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Preface

This statistical release presents information on perinatal deaths that occurred in South Africa in 2014 based on data from the South African civil registration system maintained by the Department of Home Affairs. The release focuses on the aggregate number of registered stillbirths and infant deaths occurring during the first week of life. It also provides information on trends in the number of perinatal deaths covering the period 1997 to 2014 and causes of perinatal deaths from 2012 to 2014.

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1. Introduction

1.1 Background

Information on the number of perinatal deaths occurring over a time period, classified by the various causes of death, constitutes the basis for setting targets, planning, monitoring and evaluating interventions and programmes that aim to promote the health and survival of babies (United Nations [UN], 2014; Department of Health [DoH], 2014). These statistics are an invaluable indicator of the standard of health among pregnant women and their infants, as well as the quality of health care provided during pregnancy, delivery and post-delivery in the first week of life. As such, documentation of perinatal deaths and their causes is a crucial step towards both preventive and curative measures (World Health Organization [WHO], 2014a).

Perinatal deaths encompass both stillbirths, which are foetuses delivered without signs of life, and early neonatal deaths, which refer to live born babies that die in the first week after birth (WHO, 2006). The perinatal period as defined by the WHO commences at 22 completed weeks of gestation for stillbirths and ends on the seventh completed day of life for early neonatal deaths (WHO, 2006). The primary causes of stillbirths and early neonatal deaths are similar, and therefore the two are usually grouped into a single category of perinatal deaths (Barfield, 2011; WHO, 2006). The main contributory factors behind perinatal mortality include preterm birth, low birth weight, foetal growth restriction and congenital abnormalities (WHO, 2014a). However, high-quality antenatal care, delivery and postnatal care are deemed to reduce the incidence of complications and ensure the survival of newborn infants (WHO, 2006).

Recent statistics on perinatal deaths indicate that an estimated 3,3 million stillbirths and 2,8 million early neonatal deaths occur worldwide every year, 98% of which occur in low- and middle-income countries (WHO, 2014a). Over the years, perinatal deaths have reduced at a slower rate than child mortality rates, even though the vast majority of perinatal deaths are preventable. In order to achieve further reductions in child mortality, perinatal deaths require more attention, as early neonatal deaths account for 44% of all deaths occurring among children under five years (WHO, 2014a).

The registration of perinatal deaths in South Africa falls under the mandate of the Department of Home Affairs (DHA) and is governed by the Births and Deaths Registration Act 1992 (Act No. 51 of 1992) (Republic of South Africa, 1992). This Act was last amended in 2010 as the Births and Deaths Registration Amendment Act (Act No.18 of 2010), with the regulations of the Act amended in 2014 (Republic of South Africa, 2010; Republic of South Africa, 2014). According to the principal Act, '*A stillborn in relation to a child, means that it has at least 26 weeks of intra-uterine existence but showed no sign of life after complete birth* (Republic of South Africa, 1992:5).

In terms of the Regulations on the Registration of Births and Deaths, stillbirths and deaths have to be registered within 72 hours of occurrence (Republic of South Africa, 2014). While the certification of the occurrence of a stillbirth and provision of information on causes of death may be done by a professional nurse, all other deaths, including neonatal deaths, have to be certified by a medical practitioner. However, if any death was not due to natural causes, the medical practitioner is obliged to report such a death to a police officer. Subject to the Inquests Act, 1959 (Act No.58 of 1959), the police officer shall investigate the circumstances of the death while a forensic pathologist should perform a medico-legal post mortem to determine the causes of death.

'A long and healthy life for all South Africans' is one of the key development objectives outlined in the National Development Plan (NDP) adopted by the South African government in 2012 (National Planning Commission, 2012). In order to reach the NDP goal, the national DoH advocates for the reduction of neonatal and child mortality rates, including improvement of health care systems (DoH, 2014). Statistics South Africa (Stats SA) as the government department mandated to provide statistical information endeavours to disseminate annual perinatal statistics in order to guide health interventions at every administrative level, from national to local municipality level. Perinatal statistics also reveal the strengths and weaknesses of perinatal mortality information and serve to encourage initiatives to improve the completeness and quality of the data. Information on perinatal deaths is an

integral element of investing in care around the time of birth and raising awareness in communities about the burden of stillbirths and early neonatal mortality.

1.2 Purpose of the statistical release

This statistical release is the second in the series of annual reports on perinatal deaths in South Africa derived from the civil registration system. The general objective of the publication is to provide information on levels, patterns, trends and causes of perinatal deaths in South Africa. Specifically, the report is aimed at achieving the following objectives:

- To show trends in perinatal deaths over an 18-year period (1997−2014) for selected variables and to outline differentials in 2014 perinatal death occurrences by selected demographic, social and geographic characteristics;

- To provide information on the causes of death for perinatal deaths that occurred in 2014 based mainly on the underlying causes of death.

1.3 Scope of this statistical release

This statistical release is based on information on perinatal deaths from the South African civil registration system, covering both stillbirths and infant deaths occurring during the first week of life. It includes all death notification forms from DHA for registered perinatal deaths that occurred in 2014 or earlier, that reached Stats SA in time for the 2014/15 processing phase. The primary focus for this release is on perinatal deaths that occurred in 2014, but additional information covering the period 1997–2013 is provided for a discussion on trends in the number of perinatal deaths and causes of perinatal deaths from 2012 to 2014.

Analysis on geography is limited to provincial level. Information at district and local municipality levels can be obtained from Stats SA on request. The definitions of technical terms used in this release are provided in Appendix A (see page 34).

1.4 Organisation and presentation of this statistical release

The release has five sections. The first section (introduction) provides the background information, objectives and scope of the release. Section two describes the data source, data processing and data analysis methods applied in the release.

Section three provides information on the levels, trends (from 1997 to 2014), and differentials in perinatal deaths. The differentials are mainly based on demographic, social and geographic characteristics of the deceased stillbirths/ infants.

Information on the 2014 causes of perinatal deaths is presented in section four. Deaths from 2012 to 2013 have also been included to show trends and patterns in causes of perinatal deaths in the recent years.

Finally, the last section, section five, presents the summary of the main findings and concluding remarks.

2. Data and methods

This section provides information on the data source as well as data processing, data editing and data analysis methods applied. The subsection on data processing, editing and analysis provides information on data coding, editing, derivation of underlying causes of death and ranking of the underlying causes of death.

2.1 Data source

The perinatal deaths reported in this release are based on two forms: Form BI-1663, which was introduced in 1998, as well as DHA-1663, which was introduced in 2009. Although form BI-1663 is still in use in areas where it is still in stock; it is being replaced by form DHA-1663. The data elements in these forms are largely similar, allowing for the merging of data from the two forms into one dataset. The difference between the two forms is that in form BI-1663, causes of death for perinatal deaths and individual deaths are in one section, whereas form DHA-1663 has a separate section (section G.2) which is completed for perinatal deaths and contains pertinent details of both the mother and the stillborn/infant.

In 2014, a total of 21 908 death notification forms were registered at the DHA as perinatal deaths [14 413 (65,8%) stillbirths and 7 495 (34,2%) early neonatal deaths] and reached Stats SA in time for the 2014/15 data processing phase. Of these, 92,8% were registered using the DHA-1663 form, and 7,2% used the BI-1663 form.

2.2 Data processing, editing and analysis

Processing of death notification forms collected from the DHA head office takes place at Stats SA. The information on stillbirths is processed together with that for individual deaths. Details on data processing are available in the statistical release on *Mortality and causes of death in South Africa: Findings from death notification 2014* (Stats SA, 2015).

Causes of death for both stillbirths and early neonatal deaths were manually coded using the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10), as published by the World Health Organization (1992). All member states of the United Nations, including South Africa, agreed to use the ICD standard classification system. Stats SA uses two programs to automatically derive the underlying cause of death for individual deaths (early neonatal deaths): the Automated Classification of Medical Entities (ACME 2011) and IRIS. Where both programs fail to derive the underlying cause, experienced coders at Stats SA manually derive the underlying cause. The underlying causes for all stillbirths are also derived manually.

Stats SA has developed a set of data editing rules and these were applied to the perinatal deaths data when all the stages of data processing had been completed. The editing rules check for accuracy of data and highlight implausible cases for further investigation and correction. The quality of early neonatal deaths data was further assessed using two electronic tools developed by the WHO: version 2.0 of the "Analysing mortality levels and causes-of-death" (ANACoD) and version 1.0 of CoDEdit. In general, the tool detects and flags errors in the data, identifies possible misuse of codes, highlights cases with causes unlikely to cause death generally or unlikely to cause death for specific ages and sex, and provides a summary of the dataset (WHO, 2014b; WHO, 2014c). Assessment of data quality is presented in Appendix B (see page 35).

Only descriptive analyses were undertaken in this release, specifically frequency and percentage distributions, sex ratios, cross-tabulations and death rates. Sex ratios were calculated by dividing the number of male perinatal deaths by the number of female perinatal deaths and multiplying by 100. The mortality rates were computed for the years 2002 to 2014, based on the observed number of perinatal deaths and South African mid-year population estimates. Stillbirth and perinatal death rates were calculated by dividing the observed deaths by the total deaths (which include live births and stillbirths). For early neonatal mortality rates only live births were used as the denominator.

The analysis also involved ranking the causes of death. The top-ranking natural underlying causes were derived by ranking the underlying causes of death from highest to lowest, with the highest forming part of the leading causes of death. In ranking the natural underlying causes of death, *symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)* and *other disorders originating in the perinatal period (P90-P96)* were excluded, as the information is not detailed enough for disease control and prevention programmes. The latter *P90-P96* was excluded because it contains *P95,* which is *unspecified cause of foetal death*. Further analysis presents differentials in stillbirths, early neonatal deaths and perinatal deaths.

3. Registered perinatal deaths

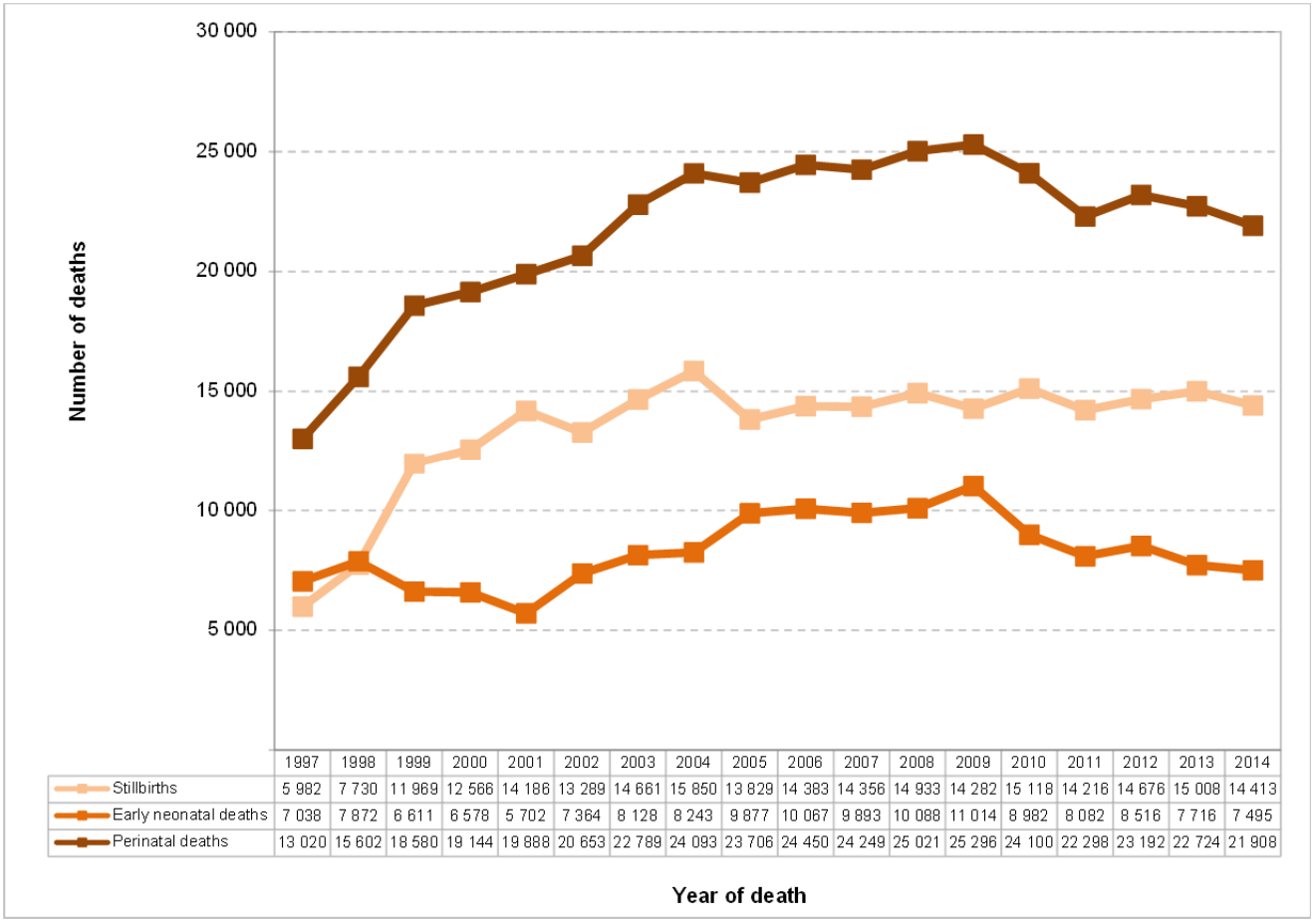
This section presents an analysis of the distribution of 2014 stillbirths, early neonatal and perinatal deaths by selected socio-demographic characteristics including age, sex, population group, place/institution of death; and geographic characteristics of the deceased (province of death). Levels and trends of registered stillbirths, early neonatal deaths and perinatal deaths from 1997 to 2014 are also provided. Finally, observed stillbirth rates, early neonatal rates and perinatal death rates are presented.

3.1 Levels and trends of stillbirths, early neonatal deaths and perinatal deaths

The number of stillbirths, early neonatal deaths and the overall number of perinatal deaths processed by Statistics South Africa (Stats SA) for the years 1997 to 2014 are shown in Figure 3.1. The stillbirths, which represented about two-thirds of all perinatal deaths in 2014, show a general increase from 1997 to 2004, after which the number remained more or less constant at between 14 000 and 15 000 per year up to 2014.

The general trend in the number of early neonatal deaths indicates an increase between 1997 and 1998. Thereafter, there was a decrease from 1999 to 2001 and an increase between 2002 and 2006. A general decline was observed from 2009 to 2014, with a slight increase in 2008, 2009 and 2012. Early neonatal deaths went on to decrease by 2,9% between 2013 and 2014 (from 7 716 in 2013 to 7 495 in 2014). The number of perinatal deaths generally increased between 1997 and 2009 and fluctuated modestly thereafter. There was a decrease of 3,6% between 2013 and 2014 (from 22 274 in 2013 to 21 908 in 2014).

Figure 3.1: Number of perinatal deaths by year of death, 1997−2014*



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Stillbirths	5 982	7 730	11 969	12 566	14 186	13 289	14 661	15 850	13 829	14 383	14 356	14 933	14 282	15 118	14 216	14 676	15 008	14 413
Early neonatal deaths	7 038	7 872	6 611	6 578	5 702	7 364	8 128	8 243	9 877	10 067	9 893	10 088	11 014	8 982	8 082	8 516	7 716	7 495
Perinatal deaths	13 020	15 602	18 580	19 144	19 888	20 653	22 789	24 093	23 706	24 450	24 249	25 021	25 296	24 100	22 298	23 192	22 724	21 908

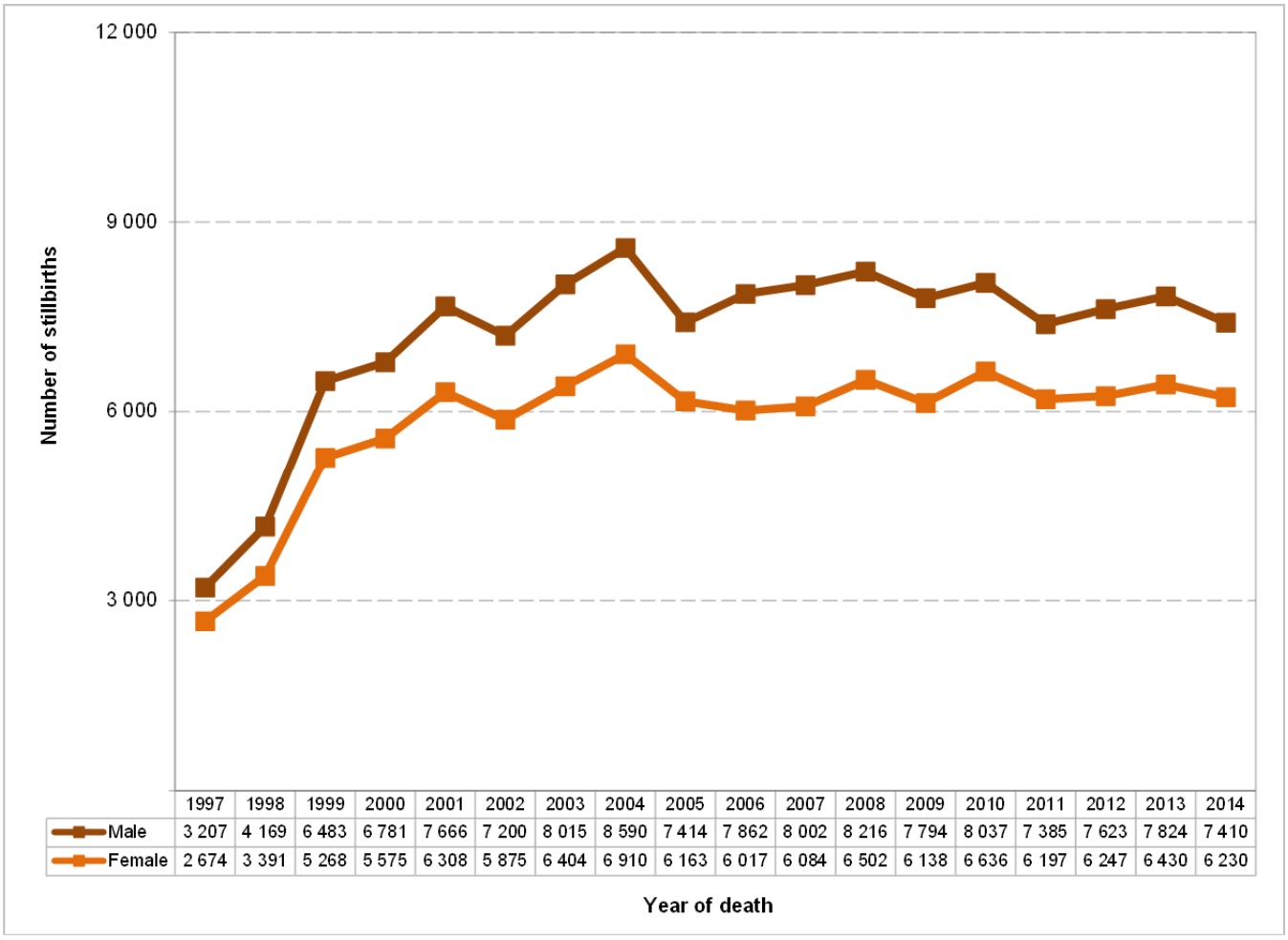
* (1) Data for 1997−2013 have been updated with late registrations/delayed death notification forms processed in 2014/2015.
(2) Excluding stillbirths, early neonatal and perinatal deaths with unspecified sex.

3.2 Sex differentials

Stillbirths

Figure 3.2 shows the number of stillbirths by sex from 1997 to 2014. The graph shows that there were more male stillbirths compared to female stillbirths throughout the 18-year period. However, in terms of the pattern, this was similar for both sexes with a consistent increase observed from 1997 and reaching a peak in 2004. Thereafter, stillbirths declined in 2005 and increased again in 2006, where stillbirths began to plateau, hovering around 7 385 and 8 216 for males and between 6 017 and 6 636 among females.

Figure 3.2: Number of stillbirths by sex and year of death, 1997−2014*



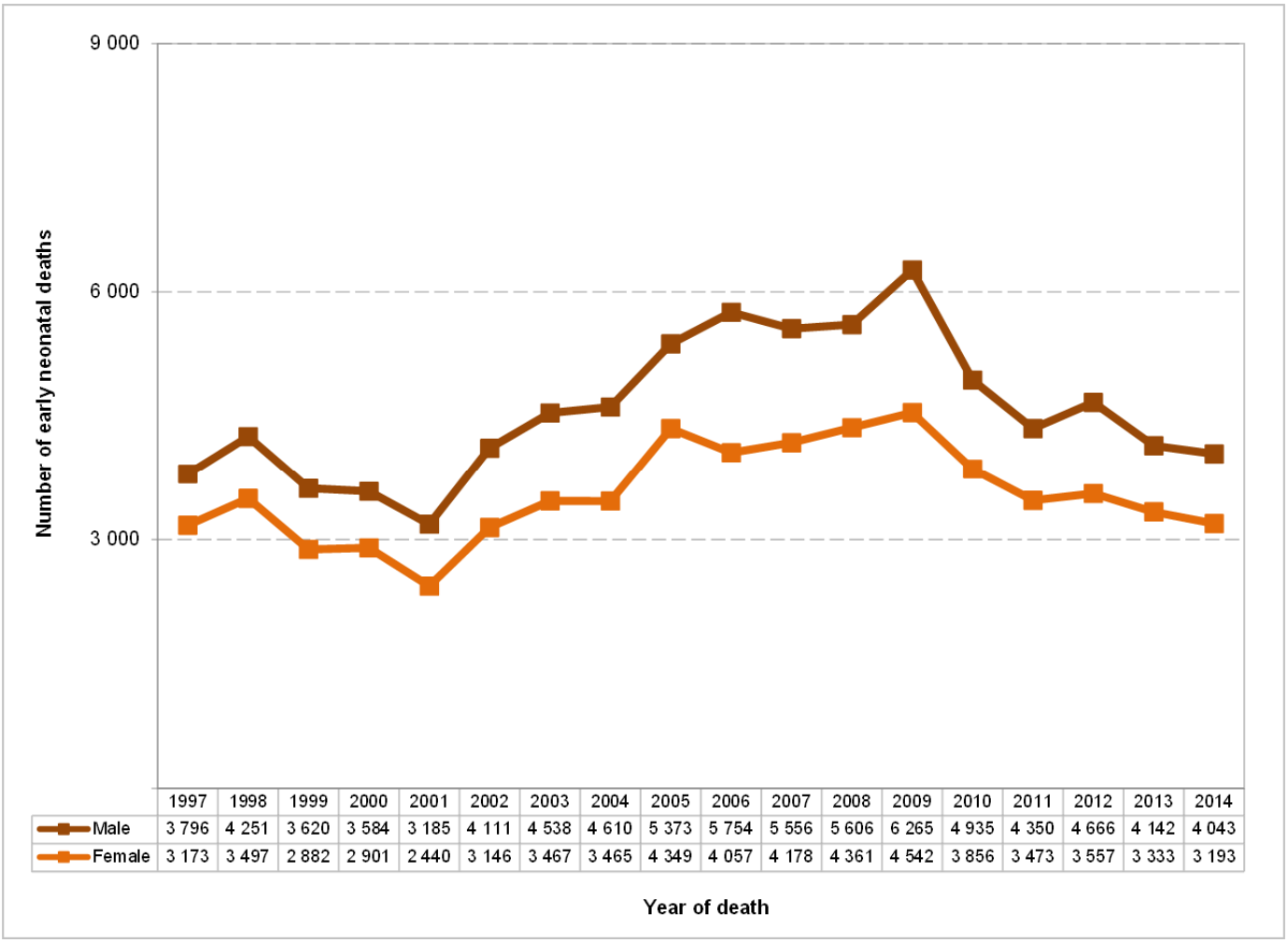
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Male	3 207	4 169	6 483	6 781	7 666	7 200	8 015	8 590	7 414	7 862	8 002	8 216	7 794	8 037	7 385	7 623	7 824	7 410
Female	2 674	3 391	5 268	5 575	6 308	5 875	6 404	6 910	6 163	6 017	6 084	6 502	6 138	6 636	6 197	6 247	6 430	6 230

* (1) Data for 1997−2013 have been updated with late registrations/delayed death notification forms processed in 2014/2015.
(2) Excluding stillbirths with unspecified sex.

Early neonatal deaths

The trends in early neonatal deaths shown in Figure 3.3 portray higher male deaths compared to female deaths. The patterns for both males and females follow the same direction, characterised by an undulating pattern of low number of deaths in 1997 and reaching a slump in 2001. Early neonatal deaths then rose steadily and peaked in 2009, before taking another consistent decline until 2014.

Figure 3.3: Number of early neonatal deaths by sex and year of death, 1997−2014*



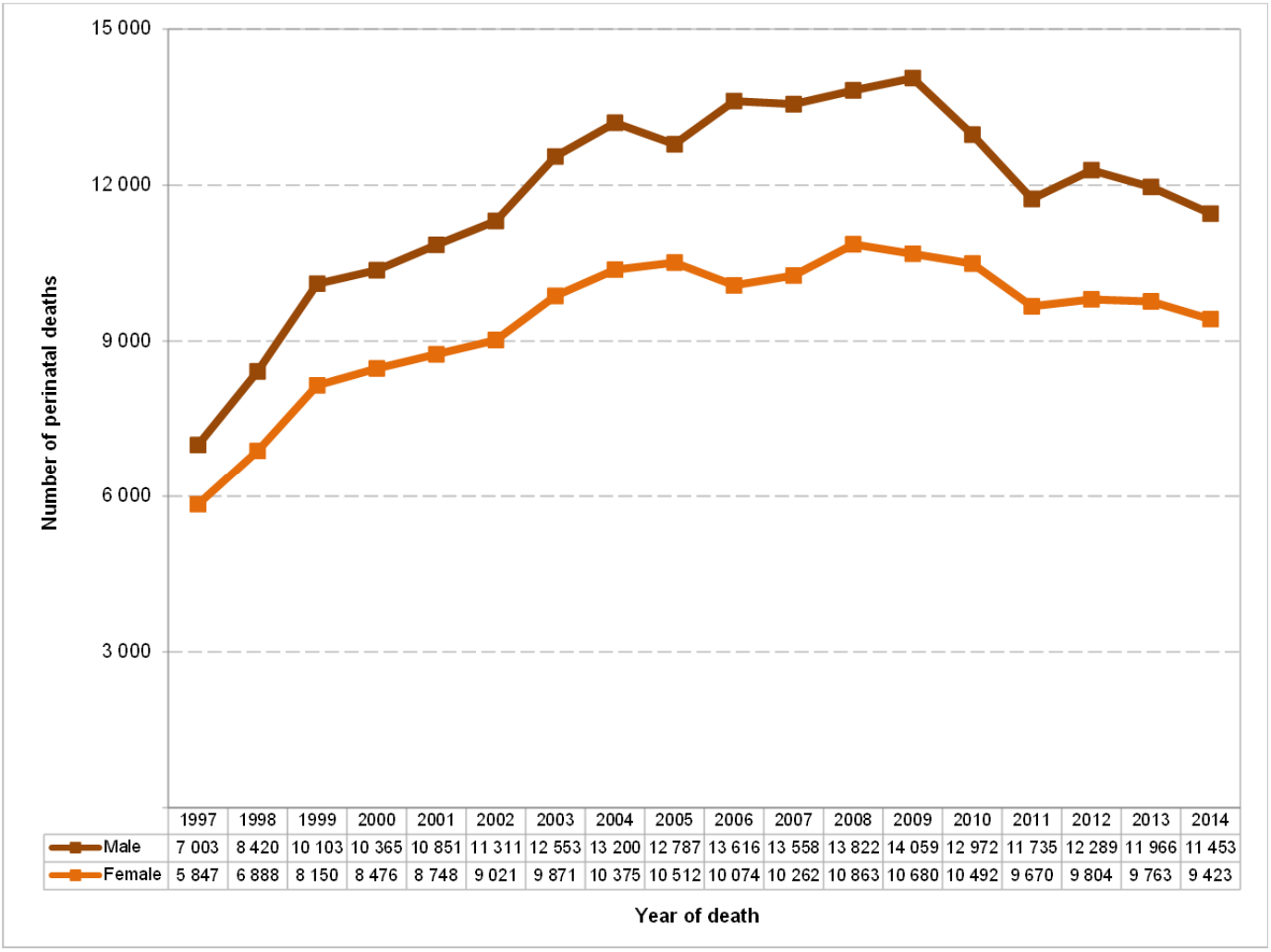
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Male	3 796	4 251	3 620	3 584	3 185	4 111	4 538	4 610	5 373	5 754	5 556	5 606	6 265	4 935	4 350	4 666	4 142	4 043
Female	3 173	3 497	2 882	2 901	2 440	3 146	3 467	3 465	4 349	4 057	4 178	4 361	4 542	3 856	3 473	3 557	3 333	3 193

* (1) Data for 1997−2013 have been updated with late registrations/delayed death notification forms processed in 2014/2015.
(2) Excluding early neonatal deaths with unspecified sex.

Perinatal deaths

The distribution of perinatal deaths by sex and year of death from 1997 to 2014 is shown in Figure 3.4. The number of male perinatal deaths exceeded the number of female perinatal deaths over the 18-year period (1997 to 2014). However, the pattern over time was largely similar for both sexes. Between 2013 and 2014, the number of male perinatal deaths decreased by 4,3% (from 11 966 in 2013 to 11 453 in 2014) and the number of female perinatal deaths declined by 3,5% (from 9 763 in 2013 to 9 423 in 2014).

Figure 3.4: Number of perinatal deaths by sex and year of death, 1997−2014*



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Male	7 003	8 420	10 103	10 365	10 851	11 311	12 553	13 200	12 787	13 616	13 558	13 822	14 059	12 972	11 735	12 289	11 966	11 453
Female	5 847	6 888	8 150	8 476	8 748	9 021	9 871	10 375	10 512	10 074	10 262	10 863	10 680	10 492	9 670	9 804	9 763	9 423

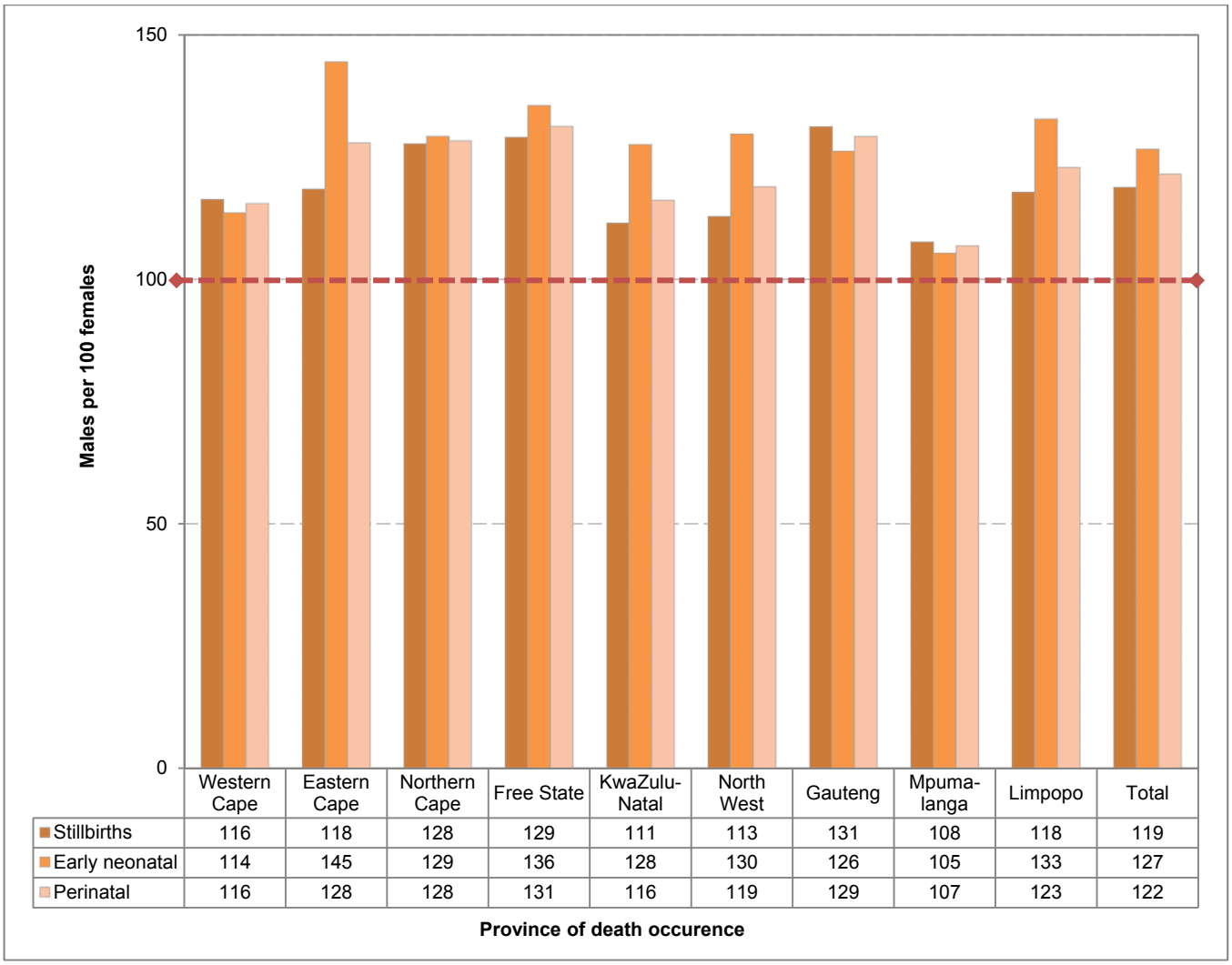
* (1) Data for 1997−2013 have been updated with late registrations/delayed death notification forms processed in 2014/2015.
(2) Excluding perinatal deaths with unspecified sex.

Sex ratios at death by province

Figure 3.5 presents the sex ratio among stillbirths, early neonatal deaths and perinatal deaths by province of death occurrence. The sex ratio refers to the number of male deaths per 100 female deaths. Generally there were more male deaths than female deaths for stillbirths, early neonatal deaths and perinatal deaths. The national sex ratio among stillbirths was 119 male deaths per 100 female deaths. Mpumalanga had the lowest sex ratio of 108 male deaths per 100 female deaths among stillbirths, while Gauteng had the highest sex ratio of 131 male deaths per 100 female deaths. For the early neonatal deaths, once again Mpumalanga had the lowest sex ratio (105 male deaths per 100 females) and Eastern Cape had the highest sex ratio of 145 male neonatal deaths per 100 female neonatal deaths.

Among perinatal deaths, the overall results show that for 2014, there were 122 male deaths per 100 female perinatal deaths, indicating a higher number of male than female perinatal deaths. In general, all provinces had sex ratios above 100, ranging from a low of 107 in Mpumalanga to a high of 131 in Free State. Five provinces (Eastern Cape, Northern Cape, Free State, Gauteng and Limpopo) had a sex ratio higher than the national average and four provinces (Western Cape, KwaZulu-Natal, North West and Mpumalanga) had a sex ratio lower than the national sex ratio.

Figure 3.5: Sex ratios at perinatal death by province of death occurrence, 2014



	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpuma-langa	Limpopo	Total
Stillbirths	116	118	128	129	111	113	131	108	118	119
Early neonatal	114	145	129	136	128	130	126	105	133	127
Perinatal	116	128	128	131	116	119	129	107	123	122

Province of death occurence

3.3 Age differentials

The distribution of 2014 stillbirths, early neonatal and perinatal deaths by age in days is shown in Table 3.1. Stillbirths accounted for the vast majority of perinatal deaths (65,8%), while early neonatal mortality accounted for about a third. The age distribution of early neonatal deaths broadly reflects a declining proportion of early neonatal deaths with increasing age. Thus, most of the early neonatal deaths occur during the day of birth (36,1%) and the least on the seventh day (4,1%). About 55% of early neonatal deaths occurred by the first day and 70% were dead by the end of the second day.

Table 3.1: Number and percentage distribution of stillbirths, early neonatal deaths and perinatal deaths by age, 2014

Perinatal deaths	Number	Percentage*	Cumulative percentage
Stillbirths	14 413	65,8	65,8
Early neonatal deaths	7 495	34,2	100,0
Total	**21 908**	**100,0**	
Age in days among early neonatal deaths			
0	2 702	36,1	36,1
1	1 440	19,2	55,3
2	1 112	14,8	70,1
3	669	8,9	79,0
4	507	6,8	85,8
5	396	5,3	91,1
6	364	4,9	95,9
7	305	4,1	100,0
Total	**7 495**	**100,0**	

*Percentage may not add up to 100 due to rounding up

3.4 Stillbirths birth weight

Birth weight refers to the first weight of a stillborn obtained immediately after birth. Low birth weight is defined as weight of less than 2 500 grams, regardless of the gestational age (UN, 2014). The distribution of stillbirths by birth weight is essential, as low birth weight is associated with death of many newborns, developmental problems and health risks (UN, 2014).

Table 3.2 presents the birth weight of stillbirths for 2014. The highest proportion of stillbirths was in the range less than 1 000 grams with 16,2%, followed by those weighing between 1 000 grams and 1 499 grams (13,9%). Stillbirths for the range 1 500−1 999 grams and 2 000−2 499 grams comprised 11,8% and 10,0% of stillbirths, respectively. In general, just over half (52,0%) of stillbirths weighed less than 2 500 grams at birth and 18,6% weighed 2 500 grams and more. It is worth noting that 29,5% of the stillbirths had unspecified birth weight. As a result, the information on birth weight has to be interpreted with caution, given the high percentage of missing cases.

Table 3.2: Number and percentage distribution of stillbirths by birth weight, 2014

Birth weight (grams)	Number	Percentage	Cumulative percentage
Less than 1 000	2 339	16,2	16,2
1 000−1 499	2 008	13,9	30,2
1 500−1 999	1 702	11,8	42,0
2 000−2 499	1 441	10,0	52,0
2 500−2 999	1 164	8,1	60,0
3 000−3 499	879	6,1	66,1
3 500−3 999	342	2,4	68,5
4 000 and above	284	2,0	70,5
Unspecified	4 254	29,5	100,0
Total	**14 413**	**100,0**	

3.5 Month of death occurrence

The distribution of 2014 stillbirths, early neonatal deaths and perinatal deaths is classified by the month of death occurrence shown in Table 3.3. Among stillbirths, January had the highest proportion of deaths while December had the lowest proportions (9,5% and 7,3%, respectively). For the early neonatal deaths, again January had more deaths (9,6%), whereas November had the lowest proportion (7,7%). The general pattern of perinatal deaths by month of death for 2014 deaths indicates that the percentages ranged between 7,5% and 9,5%. January had relatively more deaths (9,5%), closely followed by March (9,3%) and August (8,8%). December (7,5%) accounted for the lowest percentage of perinatal deaths.

Table 3.3: Number and percentage distribution of stillbirths, early neonatal deaths and perinatal deaths by month of death occurrence, 2014

Month of death	Stillbirths		Early neonatal deaths		Perinatal deaths*	
	Number	Percentage	Number	Percentage	Number	Percentage
January	1 370	9,5	718	9,6	2 088	9,5
February	1 212	8,4	606	8,1	1 818	8,3
March	1 338	9,3	698	9,3	2 036	9,3
April	1 218	8,5	613	8,2	1 831	8,4
May	1 231	8,5	639	8,5	1 870	8,5
June	1 155	8,0	617	8,2	1 772	8,1
July	1 221	8,5	583	7,8	1 804	8,2
August	1 274	8,8	655	8,7	1 929	8,8
September	1 124	7,8	599	8,0	1 723	7,9
October	1 134	7,9	584	7,8	1 718	7,8
November	1 088	7,5	578	7,7	1 666	7,6
December	1 048	7,3	605	8,1	1 653	7,5
Total	**14 413**	**100,0**	**7 495**	**100,0**	**21 908**	**100,0**

*Percentage may not add up to 100 due to rounding up

3.6 Population group differences

Table 3.4 shows the distribution of stillbirths, early neonatal deaths and perinatal deaths by population group for 2014. Black Africans comprised the majority of deaths among stillbirths (80,2%), early neonatal deaths (81,2%) and 80,6% for perinatal deaths. These were followed by the coloured population group, which accounted for 5,6% of the three death types (stillbirths, early neonatal deaths and perinatal deaths). About 2,0% and 0,7% of all deaths were for the white and Indian/Asian population groups, respectively. In general, the proportions are indicative of the variations in population size by population group in South Africa. Information on population group was unspecified or unknown in 11,5% of stillbirths, 9,9 % among early neonatal deaths and 11,0% of perinatal deaths.

Table 3.4: Number and percentage distribution of stillbirths, early neonatal deaths and perinatal deaths by population group, 2014

Population group	Stillbirths		Early neonatal deaths		Perinatal deaths	
	Number	Percentage*	Number	Percentage*	Number	Percentage
Black African	11 566	80,2	6 087	81,2	17 653	80,6
White	266	1,8	167	2,2	433	2,0
Indian or Asian	81	0,6	58	0,8	139	0,6
Coloured	803	5,6	421	5,6	1 224	5,6
Other	34	0,2	18	0,2	52	0,2
Unknown/unspecified	1 663	11,5	744	9,9	2 407	11,0
Total	**14 413**	**100,0**	**7 495**	**100,0**	**21 908**	**100,0**

*Percentage may not add up to 100 due to rounding up

3.7 Place or institution of death occurrence

The distribution of stillbirths, early neonatal deaths and perinatal deaths by place or institution of death occurrence in 2014 is shown in Table 3.5. Overall, the majority of deaths occurred in a health facility. Early neonatal deaths occurring in a health facility constituted 71,7%. The corresponding proportion were 69,0% and 67,5% for perinatal and stillbirths, respectively. Deaths in a health facility consist of deaths that occurred in a hospital, in emergency rooms or as outpatients; and in a nursing home. Between 1,2% and 1,8% of the cases were dead on arrival at a health care facility, while deaths that occurred at home ranged from 3,2% to 4,3%. There were more than 20% deaths where the place of death was unknown or unspecified (26,0% stillbirths, 21,9% early neonatal deaths and 24,6% perinatal deaths). Hence, the results must be interpreted with caution.

Table 3.5: Number and percentage distribution of stillbirths, early neonatal deaths and perinatal deaths by place or institution of death occurrence, 2014

Place of death	Stillbirths		Early neonatal deaths		Perinatal deaths	
	Number	Percentage*	Number	Percentage	Number	Percentage
Hospital	9 556	66,3	5 322	71,0	14 878	67,9
Emergency room/Outpatient	136	0,9	31	0,4	167	0,8
Dead on arrival	259	1,8	91	1,2	350	1,6
Nursing home	49	0,3	26	0,3	75	0,3
Home	463	3,2	321	4,3	784	3,6
Other	206	1,4	66	0,9	272	1,2
Unknown/unspecified	3 744	26,0	1 638	21,9	5 382	24,6
Total	**14 413**	**100,0**	**7 495**	**100,0**	**21 908**	**100,0**

*Percentage may not add up to 100 due to rounding up

3.8 Geographic differences

The number and percentage distribution of stillbirths, early neonatal deaths and perinatal deaths by province of death occurrence and usual residence for 2014 is presented in Table 3.6.

The highest proportion of deaths occurred in Gauteng province for early neonatal deaths (26,7%) and perinatal deaths (24,4%). KwaZulu-Natal had the highest proportion of stillbirths (24,5%). The lowest proportion of all death types occurred in Northern Cape.

For province of usual residence, the distribution of stillbirths, early neonatal deaths and perinatal deaths was largely similar in order, with differences mainly noted in the proportions. Gauteng accounted for the highest percentage of early neonatal deaths (25,0%) and perinatal deaths (20,1%). KwaZulu-Natal (18,3%) was highest among stillbirths.

Similarly, Northern Cape had the least proportion with regard to the deceased registered as usual residents of the province, ranging from 2,1% among stillbirths to 3,7% among early neonatal deaths.

Table 3.6: Number and percentage distribution of stillbirths, early neonatal deaths and perinatal deaths by province, 2014

Province of death	Province of death occurrence						Province of usual residence					
	Stillbirths		Early neonatal deaths		Perinatal deaths		Stillbirths		Early neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%*
Western Cape	1 502	10,4	578	7,7	2 080	9,5	1 177	8,2	547	7,3	1 724	7,9
Eastern Cape	699	4,8	439	5,9	1 138	5,2	612	4,2	471	6,3	1 083	4,9
Northern Cape	389	2,7	275	3,7	664	3,0	303	2,1	275	3,7	578	2,6
Free State	1 160	8,0	602	8,0	1 762	8,0	961	6,7	586	7,8	1 547	7,1
KwaZulu-Natal	3 534	24,5	1 539	20,5	5 073	23,2	2 640	18,3	1 453	19,4	4 093	18,7
North West	1 137	7,9	696	9,3	1 833	8,4	879	6,1	712	9,5	1 591	7,3
Gauteng	3 337	23,2	2 002	26,7	5 339	24,4	2 530	17,6	1 872	25,0	4 402	20,1
Mpumalanga	1 068	7,4	555	7,4	1 623	7,4	814	5,6	550	7,3	1 364	6,2
Limpopo	1 465	10,2	794	10,6	2 259	10,3	1 089	7,6	788	10,5	1 877	8,6
Outside South Africa	22	0,2	9	0,1	0	0,0	3	0,0	11	0,1	14	0,1
Unknown/unspecified	100	0,7	6	0,1	137	0,6	3 405	23,6	230	3,1	3 635	16,6
Total	**14 413**	**100,0**	**7 495**	**100,0**	**21 908**	**100,0**	**14 413**	**100,0**	**7 495**	**100,0**	**21 908**	**100,0**

*Percentage may not add up to 100 due to rounding up

3.9 Observed death rates by year of death

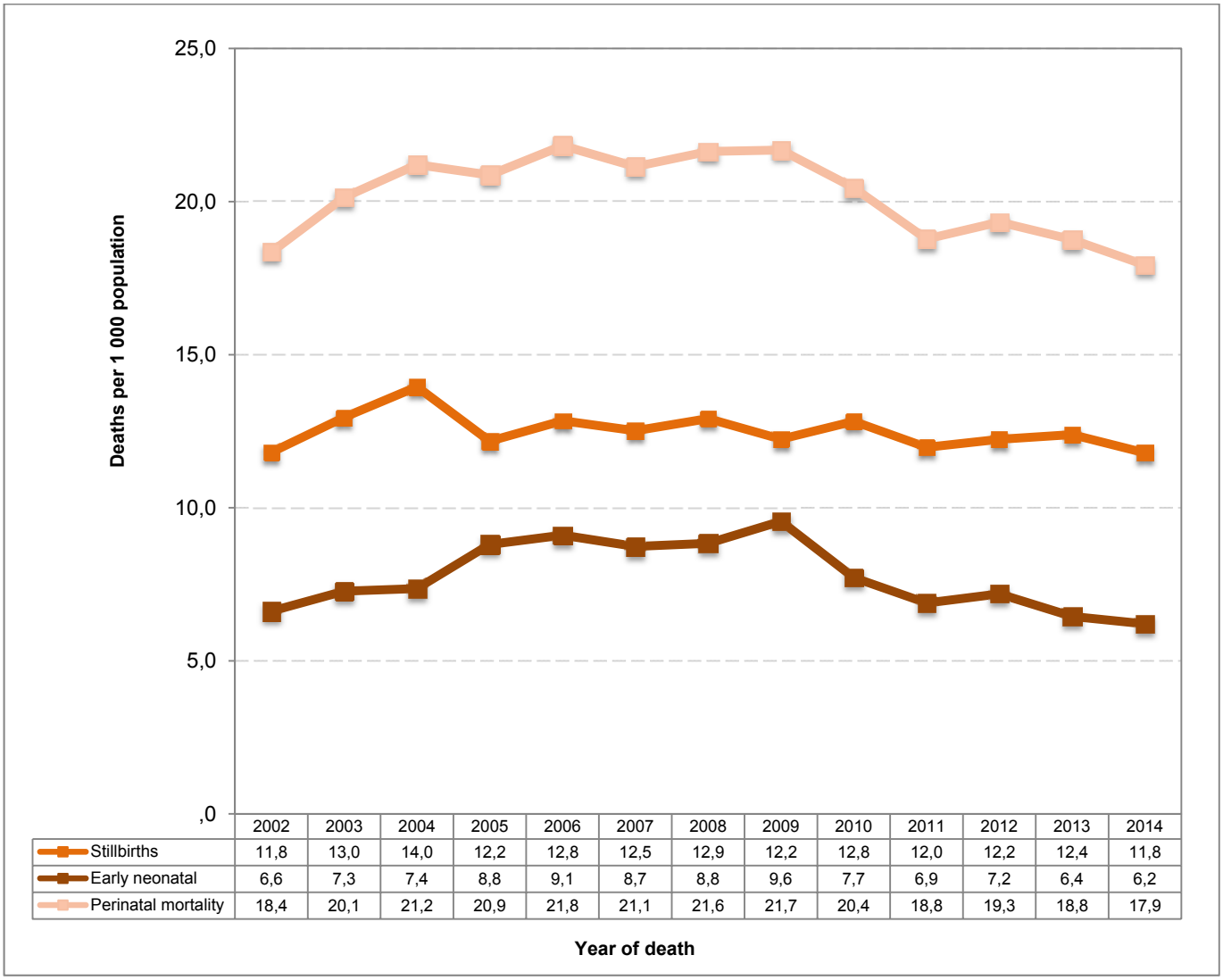
Figure 3.6 presents the observed stillbirths, early neonatal and perinatal mortality rates for the years 2002 to 2014. The absolute numbers are shown in Appendix C (see page 37). The years 1997 to 2001 have been excluded from the analysis due to the unavailability of the denominator. Early neonatal mortality rates (early neonatal deaths per 1 000 live births), stillbirth rates (stillbirths per 1 000 total births) and perinatal mortality rates (perinatal deaths per 1 000 total births) are calculated to obtain their relative importance to the number of births in South Africa. Observed rates, unadjusted for completeness of reporting, are provided and therefore the results have to be interpreted with caution.

The pattern among the stillbirths shows that rates increased from 11,8 stillbirths per 1 000 total births in 2002 to 14,0 stillbirths per 1 000 total births in 2004, when it reached its peak. Hereafter, rates were stable from 2005 to 2013, ranging from 12,0 stillbirths per 1 000 total births to 12,9 stillbirths per 1 000 total births. Stillbirth rates then declined to 11,8 stillbirths per 1 000 total births in 2014.

The trend in early neonatal rates shows that rates increased from 6,6 early neonatal deaths per 1 000 live births in 2002 to 9,1 early neonatal deaths per 1 000 live births in 2006. A decline was observed in 2007, and rates remained stable in 2008. Thereafter, rates increased to 9,6 early neonatal deaths per 1 000 live births, reaching its highest level in 2009. From 2010, the rates declined to 7,7 early neonatal deaths per 1 000 live births and further declined to 6,9 early neonatal deaths per 1 000 live births in 2011. The rates then showed a slight increase in 2012 before declining to 6,2 early neonatal deaths per 1 000 live births in 2014, its lowest in the 13-year period.

Among perinatal deaths, rates increased from 18,4 perinatal deaths per 1 000 total births in 2002 to 21,2 perinatal deaths per 1 000 total births in 2004. A slight decline was observed in 2005 and then saw a slight increase in 2006 and stabilised until 2009, when they peaked, before declining to 20,4 perinatal deaths per 1 000 total births in 2010. Since 2011, the rates have been more or less constant and were lowest in 2014 at 17,9 perinatal deaths per 1 000 total births.

Figure 3.6: Stillbirths, early neonatal and perinatal mortality rates, 2002−2014*



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Stillbirths	11,8	13,0	14,0	12,2	12,8	12,5	12,9	12,2	12,8	12,0	12,2	12,4	11,8
Early neonatal	6,6	7,3	7,4	8,8	9,1	8,7	8,8	9,6	7,7	6,9	7,2	6,4	6,2
Perinatal mortality	18,4	20,1	21,2	20,9	21,8	21,1	21,6	21,7	20,4	18,8	19,3	18,8	17,9

* Data for 2002−2013 have been updated with late registrations/delayed death notification forms processed in 2014/2015.
**Denominators used for the calculations of perinatal mortality rate and stillbirth rate are total deaths, which include both live births (from mid-year estimates) and stillbirths (from death notification forms). The denominators used for early neonatal mortality rates are live births only (from mid-year estimates).

4. Causes of death among stillbirths, early neonatal deaths and perinatal deaths

Information on causes of death for stillbirths, early neonatal deaths and perinatal deaths that occurred in 2014 and were registered is presented in this section. The section also provides comparisons with deaths for the period 2012−2013, updated with late registrations or delayed death notification forms that were captured during the processing of 2014 deaths. The information on causes of death is based mainly on the underlying causes of death. Underlying causes of death in this section are classified by the main groups and broad groups. Analysis carried out in this section includes sex, population group and geographic differentials in causes of stillbirths, early neonatal deaths and perinatal deaths.

4.1 Stillbirths

4.1.1 Main groups of underlying causes of stillbirths

The number and percentage distribution of stillbirths by main group of underlying causes of death and sex for stillbirths that occurred in 2014 is provided in Table 4.1. Overall, for both sexes, *certain conditions originating in the perinatal period* contributed the highest percentage of stillbirths (97,6%), as compared to *congenital malformations* (2,4%).

Table 4.1: Number and percentage distribution of stillbirths by main group of underlying causes of death and sex, 2014

Main group of underlying causes	Sex of the deceased					
	Male		Female		Both sexes	
	Number	%	Number	%	Number	%
Certain conditions originating in the perinatal period (P00-P96)	7 232	97,6	6 081	97,6	13 313	97,6
Congenital malformations (Q00-Q99)	178	2,4	149	2,4	327	2,4
Total	**7 410**	**100,0**	**6 230**	**100,0**	**13 640**	**100,0**

*Excluding stillbirths with unspecified sex.

4.1.2 Broad groups of underlying natural causes of stillbirths

Table 4.2 presents the ten leading underlying natural causes of stillbirths for the years 2012 to 2014. The three years were selected to show recent trends in natural causes of stillbirths. The other natural category comprises of *symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified (R00-R99)* and *foetal death for unspecified cause (P95).* These did not form part of the ranking of causes of stillbirths as they are essentially ill-defined conditions for which no diagnosis classified elsewhere is recorded.

The table shows that nine of the ten leading underlying natural causes of stillbirths were the same for the three years, with three of these having the same rank order. These were *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (*ranked number 1*); other congenital malformations (*ranked fourth*);* and *congenital malformations of the nervous system* (ranked fifth). While *conditions involving the integument and temperature regulation of newborn* featured as the tenth leading underlying cause of stillbirths in 2012, it was not among the ten leading causes for 2013 and 2014. *Congenital malformations and deformations of the musculoskeletal system* appeared in the top ten causes of stillbirths only for 2013, while *infections specific to the perinatal period* were amongst the top ten only in 2014.

Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery was the leading cause of stillbirths over the three-year period, with increasing proportions (from 22,8% in 2012 to 24,1% in 2013, then 26,3% in 2014). *Respiratory and cardiovascular disorders specific to the perinatal period*, which was responsible for 4,1% of stillbirths in 2012 and 3,9% of stillbirths in 2013, moved from the third position between 2012 and 2013 to the second position in 2014, constituting 6,0% of stillbirths. *Disorders related to length of*

gestation and foetal growth accounted for about 5,0% of all stillbirths each year (5,0% in 2012 and 2014, and 4,9% in 2013). It ranked second in 2012 and in 2013, and thereafter was displaced to the third leading cause of death in 2014.

For all the years, *other congenital malformations* and *congenital malformations of the nervous system* maintained their positions as the fourth and fifth leading causes of stillbirths, respectively. *Transitory endocrine and metabolic disorders specific to foetus and newborn*, which ranked seventh in 2012 and 2013, moved to sixth place in 2014. *Haemorrhagic and haematological disorders of foetus and newborn* was the sixth leading cause of stillbirths in 2012, but moved down to tenth place in 2013 and was the eighth leading cause of stillbirths in 2014.

Table 4.2: The ten leading underlying natural causes of stillbirths, 2012−2014*

Causes of death (based on ICD-10)	2012			2013			2014		
	Rank	No.	%	Rank	No.	%**	Rank	No.	%**
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	1	3 343	22,8	1	3 612	24,1	1	3 795	26,3
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	3	602	4,1	3	591	3,9	2	858	6,0
Disorders related to length of gestation and foetal growth (P05-P08)	2	729	5,0	2	729	4,9	3	720	5,0
Other congenital malformations (Q80-Q89)	4	199	1,4	4	195	1,3	4	198	1,4
Congenital malformations of the nervous system (Q00-Q07)	5	95	0,6	5	87	0,6	5	79	0,5
Transitory endocrine and metabolic disorders specific to foetus and newborn (P70-P74)	7	33	0,2	7	34	0,2	6	42	0,3
Infections specific to the perinatal period (P35-P39)	…	…	…	…	…	…	7	29	0,2
Haemorrhagic and haematological disorders of foetus and newborn (P50-P61)	6	40	0,3	10	19	0,1	8	27	0,2
Chromosomal abnormalities, not elsewhere classified (Q90-Q99)	8	32	0,2	6	35	0,2	9	21	0,1
Congenital malformations of the circulatory system (Q20-Q28)	9	32	0,2	8	22	0,1	10	20	0,1
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	…	…	…	9	21	0,1	…	…	…
Conditions involving the integument and temperature regulation of newborn (P80-P83)	10	17	0,1	…	…	…	…	…	…
Other natural causes		9 554	65,1		9 663	64,4		8 624	59,8
Total		**14 676**	**100,0**		**15 008**	**100,0**		**14 413**	**100,0**

*Data for 2012−2013 have been updated with late registrations/delayed death notification forms processed in 2014/2015.
…Category not in top ten.
**Percentage may not add up to 100 due to rounding up

4.1.3 Stillbirths differentials

The percentage distribution of stillbirths by selected socio-demographic and geographic variables is presented in Table 4.3. The number distribution of the stillbirths is presented in Appendix D (see page 38). In general, it is noted that, based on the top five leading causes, all variables indicated high percentages of stillbirths due to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* Sex differences in

stillbirths show that *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* was the most common cause of stillbirths in 2014 for both sexes, accounting for 25,6% male stillbirths and 27,5% female stillbirths.

All population groups had over 25% of stillbirths attributed to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* Differentials by province show that in Limpopo (34,5%), KwaZulu-Natal (31,4%) and Free State (30,9%) there were higher proportions of stillbirths attributed to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery*. *Disorders related to length of gestation and foetal growth* accounted for 12,4% of stillbirths in KwaZulu-Natal and 9,6% of stillbirths in Limpopo. Northern Cape had high proportions of stillbirths (8,0%) due to *respiratory and cardiovascular disorders specific to the perinatal period*.

In terms of place of death, close to 30% (28,0%) of stillbirths that occurred as hospital deaths were due to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* Approximately, 24,7% of dead on arrival stillbirths and 22,1% of emergency room or outpatient stillbirths were also caused by *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* The results further show that while *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* comprised 16,3% of nursing home stillbirths, *disorders related to length of gestation and foetal growth* were responsible for 14,3% of stillbirths that occurred in nursing homes.

Stillbirths by birth weight show that for all births weights over a quarter (26,3%) of stillbirths were caused by *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* A high proportion of stillbirths (14,3%) weighing between 3 500 and 3 999 grams were caused by *disorders related to length of gestation and foetal growth*.

Table 4.3: Percentage distribution of stillbirths by top five leading causes and selected socio-demographic and geographic variables, 2014

Variables	Underlying causes of death						
	P00-P04[1]	P05-P08[2]	P20-P29[3]	Q80-Q89[4]	Q00-Q07[5]	Others*	Total**
Sex							
Male	25,6	6,1	5,2	1,3	0,6	61,2	100,0
Female	27,5	6,1	5,0	1,4	0,5	59,5	100,0
Unknown/unspecified	23,4	3,6	3,1	1,6	0,3	68,0	100,0
Total	**26,3**	**6,0**	**5,0**	**1,4**	**0,5**	**60,8**	**100,0**
Population group							
Black African	26,3	6,3	5,1	1,3	0,5	60,5	100,0
White	27,8	3,8	5,6	3,0	0,4	59,4	100,0
Indian/Asian	25,9	6,2	2,5	2,5	1,2	61,7	100,0
Coloured	31,6	3,4	6,0	2,2	0,6	56,2	100,0
Other	29,4	2,9	0,0	0,0	0,0	67,6	100,0
Unknown/unspecified	23,7	4,9	4,1	1,4	0,5	65,3	100,0
Total	**26,3**	**6,0**	**5,0**	**1,4**	**0,5**	**60,8**	**100,0**
Province of death							
Western Cape	26,6	2,4	4,4	2,0	0,7	63,8	100,0
Eastern Cape	27,9	8,2	5,9	1,1	0,6	56,4	100,0
Northern Cape	24,2	4,6	8,0	0,5	0,8	62,0	100,0
Free State	30,9	7,6	5,1	1,4	0,3	54,7	100,0
North West	27,9	4,3	5,9	1,3	0,7	59,9	100,0
KwaZulu-Natal	31,4	12,4	6,4	0,6	0,5	48,6	100,0
Gauteng	17,7	5,0	2,9	1,2	0,4	72,7	100,0
Mpumalanga	25,6	5,1	4,9	1,8	0,5	62,2	100,0
Limpopo	34,5	9,6	6,1	2,0	0,5	47,4	100,0
Outside South Africa	31,8	9,1	9,1	0,0	0,0	50,0	100,0
Unknown/unspecified	28,0	1,0	1,0	0,0	0,0	70,0	100,0
Total	**26,3**	**6,0**	**5,0**	**1,4**	**0,5**	**60,8**	**100,0**
Place of death							
Hospital	28,0	5,8	4,8	1,5	0,6	59,3	100,0
Emergency room / outpatient	22,1	5,1	6,6	0,7	0,0	65,4	100,0
Dead on arrival	24,7	5,0	8,5	0,4	0,0	61,4	100,0
Nursing home	16,3	14,3	8,2	0,0	2,0	59,2	100,0
Home	17,3	9,1	7,8	0,4	0,4	65,0	100,0
Other	23,3	8,3	4,4	0,0	0,0	64,1	100,0
Unknown/unspecified	23,9	5,9	4,9	1,3	0,4	63,6	100,0
Total	**26,3**	**6,0**	**5,0**	**1,4**	**0,5**	**60,8**	**100,0**
Birth weight							
Less than 1000	26,3	3,2	11,2	0,9	0,3	58,0	100,0
1 000−1 499	29,8	3,3	5,6	1,9	0,6	58,7	100,0
1 500−1 999	33,0	3,3	3,4	1,6	0,5	58,2	100,0
2 000−2 499	32,5	4,2	1,2	1,9	0,8	59,5	100,0
2 500−2 999	29,3	7,6	0,3	1,2	1,0	60,5	100,0
3 000−3 499	29,1	9,8	0,6	0,7	0,6	59,3	100,0
3 500−3 999	29,5	14,3	0,0	1,8	1,5	52,9	100,0
4 000 and above	28,2	4,2	2,8	0,4	0,4	64,1	100,0
Unspecified	18,2	8,6	5,9	1,3	0,4	65,6	100,0
Total	**26,3**	**6,0**	**5,0**	**1,4**	**0,5**	**60,8**	**100,0**

[1] Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04).
[2] Disorders related to length of gestation and foetal growth (P05-P08).
[3] Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29).
[4] Other congenital malformations (Q80-Q89).
[5] Congenital malformations of the nervous system (Q00-Q07).
*'Others' category includes natural causes not in top five, non-natural causes and ill-defined causes.
** Percentage may not add up to 100 due to rounding up

The distribution of the five leading underlying natural causes of stillbirths in 2014 by population group is shown in Table 4.4. Indians/Asians were excluded due to small numbers. Overall, four of the five leading causes were the same for the three population groups. *Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* was the leading cause of death for black African, white and coloured population groups and was responsible for 26,3%; 27,8% and 31,6% stillbirths in these population groups, respectively. *Respiratory and cardiovascular disorders specific to the perinatal period* was the second leading cause of stillbirths amongst black Africans, accounting for 6,3% stillbirths, but was the third leading cause for whites (3,8%) and coloureds (3,4%). *Congenital malformations of the nervous system* was in the top five leading causes only for black Africans, while *conditions involving the integument and temperature regulation of newborn* featured only amongst the white and coloured population groups.

Table 4.4: The five leading underlying natural causes of stillbirths by population group, 2014

Causes of death (based on ICD-10)	Black African			White			Coloured		
	Rank	Number	%	Rank	Number	%	Rank	Number	%
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	1	3 042	26,3	1	74	27,8	1	254	31,6
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	2	733	6,3	3	10	3,8	3	27	3,4
Disorders related to length of gestation and foetal growth (P05-P08)	3	586	5,1	2	15	5,6	2	48	6,0
Other congenital malformations (Q80-Q89)	4	147	1,3	4	8	3,0	4	18	2,2
Congenital malformations of the nervous system (Q00-Q07)	5	63	0,5	…	…	…	…	…	…
Conditions involving the integument and temperature regulation of newborn (P80-P83)		…	…	5	5	1,9	5	5	0,6
Other natural causes		0	0,0		0	0,0		0	0,0
Non-natural causes		6 995	60,5		154	57,9		451	56,2
All causes		**11 566**	**100,0**		**266**	**100,0**		**803**	**100,0**

*Excluding Indian/Asian population group due to small numbers as well as those classified as other/unknown/unspecified.
…Category not in the top ten.

4.2 Early neonatal deaths

4.2.1 Main groups of underlying causes of early neonatal deaths

The distribution of the main groups of underlying causes of early neonatal deaths by sex in 2014 is shown in Table 4.5. *Certain conditions originating in the perinatal period*, which was the most commonly reported main group of underlying causes, accounted for 89,4% and 88,8% of male and female early neonatal deaths, respectively. *Congenital malformations* were the second most common main group of causes of death for both males and females. It contributed a higher percentage of female deaths (8,6%) than male deaths (8,4%). *External causes of morbidity and mortality* accounted for 1,1% of female early neonatal deaths and 0,7% of male early neonatal deaths. Less than 1% of the male and female early neonatal deaths were due to *certain infectious and parasitic diseases* and each of the other remaining categories.

Table 4.5: Number and percentage distribution of early neonatal deaths by main group of underlying causes of death and sex, 2014

Main group of underlying causes	Sex of the deceased					
	Male		Female		Both sexes	
	Number	%	Number	%	Number	%**
Certain conditions originating in the perinatal period (P00-P96)	3 614	89,4	2 835	88,8	6 449	89,1
Congenital malformations (Q00-Q99)	340	8,4	275	8,6	615	8,5
Certain infectious and parasitic diseases (A00-B99)	24	0,6	24	0,8	48	0,7
Other main groups of underlying causes	9	0,2	10	0,3	19	0,3
Symptoms and signs not elsewhere classified (R00-R99)	28	0,7	14	0,4	42	0,6
External causes of morbidity and mortality (V01-Y98)	28	0,7	35	1,1	63	0,9
Total	**4 043**	**100,0**	**3 193**	**100,0**	**7 236**	**100,0**

*Excluding early neonatal deaths with unspecified sex.
** Percentage may not add up to 100 due to rounding up

4.2.2 Broad groups of underlying causes of early neonatal deaths

Table 4.6 shows the ten leading underlying natural causes of early neonatal deaths in South Africa over the period 2012 to 2014. Overall, nine of the ten leading causes were the same for all the years, although only the first six leading causes had the same ranking.

The table shows that over the three-year period, *respiratory and cardiovascular disorders specific to the perinatal period* has been the leading underlying cause of early neonatal deaths with proportions of early neonatal deaths declining from 39,1% in 2012 to 38,9% in 2014. *Disorders related to length of gestation and foetal growth* was the second leading underlying cause for the three years and responsible for 13,2% early neonatal deaths in 2012, 15,3% in 2013 and 12,7% in 2014. *Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* ranked third over the three-year period and accounted for 10,8% of early neonatal deaths in 2014. *Infections specific to the perinatal period* maintained the same position as the fourth leading cause of early neonatal deaths from 2012 to 2014. Furthermore, from 2012 to 2014, *haemorrhagic and haematological disorders of foetus* was the fifth leading cause of early neonatal deaths, followed by *other congenital malformations* which occupied the sixth position.

Digestive system disorders of foetus and newborn ranked seventh from 2012 to 2013 and shifted to the eighth position in 2014. *Chromosomal abnormalities, not elsewhere classified* did not feature in the top ten leading causes in 2012 but was the ninth leading cause in 2013 and moved to the tenth in 2014. *Other viral diseases* was amongst the ten leading causes only in 2012, ranking ninth and comprising 1,1% of the early neonatal deaths. However, it was not in the top ten in 2013 and 2014.

Table 4.6: The ten leading underlying natural causes of death for early neonates, 2012−2014*

Causes of death (based on ICD-10)	2012			2013			2014		
	Rank	Number	%**	Rank	Number	%**	Rank	Number	%**
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	1	3 326	39,1	1	2 936	38,1	1	2 912	38,9
Disorders related to length of gestation and foetal growth (P05-P08)	2	1 126	13,2	2	1 183	15,3	2	950	12,7
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	3	769	9,0	3	762	9,9	3	813	10,8
Infections specific to the perinatal period (P35-P39)	4	654	7,7	4	546	7,1	4	585	7,8
Haemorrhagic and haematological disorders of foetus and newborn (P50-P61)	5	298	3,5	5	299	3,9	5	294	3,9
Other congenital malformations (Q80-Q89)	6	219	2,6	6	222	2,9	6	230	3,1
Congenital malformations of the circulatory system (Q20-Q28)	8	118	1,4	8	112	1,5	7	135	1,8
Digestive system disorders of foetus and newborn (P75-P78)	7	165	1,9	7	129	1,7	8	127	1,7
Chromosomal abnormalities, not elsewhere classified (Q90-Q99)	…	…	…	9	80	1,0	10	67	0,9
Congenital malformations of the nervous system (Q00-Q07)	10	91	1,1	10	74	1,0	9	75	1,0
Other viral diseases (B25-B34)	9	94	1,1	…	…	…	…	…	…
Other natural causes		1 548	18,2		1 332	17,3		1 235	16,5
Non-natural causes		108	1,3		41	0,5		72	1,0
Total		**8 516**	**100,0**		**7 716**	**100,0**		**7 495**	**100,0**

*Data for 2011−2013 have been updated with late registrations/delayed death notification forms processed in 2014/2015.
…Category not in the top ten.
** Percentage may not add up to 100 due to rounding up

4.2.3 Early neonatal deaths differentials

The top five leading underlying natural causes of early neonatal deaths classified by selected variables are shown in Table 4.7. The percentage distribution of the top five causes of early neonatal deaths was largely similar for males and females. The number distribution of the early neonatal deaths is presented in Appendix E (see page 39). Both males and females had somewhat similar proportions of early neonatal deaths attributed to *respiratory and cardiovascular disorders specific to the perinatal period* (39,3% and 38,8%, respectively). Similarly, *disorders related to length of gestation and foetal growth* accounted for 12,7% each, for males and females. Conversely, females had a higher proportion of deaths due to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* compared to males (11,5% for females and 10,4% for males).

Population group differentials indicate that the highest proportion of early neonatal deaths was due to *respiratory and cardiovascular disorders specific to the perinatal period* (38,9%). The proportions ranged from 29,3% among Indian/Asian to 40,5% among black Africans. For all the other population groups, except for the white population group, the second most common cause of death was *disorders related to length of gestation and foetal growth. Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* was the second leading cause of early neonatal death amongst the white population group; responsible for 15,0% early neonatal deaths in this population group.

For all provinces of death occurrence, *respiratory and cardiovascular disorders specific to the perinatal period* accounted for the highest percentage of early neonatal deaths, with higher proportions observed for KwaZulu-Natal (46,1%), Mpumalanga (43,2%) and Free State (41,4%). Western Cape was the only province with less than 30% of early neonatal deaths attributed to *respiratory and cardiovascular disorders specific to the perinatal period*.

The distribution of early neonatal deaths by place of death shows that over 40% of early neonatal deaths that occurred in hospitals (40,2%), emergency rooms or as outpatient deaths (48,4%) and at home (41,4%) were due to *respiratory and cardiovascular disorders specific to the perinatal period*. *Disorders related to length of gestation and foetal growth* accounted for 13,8% early neonatal deaths that occurred in hospitals, 12,9% emergency room or outpatient deaths and 15,4% of nursing home deaths.

Table 4.7: Percentage distribution of early neonatal deaths by top five leading causes and selected socio-demographic and geographic variables, 2014

Variables	Underlying causes of death						
	P20-P29[1]	P05-P08[2]	P00-P04[3]	P35-P39[4]	P50-P61[5]	Others*	Total**
Sex							
Male	39,3	12,7	10,4	7,8	4,4	25,4	100,0
Female	38,8	12,7	11,5	7,9	3,5	25,6	100,0
Unknown/unspecified	32,8	12,0	9,7	6,9	1,5	37,1	100,0
Total	**38,9**	**12,7**	**10,8**	**7,8**	**3,9**	**25,9**	**100,0**
Population group							
Black African	40,5	12,7	10,7	8,0	4,1	24,0	100,0
White	31,1	11,4	15,0	7,2	6,0	29,3	100,0
Indian/Asian	29,3	17,2	10,3	8,6	5,2	29,3	100,0
Coloured	30,9	16,2	12,8	8,3	3,6	28,3	100,0
Other	44,4	5,6	33,3	0,0	0,0	16,7	100,0
Unknown/unspecified	32,1	10,6	9,3	6,0	2,4	39,5	100,0
Total	**38,9**	**12,7**	**10,8**	**7,8**	**3,9**	**25,9**	**100,0**
Province of death							
Western Cape	29,6	17,1	12,3	9,0	3,8	28,2	100,0
Eastern Cape	35,3	13,0	11,8	7,7	3,6	28,5	100,0
Northern Cape	32,7	13,5	11,3	5,5	3,3	33,8	100,0
Free State	41,4	9,1	11,5	8,8	4,0	25,2	100,0
North West	36,0	18,4	11,5	8,1	3,6	22,4	100,0
KwaZulu-Natal	46,1	12,8	8,0	8,5	2,9	21,7	100,0
Gauteng	39,9	7,7	10,4	9,5	4,7	27,8	100,0
Mpumalanga	43,2	12,6	9,9	4,7	3,4	26,1	100,0
Limpopo	41,2	13,4	11,6	3,9	4,3	25,7	100,0
Outside South Africa	44,4	0,0	22,2	0,0	0,0	33,3	100,0
Unknown/unspecified	33,3	0,0	0,0	0,0	0,0	66,7	100,0
Total	**38,9**	**12,7**	**10,8**	**7,8**	**3,9**	**25,9**	**100,0**
Place of death							
Hospital	40,2	13,8	11,6	8,8	4,4	21,2	100,0
Emergency room / outpatient	48,4	12,9	6,5	0,0	0,0	32,3	100,0
Dead on arrival	28,6	15,4	7,7	4,4	2,2	41,8	100,0
Nursing home	26,9	7,7	7,7	0,0	3,8	53,8	100,0
Home	41,4	5,3	5,0	4,0	2,5	41,7	100,0
Other	27,3	3,0	13,6	4,5	0,0	51,5	100,0
Unknown/unspecified	34,9	10,6	9,8	6,0	3,1	35,6	100,0
Total	**38,9**	**12,7**	**10,8**	**7,8**	**3,9**	**25,9**	**100,0**

[1] Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29).
[2] Disorders related to length of gestation and foetal growth (P05-P08).
[3] Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04).
[4] Infections specific to the perinatal period (P35-P39).
[5] Haemorrhagic and haematological disorders of foetus and newborn (P50-P61).
* 'Others' category includes natural causes not in top five, non-natural causes and ill-defined causes.
** Percentage may not add up to 100 due to rounding up

Table 4.8 shows the five leading underlying natural causes of early neonatal deaths in 2014 by population group. Indians/Asians were excluded from the analysis due to small numbers. Generally, four of the five leading causes of early neonatal deaths featured in the three population groups. *Haemorrhagic and haematological disorders of foetus and newborn* was amongst the top five only for black Africans and coloureds, whereas *congenital malformations of the circulatory system* was among the top five causes only for the white population group.

Respiratory and cardiovascular disorders specific to the perinatal period was the leading cause of early neonatal death for black Africans, whites and coloured (comprising 40,5%, 31,1% and 30,9%; respectively). *Disorders related to length of gestation and foetal growth* and *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* ranked second and third, respectively among black Africans and coloureds. For the white population group, these two causes swapped positions.

Table 4.8: The five leading underlying natural causes of early neonatal deaths by population group, 2014*

Underlying broad groups of causes of death (based on ICD-10)	Black African			White			Coloured		
	Rank	Number	%	Rank	Number	%	Rank	Number	%**
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	1	2 466	40,5	1	52	31,1	1	130	30,9
Disorders related to length of gestation and foetal growth (P05-P08)	2	773	12,7	3	19	11,4	2	68	16,2
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	3	653	10,7	2	25	15,0	3	54	12,8
Infections specific to the perinatal period (P35-P39)	4	488	8,0	4	12	7,2	4	35	8,3
Haemorrhagic and haematological disorders of foetus and newborn (P50-P61)	5	248	4,1	…	…	…	5	15	3,6
Congenital malformations of the circulatory system (Q20-Q28)	…	…	…	5	11	6,6	…	…	…
Other natural causes		1407	23,1		45	26,9		115	27,3
Non-natural causes		52	0,9		3	1,8		4	1,0
All causes		**6 087**	**100,0**		**167**	**100,0**		**421**	**100,0**

*Excluding Indian/Asian population group due to small numbers as well as those classified as other/unknown/unspecified.
…Category not in the top ten.
** Percentage may not add up to 100 due to rounding up

4.3 Perinatal deaths

4.3.1 Main groups of underlying causes of perinatal deaths

The distribution of perinatal deaths by the main group of underlying causes of death and sex is provided in Table 4.9. It is observed that for both sexes the majority (94,7%) of perinatal deaths in 2014 were due to *certain conditions originating in the perinatal period*. About 4,5% of perinatal deaths were due to *congenital malformations*. The remaining causes were not common for both sexes, accounting for less than 1,0% of all perinatal deaths. The percentage distribution for males and females was largely similar to the overall percentage observed for both sexes.

Table 4.9: Number and percentage distribution of perinatal deaths by main group of underlying causes of death and sex, 2014

Main group of underlying causes	Sex of the deceased					
	Male		Female		Total	
	Number	%**	Number	%	Number	%
Certain conditions originating in the perinatal period (P00-P96)	10 846	94,7	8 916	94,6	19 762	94,7
Congenital malformations (Q00-Q99)	518	4,5	424	4,5	942	4,5
Certain infectious and parasitic diseases (A00-B99)	24	0,2	24	0,3	48	0,2
Other main groups of underlying causes	9	0,1	10	0,1	19	0,1
Symptoms and signs not elsewhere classified (R00-R99)	28	0,2	14	0,1	42	0,2
External causes of morbidity and mortality (V01-Y98)	28	0,2	35	0,4	63	0,3
Total	**11 453**	**100,0**	**9 423**	**100,0**	**20 876**	**100,0**

*Excluding perinatal deaths with unspecified sex.
** Percentage may not add up to 100 due to rounding up

4.3.2 Broad groups of underlying causes of perinatal deaths

The top ten leading underlying natural causes of perinatal deaths from 2012 to 2014 are shown in Table 4.10. The table shows that all ten leading causes of perinatal deaths between 2012 and 2014 were the same and had the same rankings. The only difference was in the contribution of each cause to the overall number of deaths per year. *Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* maintained the same rank as the leading cause of perinatal deaths, but with increasing proportions over the three years. It contributed 17,7% of perinatal deaths in 2012, increasing to 19,2% in 2013 and further increasing to 21,0% in 2014. It was consistently followed by *respiratory and cardiovascular disorders specific to the perinatal period* which accounted for 16,9% perinatal deaths in 2012, 15,5% in 2013 and 17,2% in 2014.

Disorders related to length of gestation and foetal growth occupied the third place and was responsible for 7,6% of perinatal deaths in 2014. Between 2012 and 2014, *infections specific to the perinatal period* was ranked fourth and *other congenital malformations* fifth. The breakdown of individual causes for broad groups of causes of death that were in the top ten leading causes for total perinatal deaths in 2014 is provided in Appendix F (see pages 38−39).

Table 4.10: The ten leading underlying natural causes of perinatal deaths, 2012−2014*

Causes of death (based on ICD-10)	2012			2013			2014		
	Rank	Number	%**	Rank	Number	%**	Rank	Number	%**
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	1	4 112	17,7	1	4 374	19,2	1	4 608	21,0
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	2	3 928	16,9	2	3 527	15,5	2	3 770	17,2
Disorders related to length of gestation and foetal growth (P05-P08)	3	1 855	8,0	3	1 912	8,4	3	1 670	7,6
Infections specific to the perinatal period (P35-P39)	4	664	2,9	4	555	2,4	4	614	2,8
Other congenital malformations (Q80-Q89)	5	418	1,8	5	417	1,8	5	428	2,0
Haemorrhagic and haematological disorders of foetus and newborn (P50-P61)	6	338	1,5	6	318	1,4	6	321	1,5
Congenital malformations of the nervous system (Q00-Q07)	7	186	0,8	7	161	0,7	7	155	0,7
Digestive system disorders of foetus and newborn (P75-P78)	8	170	0,7	8	134	0,6	8	154	0,7
Congenital malformations of the circulatory system (Q20-Q28)	9	150	0,6	9	131	0,6	9	129	0,6
Chromosomal abnormalities, not elsewhere classified (Q90-Q99)	10	107	0,5	10	115	0,5	10	88	0,4
Other natural causes		11 264	48,6		11 080	48,8		9 971	45,5
Non-natural causes		108	0,5		41	0,2		72	0,3
Total		**23 192**	**100,0**		**22 724**	**100,0**		**21 908**	**100,0**

*Data for 2012−2013 have been updated with late registrations/delayed death notification forms processed in 2014/2015.
** Percentage may not add up to 100 due to rounding up

4.3.3 Perinatal deaths differentials

The percentage distribution of perinatal deaths by the top five leading causes and selected socio-demographic variables for 2014 is presented in Table 4.11. The number distribution of the perinatal deaths is presented in Appendix G (see page 40). In general, sex differentials show that for overall perinatal deaths, *foetus and newborn affected by maternal factors and by complications of pregnancy, labour* contributed 21,0% of perinatal deaths. It contributed a higher proportion amongst females (22,1%) as compared to males (20,3%). *Respiratory and cardiovascular disorders specific to the perinatal period* accounted for 17,8% of male perinatal deaths and 17,2% of female perinatal deaths.

Population group differences show that while *foetus and newborn affected by maternal factors and by complications of pregnancy, labour* was the leading cause of death for all population groups, it contributed a higher proportion of deaths among the coloured (25,2%) and the white (22,9%) population groups. While *respiratory and cardiovascular disorders specific to the perinatal period* was the second leading cause of death in all population groups, black Africans (18,1%) were the only population group with a proportion higher than the national average (17,2%). The lowest proportion of deaths due to *respiratory and cardiovascular disorders specific to the perinatal period* was observed among the coloured population group (12,8%), which had a higher percentage of deaths attributed to *disorders related to length of gestation and foetal growth* (9,5%).

The table further shows that *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* was the most common cause of death in all provinces except in KwaZulu-Natal. It ranged from 15,0% in Gauteng to 26,4% in Limpopo. The first leading cause in KwaZulu-Natal was *respiratory and cardiovascular disorders specific to the perinatal period*, accounting for 25,2% of perinatal deaths in this province, which was higher than the national average of 17,2%.

The distribution of perinatal deaths by place of death occurrence shows that *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* (22,1%) accounted for a higher proportion of perinatal deaths that occurred in hospitals. It also was the leading cause of death for 20,3% of dead on arrival perinatal deaths and 19,2% of emergency room or outpatient perinatal deaths. For perinatal deaths that occurred at home (22,3%) and those that occurred in nursing homes (18,7%), *respiratory and cardiovascular disorders specific to the perinatal period* was the most common cause of perinatal deaths.

Table 4.11: Percentage distribution of perinatal deaths by top five leading causes and selected socio-demographic and geographic variables, 2014*

Variables	Underlying causes of death						
	P00-P04	P20-P29	P05-P08	P35-P39	Q80-Q89	Others	Total**
Sex							
Male	20,3	17,8	7,9	2,9	1,9	49,3	100,0
Female	22,1	17,2	7,6	2,8	1,9	48,4	100,0
Unknown/unspecified	20,0	10,9	5,3	1,9	2,5	59,3	100,0
Total	**21,0**	**17,2**	**7,6**	**2,8**	**2,0**	**49,4**	**100,0**
Population group							
Black African	20,9	18,1	7,7	2,9	1,9	48,4	100,0
White	22,9	14,3	7,9	2,8	3,0	49,2	100,0
Indian/Asian	19,4	15,8	8,6	4,3	2,9	48,9	100,0
Coloured	25,2	12,8	9,5	3,0	2,5	47,1	100,0
Other	30,8	17,3	1,9	0,0	0,0	50,0	100,0
Unknown/unspecified	19,2	13,3	6,1	1,9	1,8	57,6	100,0
Total	**21,0**	**17,2**	**7,6**	**2,8**	**2,0**	**49,4**	**100,0**
Province of death							
Western Cape	22,6	10,0	7,9	2,6	2,5	54,4	100,0
Eastern Cape	21,7	18,6	8,6	3,1	1,5	46,5	100,0
Northern Cape	18,8	16,3	10,2	2,3	1,1	51,4	100,0
Free State	24,2	19,1	6,5	3,1	1,7	45,3	100,0
North West	22,9	13,9	9,7	2,7	1,9	48,9	100,0
KwaZulu-Natal	22,5	25,2	8,8	3,3	1,1	39,0	100,0
Gauteng	15,0	18,1	4,7	3,7	2,2	56,4	100,0
Mpumalanga	20,2	18,2	7,5	1,7	2,4	50,0	100,0
Limpopo	26,4	20,7	8,6	1,5	2,3	40,5	100,0
Outside South Africa	29,0	19,4	6,5	0,0	0,0	45,2	100,0
Unknown/unspecified	26,4	2,8	0,9	0,0	0,0	69,8	100,0
Total	**21,0**	**17,2**	**7,6**	**2,8**	**2,0**	**49,4**	**100,0**
Place of death							
Hospital	22,1	18,1	8,0	3,3	2,2	46,3	100,0
Emergency room / outpatient	19,2	13,2	7,8	0,0	1,8	58,1	100,0
Dead on arrival	20,3	11,1	10,3	1,1	0,3	56,9	100,0
Nursing home	13,3	18,7	8,0	0,0	0,0	60,0	100,0
Home	12,2	22,3	6,8	1,8	0,3	56,6	100,0
Other	21,0	12,9	4,0	1,1	0,4	60,7	100,0
Unknown/unspecified	19,6	14,7	6,6	1,9	1,8	55,4	100,0
Total	**21,0**	**17,2**	**7,6**	**2,8**	**2,0**	**49,4**	**100,0**

[1] Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04).
[2] Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29).
[3] Disorders related to length of gestation and foetal growth (P05-P08).
[4] Infections specific to the perinatal period (P35-P39).
[5] Other congenital malformations (Q80-Q89).
* Excluding unknown or unspecified cases.
** Percentage may not add up to 100 due to rounding up

The leading underlying causes of perinatal deaths by population group are shown in Table 4.12. Indians and Asians were excluded from the analysis due to small numbers. The results show that four of the five leading causes of perinatal deaths were the same for the three population groups, even though their rankings were not the same across all population groups. *Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* was the leading cause of perinatal deaths for all population groups. *Respiratory and cardiovascular disorders specific to the perinatal period* was the second leading cause of death among the black African, white, and coloured population groups, accounting for 18,1%; 14,3%; and 12,8% of all perinatal deaths in these population groups, respectively. *Disorders related to length of gestation and foetal growth* featured as the third leading cause of death for all population groups and comprised 7,7% of perinatal deaths in the black African population group, 7,9% amongst the white population, and 9,5%for the coloured population group.

Some of the leading underlying causes of death were shared by some population groups but not by others. Black Africans and coloureds were the only population groups that had *infections specific to the perinatal period* amongst the five leading causes of perinatal deaths; ranking fourth for both population groups. *Congenital malformations of the circulatory system* was among the five leading causes only for the white population group, accounting for 3,2% of perinatal deaths in this population group.

Table 4.12: The five leading underlying natural causes of perinatal deaths by population group, 2014*

Underlying broad groups of causes of death (based on ICD-10)	Black African			White			Coloured		
	Rank	No.	%**	Rank	No.	%	Rank	No.	%
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)	1	3 695	20,9	1	99	22,9	1	308	25,2
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)	2	3 199	18,1	2	62	14,3	2	157	12,8
Disorders related to length of gestation and foetal growth (P05-P08)	3	1 359	7,7	3	34	7,9	3	116	9,5
Infections specific to the perinatal period (P35-P39)	4	514	2,9	…	…	…	4	37	3,0
Other congenital malformations (Q80-Q89)	5	338	1,9	5	13	3,0	5	30	2,5
Congenital malformations of the circulatory system (Q20-Q28)	…	…	…	4	14	3,2	…	…	…
Other natural causes		8 496	48,1		208	48,0		572	46,7
Non-natural causes		52	0,3		3	0,7		4	0,3
All causes		**17 653**	**100,0**		**433**	**100,0**		**1 224**	**100,0**

*Excluding Indian/Asian population group due to small numbers as well as those classified as other/unknown/unspecified.
…Category not in the top ten.
** Percentage may not add up to 100 due to rounding up

5. Summary and concluding remarks

This statistical release provided information on registered perinatal deaths for 2014 in South Africa based on data from the South African civil registration system maintained by the Department of Home Affairs (DHA). Perinatal deaths for the years 1997 to 2013 were also included to provide information on trends in the occurrence of perinatal deaths.

The results show that the number of perinatal deaths generally increased between 1997 and 2009, after which there was a general decrease. The total number of perinatal deaths that occurred in 2014 and that were registered at DHA was 21 908, which was a 3,6% decline from the 22 274 perinatal deaths for 2013. Over the 18-year period (1997−2014), stillbirths were only lower than early neonatal deaths in 1997 and 1998. After 1998, there were more stillbirths than early neonatal deaths. In 2014, about two-thirds of perinatal deaths were stillbirths (65,8%) and the remaining one-third early neonatal deaths (34,2%). The estimated mortality rates ranged from 6,2 early neonatal deaths per 1 000 live births; 11,8 stillbirths per 1 000 total births to a national perinatal rate of 17,9 perinatal deaths per 1 000 total births.

Differences in stillbirths, early neonatal deaths and perinatal deaths by sex from 1997 to 2014 showed that there were more male than female deaths for all the years. In 2013 and 2014, while male deaths accounted for over 50% of stillbirths and perinatal deaths as compared to female deaths, the proportions of male stillbirths and perinatal deaths decreased over the two years while the proportions of female stillbirths and perinatal deaths increased. For early neonatal deaths, the percentage of female early neonatal deaths increased between 2013 and 2014, while the percentage of male early neonatal deaths decreased.

In 2014, provincial differences indicated that for all death types (stillbirths, early neonatal deaths and perinatal deaths) all provinces had sex ratios above 100. The national sex ratio at perinatal death was 122 male deaths per 100 female perinatal deaths. The national average for stillbirths was 119 male stillbirths per 100 female stillbirths and 127 male early neonatal deaths per 100 female early neonatal deaths. Overall, Mpumalanga had the lowest sex ratios for stillbirths, early neonatal deaths and perinatal deaths. The highest sex ratios at death were observed in Gauteng for stillbirths, in Eastern Cape for early neonatal deaths and in Free State for perinatal deaths.

Overall, for 2014 death occurrences, most early neonatal and perinatal deaths took place in Gauteng and KwaZulu-Natal, and the least in Northern Cape, which is in line with the population distribution in the country. For stillbirths, most deaths occurred in KwaZulu-Natal, closely followed by Gauteng.

Differentials indicated that black Africans comprised the majority (over 80%) of all death types (stillbirths, early neonatal deaths and perinatal deaths), which is also similar to the population distribution in the country. Nearly 70% of all death types took place in a health facility. The general pattern indicated that most perinatal deaths for all death types occurred during the months of January and March.

A great majority of stillbirths, early neonatal deaths and perinatal deaths that took place in 2014 were due to natural causes, mainly attributed to the main group of *certain conditions originating in the perinatal period*, and *congenital malformations* was the second most common main group of underlying causes of deaths. There was a similarity in the distribution of main groups of causes of death for males and females.

Analysis of the causes of death showed that the first three leading causes of death from 2012 to 2014 were the same for all death types but with differences in ranking and proportions. The distribution of the ten leading underlying causes of stillbirths and perinatal deaths indicated that *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* maintained its rank as the top-ranking cause of stillbirths and perinatal deaths between 2012 and 2014. For both stillbirths and perinatal deaths, the proportions of death attributed to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery* increased over the three years. Although it ranked third over the three-year period for early neonatal deaths, its proportions increased from 9,0% in 2012 to 10,8% in 2014.

Over the three-year period, *respiratory and cardiovascular disorders specific to the perinatal period* has been the leading underlying cause of early neonatal deaths and the second leading cause of perinatal deaths. Amongst stillbirths, it moved from the third position between 2012 and 2013 to the second position in 2014. For stillbirths, *disorders related to length of gestation and foetal growth* ranked second in 2012 and in 2013 and thereafter was displaced to the third place in 2014. It was consistently the second leading cause of death for early neonatal deaths and third for perinatal deaths.

Differentials by selected socio-demographic and geographic variables for 2014 deaths showed that all variables and death types mostly indicated high percentages of stillbirths due to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* Stillbirth weight differentials show that for all birth weights, over a quarter of stillbirths were caused by *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* A high proportion of stillbirths weighing between 3 500 and 3 999 grams were caused by *disorders related to length of gestation and foetal growth*. The distribution of causes of stillbirths and perinatal deaths was largely similar for males and females with high proportions of deaths attributed to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* Both males and females had somewhat similar proportions of early neonatal deaths attributed to *respiratory and cardiovascular disorders specific to the perinatal period*. All population groups had over 25% of stillbirths and perinatal deaths attributed to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* The highest proportion of early neonatal deaths was due to *respiratory and cardiovascular disorders specific to the perinatal period across* all population groups. For perinatal deaths, *respiratory and cardiovascular disorders specific to the perinatal period* was the second leading cause of death in all population groups.

Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery was the most common cause of stillbirths in all provinces. However, for perinatal deaths it was the most common cause of death in all provinces except in KwaZulu-Natal, where the majority of perinatal deaths were due to *respiratory and cardiovascular disorders specific to the perinatal period*. The latter was also the leading cause of early neonatal deaths in all provinces. In terms of place of death, most of the stillbirths that occurred as hospital deaths, emergency room or outpatients stillbirths and dead on arrival were due to *foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery.* It was also the leading cause of death for perinatal deaths that occurred in hospitals, emergency rooms or as outpatients and dead on arrival perinatal deaths. Over 40% of early neonatal deaths that occurred in hospitals, emergency room or outpatient deaths and home occurrences were due to *respiratory and cardiovascular disorders specific to the perinatal period*.

Statistics on perinatal deaths are important for planning, monitoring and evaluation of interventions and programmes aimed at improving the health and survival of infants. Their usefulness may however, be undermined if data are not of high quality. As such, efforts need to be made to enhance the completeness and quality of information. In particular, reductions in unknown and unspecified information on socio-demographic characteristics of both the perinatal deaths and the mothers, including detailed information on causes of death. Addressing gaps in perinatal deaths data will go a long way towards in-depth analysis of the perinatal deaths and adequate understanding of the status of perinatal deaths in the country. Notwithstanding the quality issues highlighted in this statistical release, the data on perinatal deaths are an invaluable source of information on both the characteristics and causes of death for stillbirths and early neonatal deaths.

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Appendices

Appendix A: Definitions of concepts used

1.1 Death

The permanent disappearance of all evidence of life at any time after a live birth has taken place. This definition excludes foetal deaths.

1.2 Stillbirth

A stillborn in relation to a child, means that it has at least 26 weeks of intra-uterine existence but showed no sign of life after complete birth.

1.3 Early neonatal death

The death of live-born infant during the first seven completed days of life.

1.4 Perinatal death

Perinatal deaths are a combination of foetuses of at least 26 weeks that are born dead (stillbirths) and infants that die within the first week after live birth (early neonatal deaths).

1.5 Neonatal death

The death of a live-born infant during the first 28 completed days of life.

1.6 Live birth

The complete expulsion or extraction from its mother's womb of a product of conception, irrespective of the duration of pregnancy, which after such separation, breathes or shows any other evidence of life, such as, beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached.

Appendix B: Assessment of data on perinatal deaths

Data pertaining to perinatal deaths are limited, particularly in developing countries where it is estimated that the majority of perinatal deaths occur (98% of about 6 million perinatal deaths worldwide [WHO, 2006]). Although perinatal deaths are registered and the statistics published in South Africa; the information is limited as many variables related to perinatal deaths have a high number of cases with unspecified or unknown cases, especially for stillbirths. As such, the data have to be interpreted with caution. In addition, while the civil registration data provide insights into the number of perinatal deaths registered at the Department of Home Affairs (DHA) for the period 1997 to 2014, the following have to be noted:

- The definition of stillbirths based on the Births and Deaths Registration Act, 1992 (Act No. 51 of 1992) is not the same as the definition recommended by the WHO. The Births and Deaths Registration Act (Act No. 51 of 1992) states that '*A stillborn in relation to a child, means that it has at least 26 weeks of intra-uterine existence but showed no sign of life after complete birth* (Republic of South Africa, 1992). The WHO defines stillbirths as deaths which occurred with a mass of 500 grams or at 22 complete weeks of pregnancy (WHO, 2006). The WHO recommends that, if possible, all foetuses and infants weighing at least 500g at birth, whether alive or dead, should be included in the national statistics as it will allow for the inclusion of inherently valuable data and improve the coverage of reporting perinatal deaths. For international comparison, the WHO recommends the use a more conservative definition which restricts still births to deaths weighing 1 000 g and/or 28 weeks gestation (WHO, 2006).

- There are a limited number of variables for in-depth analysis, particularly factors related to the mother. The information on the maternal characteristic is not conclusive as it has a high percentage of missing information.

- Completeness levels for the registration of perinatal deaths have not been estimated, which may differ by year of death and geographic areas.

In terms of accuracy of perinatal deaths, Table B.1 provides the proportion of unknown or unspecified information for key variables. The 'unknown cases' refers to cases where the option 'unknown' was selected on the death notification form, more than one option was selected or where information could not be classified according to specified categories. 'Unspecified cases' refers to missing information for that variable.

Generally, province of death was well reported in 2014, with 0,6% with unspecified or unknown information. Province of birth was missing in 4,4% of the perinatal deaths while sex of the perinatal death was missing in 4,7% of the perinatal deaths. Missing information that was more than 10% was observed among the variables population group (11,0%); province of usual residence (16,6%); and place or institution of death occurrence (24,6%). For the rest of the variables, information was missing in over 25% of the cases and as such were excluded from further analysis. Overall, the characteristics of the mother were poorly reported.

Table B.1: Percentage of perinatal deaths classified as unknown/unspecified for selected variables, 2014

Variables	Applicable group	Percentage unknown or unspecified
Sex	Perinatal death	4,7
Province of death occurrence	Perinatal death	0,6
Province of usual residence	Perinatal death	16,6
Province of birth	Perinatal death	4,4
Population group	Perinatal death	11,0
Place or institution of death occurrence	Perinatal death	24,6
Method used to ascertain cause of death	Perinatal death	74,5
Age of mother	Mother	59,8
Outcome of previous pregnancy	Mother	74,5
Pregnancy duration in weeks	Mother	54,2
Delivery method	Mother	65,1
Antenatal care	Mother	68,3
Birth type	Mother	41,7
Birth attendant	Mother	48,5

Mahapatra et al. (2007) propose that at most, 10% of cause-of-death statistics should be assigned to ill-defined causes. In general, the causes of death for the majority of perinatal deaths were unexplained and thus appeared as ill-defined. Although ill-defined causes still help to provide the overall mortality due to broad diseases, they fail to provide a concise picture because they poorly attribute the underlying cause of death. The ill-defined causes consist of *symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)* and *foetal death of unspecified cause (P95)*.

The 2014 perinatal deaths depicted in Table B.2 indicate that 39,5% of perinatal deaths were assigned to ill-defined causes, which is a large margin from the recommended proportion. However, only 0,6% early neonatal deaths were assigned to ill-defined in comparison to 59,4% stillbirths. The results further show a breakdown of the ill-defined causes by place of death occurrence. In general, 53,9% perinatal deaths that occurred in emergency rooms or as outpatient perinatal deaths were classified as ill-defined, while 46,3% dead on arrival cases had ill-defined causes of death. Approximately, 40,0% of the perinatal deaths that occurred in nursing homes, 41,3% occurring at home and 37,3% hospital occurrences were assigned to ill-defined causes.

Table B.2: Ill-defined causes of death by place of death occurrence, 2014*

Place of death	Stillbirths			Early neonatal deaths			Perinatal deaths		
	No. of ill-defined	Total no. of deaths in the place of death	%	No. of ill-defined	Total no. of deaths in the place of death	%	No. of ill-defined	Total no. of deaths in the place of death	%
Hospital	5 529	9 556	57,9	10	5 322	0,2	5 539	14 878	37,2
Emergency room / outpatient	89	136	65,4	1	31	3,2	90	167	53,9
Dead on arrival	155	259	59,8	7	91	7,7	162	350	46,3
Nursing home	29	49	59,2	1	26	3,8	30	75	40,0
Home	298	463	64,4	13	321	4,0	311	784	39,7
Other	128	206	62,1		66	0,0	128	272	47,1
Unknown or unspecified	2 333	3 744	62,3	12	1 638	0,7	2 345	5 382	43,6
Total	**8 561**	**14 413**	**59,4**	**44**	**7 495**	**0,6**	**8 605**	**21 908**	**39,3**

Appendix C: Observed Stillbirths, early neonatal and perinatal mortality rates, 2002−2014*

Death year	Number					Rate		
	Stillbirths	Early neonatal deaths	Perinatal deaths	Live births	Total births**	Stillbirth rate	Early neonatal mortality rate	Perinatal mortality rate
2002	13 289	7 364	20 653	1 111 987	1 125 276	**11,8**	**6,6**	**18,4**
2003	14 661	8 128	22 789	1 117 024	1 131 685	**13,0**	**7,3**	**20,1**
2004	15 850	8 243	24 093	1 120 172	1 136 022	**14,0**	**7,4**	**21,2**
2005	13 829	9 877	23 706	1 122 148	1 135 977	**12,2**	**8,8**	**20,9**
2006	14 383	10 067	24 450	1 105 755	1 120 138	**12,8**	**9,1**	**21,8**
2007	14 356	9 893	24 249	1 132 500	1 146 856	**12,5**	**8,7**	**21,1**
2008	14 933	10 088	25 021	1 141 468	1 156 401	**12,9**	**8,8**	**21,6**
2009	14 282	11 014	25 296	1 152 319	1 166 601	**12,2**	**9,6**	**21,7**
2010	15 118	8 982	24 100	1 163 629	1 178 747	**12,8**	**7,7**	**20,4**
2011	14 216	8 082	22 298	1 173 164	1 187 380	**12,0**	**6,9**	**18,8**
2012	14 676	8 516	23 192	1 184 867	1 199 543	**12,2**	**7,2**	**19,3**
2013	15 008	7 716	22 724	1 196 395	1 211 403	**12,4**	**6,4**	**18,8**
2014	14 413	7 495	21 908	1 207 711	1 222 124	**11,8**	**6,2**	**17,9**

Appendix D: Number distribution of stillbirths by top five leading causes and selected socio-demographic and geographic variables, 2014

Variables	Underlying causes of death						
	P00-P04[1]	P05-P08[2]	P20-P29[3]	Q80-Q89[4]	Q00-Q07[5]	Others*	Total
Sex							
Male	1 898	453	385	99	43	4 532	7 410
Female	1 716	377	311	87	34	3 705	6 230
Unknown/unspecified	181	28	24	12	2	526	773
Total	**3 795**	**858**	**720**	**198**	**79**	**8 763**	**14 413**
Population group							
Black African	3 042	733	586	147	63	6 995	11 566
White	74	10	15	8	1	158	266
Indian/Asian	21	5	2	2	1	50	81
Coloured	254	27	48	18	5	451	803
Other	10	1	0	0	0	23	34
Unknown/unspecified	394	82	69	23	9	1 086	1 663
Total	**3 795**	**858**	**720**	**198**	**79**	**8 763**	**14 413**
Province of death							
Western Cape	400	36	66	30	11	959	1 502
Eastern Cape	195	57	41	8	4	394	699
Northern Cape	94	18	31	2	3	241	389
Free State	358	88	59	16	4	635	1 160
North West	986	153	208	47	24	2 116	3 534
KwaZulu-Natal	357	141	73	7	6	553	1 137
Gauteng	592	167	98	40	15	2 425	3 337
Mpumalanga	273	55	52	19	5	664	1 068
Limpopo	505	140	89	29	7	695	1 465
Outside South Africa	7	2	2	0	0	11	22
Unknown/unspecified	28	1	1	0	0	70	100
Total	**3 795**	**858**	**720**	**198**	**79**	**8 763**	**14 413**
Place of death							
Hospital	2 671	551	457	146	60	5 671	9 556
Emergency room / outpatient	30	7	9	1	0	89	136
Dead on arrival	64	13	22	1	0	159	259
Nursing home	8	7	4		1	29	49
Home	80	42	36	2	2	301	463
Other	48	17	9		0	132	206
Unknown/unspecified	894	221	183	48	16	2 382	3 744
Total	**3 795**	**858**	**720**	**198**	**79**	**8 763**	**14 413**
Birth weight							
Less than 1000	615	74	263	22	8	1 357	2 339
1 000−1 499	599	66	113	38	13	1 179	2 008
1 500−1 999	561	57	58	27	9	990	1 702
2 000−2 499	468	61	17	27	11	857	1 441
2 500−2 999	341	89	4	14	12	704	1 164
3 000−3 499	256	86	5	6	5	521	879
3 500−3 999	101	49	0	6	5	181	342
4 000 and above	80	12	8	1	1	182	284
Unspecified	774	364	252	57	15	2 792	4 254
Total	**3 795**	**858**	**720**	**198**	**79**	**8 763**	**14 413**

[1] Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04).
[2] Disorders related to length of gestation and foetal growth (P05-P08).
[3] Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29).
[4] Other congenital malformations (Q80-Q89).
[5] Congenital malformations of the nervous system (Q00-Q07)
*'Others' category includes natural causes not in top five, non-natural causes and ill-defined causes.

Appendix E: Number distribution of early neonatal deaths by top five leading causes and selected socio-demographic and geographic variables, 2014

Variables	Underlying causes of death						
	P20-P29	P05-P08	P00-P04	P35-P39	P50-P61	Others	Total
Sex							
Male	1 587	515	422	314	179	1 026	4 043
Female	1 240	404	366	253	111	819	3 193
Unknown/unspecified	85	31	25	18	4	96	259
Total	**2 912**	**950**	**813**	**585**	**294**	**1 941**	**7 495**
Population group							
Black African	2 466	773	653	488	248	1 459	6 087
White	52	19	25	12	10	49	167
Indian/Asian	17	10	6	5	3	17	58
Coloured	130	68	54	35	15	119	421
Other	8	1	6	0	0	3	18
Unknown/unspecified	239	79	69	45	18	294	744
Total	**2 912**	**950**	**813**	**585**	**294**	**1 941**	**7 495**
Province of death							
Western Cape	171	99	71	52	22	163	578
Eastern Cape	155	57	52	34	16	125	439
Northern Cape	90	37	31	15	9	93	275
Free State	249	55	69	53	24	152	602
North West	554	283	177	125	55	345	1 539
KwaZulu-Natal	321	89	56	59	20	151	696
Gauteng	799	154	208	190	95	556	2 002
Mpumalanga	240	70	55	26	19	145	555
Limpopo	327	106	92	31	34	204	794
Outside South Africa	4	0	2	0		3	9
Unknown/unspecified	2	0	0	0		4	6
Total	**2 912**	**950**	**813**	**585**	**294**	**1 941**	**7 495**
Place of death							
Hospital	2 141	737	616	467	233	1 128	5 322
Emergency room / Outpatient	15	4	2	0		10	31
Dead on arrival	26	14	7	4	2	38	91
Nursing home	7	2	2	0	1	14	26
Home	133	17	16	13	8	134	321
Other	18	2	9	3		34	66
Unknown/unspecified	572	174	161	98	50	583	1 638
Total	**2 912**	**950**	**813**	**585**	**294**	**1 941**	**7 495**

[1] Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29).
[2] Disorders related to length of gestation and foetal growth (P05-P08).
[3] Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04).
[4] Infections specific to the perinatal period (P35-P39).
[5] Haemorrhagic and haematological disorders of foetus and newborn (P50-P61).
[*] 'Others' category includes natural causes not in top five, non-natural causes and ill-defined causes.

Appendix F: Detailed description of the broad groups of causes of perinatal deaths which were among the ten leading underlying natural causes in 2014

Underlying cause of death	Number	Percentage*
Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04)		
Foetus and newborn affected by maternal conditions that may be unrelated to present pregnancy (P00)	2 307	50,1
Foetus and newborn affected by complications of placenta, cord and membranes (P02)	1 715	37,2
Foetus and newborn affected by maternal complications of pregnancy (P01)	325	7,1
Foetus and newborn affected by other complications of labour and delivery (P03)	243	5,3
Foetus and newborn affected by noxious influences transmitted via placenta or breast milk (P04)	18	0,4
Total	**4 608**	**100,0**
Disorders related to length of gestation and foetal growth (P05-P08)		
Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	1 627	97,4
Slow foetal growth and foetal malnutrition (P05)	41	2,5
Disorders related to long gestation and high birth weight (P08)	2	0,1
Total	**1 670**	**100,0**
Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29)		
Respiratory distress of newborn (P22)	1 136	30,1
Birth asphyxia (P21)	771	20,5
Intrauterine hypoxia (P20)	744	19,7
Neonatal aspiration syndromes (P24)	442	11,7
Congenital pneumonia (P23)	218	5,8
Other respiratory conditions originating in the perinatal period (P28)	179	4,7
Cardiovascular disorders originating in the perinatal period (P29)	134	3,6
Pulmonary haemorrhage originating in the perinatal period (P26)	111	2,9
Interstitial emphysema and related conditions originating in the perinatal period (P25)	31	0,8
Chronic respiratory disease originating in the perinatal period (P27)	4	0,1
Total	**3 770**	**100,0**
Infections specific to the perinatal period (P35-P39)		
Bacterial sepsis of newborn (P36)	554	90,2
Other infections specific to the perinatal period (P39)	40	6,5
Other congenital infectious and parasitic diseases (P37)	10	1,6
Other underlying causes	10	1,6
Total	**614**	**100,0**
Haemorrhagic and haematological disorders of foetus and newborn (P50-P61)		
Intracranial nontraumatic haemorrhage of foetus and newborn (P52)	92	28,7
Other perinatal haematological disorders (P61)	57	17,8
Neonatal jaundice from other and unspecified causes (P59)	47	14,6
Disseminated intravascular coagulation of foetus and newborn (P60)	28	8,7
Other neonatal haemorrhages (P54)	24	7,5
Haemolytic disease of foetus and newborn (P55)	21	6,5
Kernicterus (P57)	17	5,3
Neonatal jaundice due to other excessive haemolysis (P58)	16	5,0
Haemorrhagic disease of foetus and newborn (P53)	12	3,7
Other underlying causes	7	2,2
Total	**321**	**100,0**

Appendix F: Detailed description of the broad groups of causes of perinatal deaths which were among the ten leading underlying natural causes in 2014 (concluded)

Underlying cause of death	Number	Percentage
Digestive system disorders of foetus and newborn (P75-P78)		
Necrotizing enterocolitis of foetus and newborn (P77)	68	52,7
Other perinatal digestive system disorders (P78)	55	42,6
Other intestinal obstruction of newborn (P76)	6	4,7
Total	**129**	**100,0**
Other disorders originating in the perinatal period (P90-P96)		
foetal death of unspecified cause (P95)	8 561	90,3
Other conditions originating in the perinatal period (P96)	642	6,8
Other disturbances of cerebral status of newborn (P91)	254	2,7
Other underlying causes	19	0,2
Total	**9 476**	**100,0**
Congenital malformations of the nervous system (Q00-Q07)		
Congenital hydrocephalus (Q03)	56	36,4
Anencephaly and similar malformations (Q00)	51	33,1
Other congenital malformations of brain (Q04)	19	12,3
Spina bifida (Q05)	18	11,7
Other underlying causes	10	6,5
Total	**154**	**100,0**
Congenital malformations of the circulatory system (Q20-Q28)		
Other congenital malformations of heart (Q24)	114	73,5
Congenital malformations of great arteries (Q25)	17	11,0
Congenital malformations of cardiac septa (Q21)	13	8,4
Other underlying causes	11	7,1
Total	**155**	**100,0**
Other congenital malformations (Q80-Q89)		
Other congenital malformations, not elsewhere classified (Q89)	364	85,0
Congenital malformation syndromes due to known exogenous causes, not elsewhere classified (Q86)	53	12,4
Other underlying causes	11	2,6
Total	**428**	**100,0**

*Percentage may not add up to 100 due to rounding up

Appendix G: Number distribution of perinatal deaths by top five leading causes and selected socio-demographic and geographic variables, 2014

Variables	Underlying causes of death						
	P00-P04[1]	P05-P08[2]	P20-P29[3]	P35-P39[4]	Q80-Q89[5]	Others*	Total
Sex							
Male	2 320	900	2 040	328	220	5 645	11 453
Female	2 082	715	1 617	266	182	4 561	9 423
Unknown/unspecified	206	55	113	20	26	612	1 032
Total	**4 608**	**1 670**	**3 770**	**614**	**428**	**10 818**	**21 908**
Population group							
Black African	3 695	1 359	3 199	514	338	8 548	17 653
White	99	34	62	12	13	213	433
Indian/Asian	27	12	22	6	4	68	139
Coloured	308	116	157	37	30	576	1 224
Other	16	1	9	0	0	26	52
Unknown/unspecified	463	148	321	45	43	1 387	2 407
Total	**4 608**	**1 670**	**3 770**	**614**	**428**	**10 818**	**21 908**
Province of death							
Western Cape	471	165	207	55	51	1 131	2 080
Eastern Cape	247	98	212	35	17	529	1 138
Northern Cape	125	68	108	15	7	341	664
Free State	427	114	337	55	30	799	1 762
North West	1 163	491	707	135	96	2 481	5 073
KwaZulu-Natal	413	162	462	61	21	714	1 833
Gauteng	800	252	966	196	115	3 010	5 339
Mpumalanga	328	122	295	28	39	811	1 623
Limpopo	597	195	467	34	52	914	2 259
Outside South Africa	9	2	6	0		14	31
Unknown/unspecified	28	1	3	0		74	106
Total	**4 608**	**1 670**	**3 770**	**614**	**428**	**10 818**	**21 908**
Place of death							
Hospital	3 287	1 194	2 692	491	326	6 888	14 878
Emergency room / outpatient	32	13	22	0	3	97	167
Dead on arrival	71	36	39	4	1	199	350
Nursing home	10	6	14	0		45	75
Home	96	53	175	14	2	444	784
Other	57	11	35	3	1	165	272
Unknown/unspecified	1 055	357	793	102	95	2 980	5 382
Total	**4 608**	**1 670**	**3 770**	**614**	**428**	**10 818**	**21 908**

[1] Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00-P04).
[2] Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29).
[3] Disorders related to length of gestation and foetal growth (P05-P08).
[4] Infections specific to the perinatal period (P35-P39).
[5] Other congenital malformations (Q80-Q89).
* Excluding unknown or unspecified cases.

Appendix H: Perinatal deaths by selected characteristics of the mothers and perinatal deaths

This section focuses on the characteristics of the mothers who experienced perinatal deaths in 2014. The DHA-1663 asks questions on the outcome of previous pregnancies, duration of current pregnancy in weeks, antenatal care visits, birth attendant and method of delivery. The main limitation of this section is the high number of cases with unspecified information. In addition, the section only provides information on the 20 340 (92,8%) perinatal deaths that were registered using the DHA-1663 death notification form that has a section on details of the mother. A total of 1 568 (7,2%) perinatal deaths were registered using the BI-1663 which has no section requiring the details of the mother. In total there were 20 220 mothers who experienced a perinatal loss in 2014. This number is less the women who had experienced loss of more than one perinatal death. The discussion is based on the numbers excluding the missing cases, given the high number of missing cases.

Perinatal characteristics

H.1 Birth type

Table H.1 shows the number and percentage distribution of 2014 perinatal deaths by plurality of delivery. Over 41,7% of deliveries had unknown or missing birth type. In 2014, 91,5% of perinatal deaths with information on birth type were single deliveries. Multiple deliveries had a combined percentage of 8,5% (first twin [3,5%], second twin death [4,4%] and other multiple death [0,6%]).

Table H.1: Number and percentage distribution of perinatal deaths by birth type, 2014

Birth type	Cases including unspecified or unknown		Cases excluding unspecified or unknown	
	Number	Percentage*	Number	Percentage
Single birth	10 850	53,3	10 850	91,5
First twin	415	2,0	415	3,5
Second twin	524	2,6	524	4,4
Other multiple	68	0,3	68	0,6
Unknown/unspecified	8 483	41,7	-	-
Total	**20 340**	**100,0**	**11 857**	**100,0**

*Percentage may not add up to 100 due to rounding up

H.2 Birth attendant

The number of perinatal deaths and corresponding percentage distributions by attendant at birth provide information about the use of medical facilities and trained attendants in the delivery process (UN, 2014). Table H.2 shows the distribution of 2014 perinatal deaths by birth attendant. The categories indicate whether a physician (certified medical practitioner), trained midwife (professional nurse), other trained person (staff nurse, clinical associate, emergency medical staff) or other (traditional birth attendant, family member, etc.) attended to the birth (Stats SA, 2012).

The birth attendant at the time of perinatal death was unknown or unspecified in 48,5% of the perinatal deaths, thus the results must be interpreted with caution. The results excluding missing information show that trained mid-wives delivered 50,4% of perinatal deaths while 41,3% of the perinatal deaths were delivered by physicians. Perinatal deaths attended by other trained persons were 2,6% and those in the 'other' category constituted 5,7% of all perinatal deaths registered using the new form.

Table H.2: Number and percentage distribution of perinatal deaths by birth attendant, 2014

Birth attendant	Cases including unspecified or unknown		Cases excluding unspecified or unknown	
	Number	Percentage*	Number	Percentage
Physician	4 320	21,2	4 320	41,3
Trained midwife	5 271	25,9	5 271	50,4
Other trained person	275	1,4	275	2,6
Other	599	2,9	599	5,7
Unknown/unspecified	9 875	48,5	-	-
Total	**20 340**	**100,0**	**10 465**	**100,0**

*Percentage may not add up to 100 due to rounding up

Mother characteristics

H.3 Age of the mother

Information on the age of the mother gives a reflection of the patterns and variations in the age profile of women who experienced perinatal deaths. Table H.3 shows the age distribution of mothers who experienced perinatal loss in 2014. The majority (59,8%) of the perinatal deaths had missing information on the age of the mother. The distribution should be treated with caution given the high proportion of missing information. Among the records that had information about the age of the mother, the highest proportion of perinatal deaths occurred amongst women aged 20−24 years (24,9%), closely followed by women aged 25−29 years (24,8%).

Table H.3: Number and percentage distribution of mothers experiencing perinatal loss by age of the mother, 2012

Age of mother	Cases including unspecified or outside 10−54 age range		Cases excluding unspecified or outside 10−54 age range	
	Number	Percentage	Number	Percentage*
10-14	25	0,1	25	0,3
15−19	1 159	5,7	1 159	14,3
20−24	2 022	10,0	2 022	24,9
25−29	2 015	10,0	2 015	24,8
30−34	1 554	7,7	1 554	19,1
35−39	949	4,7	949	11,7
40−44	363	1,8	363	4,5
45−49	38	0,2	38	0,5
50−54	5	0,0	5	0,1
Unspecified/outside the 10−54 age range	12 090	59,8	-	-
Total	**20 220**	**100,0**	**8 130**	**100,0**

*Percentage may not add up to 100 due to rounding up

H.4 Outcome of last previous pregnancy

Information on outcomes of women's previous pregnancies is important in relation to their current pregnancy. This is because during prenatal care, certain risk factors can be flagged from the pregnancy history to ensure survival of both the mother and the child. Table H.4 shows the distribution of the mothers who experienced perinatal loss in 2014 by the outcome of their last previous pregnancy. Approximately, 74,5% of the women did not provide information about the outcome of their previous pregnancy. The results show that with the exclusion of unspecified or unknown information, 3,1% of the women had never had a previous pregnancy. The table also indicates that 68,0% of the women had a live birth in their last previous pregnancy. As much as 22,7% and 6,3% of women had a stillbirth or an abortion in their last pregnancy, respectively.

Table H.4: Number and percentage distribution of mothers experiencing perinatal loss by outcome of last previous pregnancy, 2014

Outcome of previous pregnancy	Cases including unspecified or unknown		Cases excluding unspecified or unknown	
	Number	Percentage*	Number	Percentage*
First time pregnancy	159	0,8	159	3,1
Live birth	3 509	17,4	3 509	68,0
Stillbirth	1 170	5,8	1 170	22,7
Abortion	326	1,6	326	6,3
Unknown/unspecified	15 056	74,5	-	-
Total	**20 220**	**100,0**	**5 164**	**100,0**

*Percentage may not add up to 100 due to rounding up

H.5 Antenatal care during pregnancy

Antenatal care affords pregnant women the opportunity to have their pregnancies monitored and potential complications addressed (WHO, 2014a). The results on antenatal care visits should be interpreted with caution due to high proportions of mothers with missing information (68,3%). Overall, for the women whose antenatal care information was available 82,1% had two or more antenatal care visits, while 17,9% had less than two antenatal care visits or none.

Table H.5: Number and percentage distribution of mothers experiencing perinatal loss by antenatal visits, 2014

Two or more antenatal visits	Cases including unspecified or unknown		Cases excluding unspecified or unknown	
	Number	Percentage*	Number	Percentage
Yes	5 268	26,1	5 268	82,1
No	1 148	5,7	1 148	17,9
Unknown/unspecified	13 804	68,3	-	-
Total	**20 220**	**100,0**	**6 416**	**100,0**

*Percentage may not add up to 100 due to rounding up

H.6 Delivery method

Table H.6 shows the number of mothers experiencing perinatal loss by method of delivery. Almost two-thirds of the mothers (65,1%) had unspecified or unknown information on method of delivery. This has huge implications on the quality of the data. When excluding missing cases, 74,0% of the mothers had spontaneous deliveries and 21,5% delivered perinatal deaths through the caesarean section delivery method.

Table H.6: Number and percentage distribution of mothers experiencing perinatal loss by delivery method, 2014

Delivery method	Cases including unspecified or unknown		Cases excluding unspecified or unknown	
	Number	Percentage*	Number	Percentage
Spontaneous	5 215	25,8	5 215	74,0
Forceps delivery and rotation	55	0,27	55	0,8
Vacuum extractor	34	0,2	34	0,5
Caesarean section	1 519	7,5	1 519	21,5
Other	227	1,1	227	3,2
Unknown/unspecified	13 170	65,1	-	-
Total	**20 220**	**100,0**	**7 050**	**100,0**

*Percentage may not add up to 100 due to rounding up

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