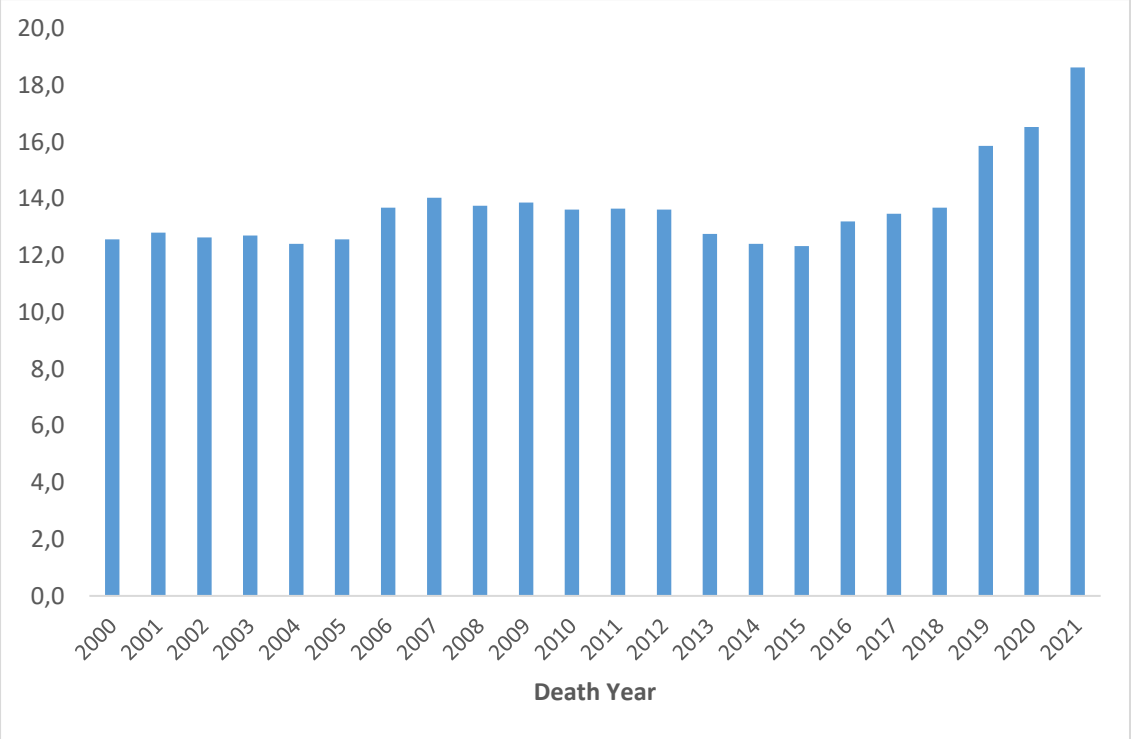
Figure C 1 – Number of deaths registered by source of data and year of death, 2011–2021



Quality of causes of death information

Quality information on 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 2000–2021*



*Data for 2000–2020 have been updated with late registrations/delayed death notification forms processed in 2024/2025.

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 2021 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 2021 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 2021. 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.

For the selected variables shown in table C.3 the variables that have been poorly reported before 2014 and have now been well reported over time. Only 0,1% of deaths had unspecified sex of deceased with 0,0% unspecified sex and province of death occurrence. Province of usual residence declined from 14,3% in 2020 to 0,8% in 2021. The information on province of birth occurrence decreased from 30,0% in 2020 to 24,7% in 2021. Missing information for marital status was 22,8% in 2021.

The results further indicate that 14,1% of the deaths had unknown or unspecified information on population group. 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 2021, education level (46,1%); industry (86,8%) and pregnancy status (77,1%) 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 2021, 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, 2021

Variables	Applicable group	Percentage unknown or unspecified
Sex	All	0,4
Age	All	0,0
Province of death occurrence	All	0,1
Province of usual residence of deceased	All	14,3
Province of birth	All	30,0
Population group	All	14,3
Place or institution of death occurrence	All	28,5
Method used to ascertain cause of death	All	34,9
Marital Status	All	22,3
Smoking status	Aged 16 and older	36,4
Education	Aged 6 and older	46,4
Occupation	Aged 15 and older	68,8
Industry	Aged 15 and older (economically active)	88,9
Pregnancy status	Females aged 10–55	76,0

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, 44,2% of the 2020 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 2021, and the variables analysed were similar to those in previous years. Therefore, comparability over time and with other countries is also regarded as complete.

The 2021 deaths show that 18,6% of all deaths were assigned to ill-defined causes. Mahapatra et al. (2007) propose that at most 10% of cause-of-death statistics should be assigned to symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified categories. This remains a cause for concern and requires urgent attention.

The table further shows that processing 2021 data on causes of death took 16 months and the mean time from the end of the reference period to publication was 39 months. A shorter processing time ensures that the mean time from the end of the reference period to publication is reduced, which in turn improves timeliness. Stats SA has introduced auto coding on the processing phase which is aimed at reducing both the mean time period and processing time.

In terms of meeting user needs, there is wide accessibility to the statistical release and datasets published on mortality and causes of death. The data published on this release are available in a wide range of formats and can be accessed through the Stats SA website and also by making use of Stats SA User Information Services.

Table C.4 – Assessment of the 2020 South African death statistics from the 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	44,2%
Missing data		Proportion of deaths assigned to symptoms and signs of disease not elsewhere classified	18,6%
See Table 2.5			
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 tenth revision at 4/5-digit level
Timeliness			
Processing time	16 months		
Mean time from end of reference period to publication	39 months		
Accessibility			
Media - number of formats in which data are released	Data portal on website		
Metadata	Data portal on website and with compact disc and available on request		
Availability of user service	Email: info@statssa.gov.za / Tel: 012 310 8600 / Fax (012) 310 8500 / 8495		