

4 Delivery

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This chapter covers several aspects of maternal health related to delivery as well as indicators of obstetric, intrapartum and postnatal care and includes the following indicators:

- ◆ Delivery in facility under 18 years rate
- ◆ Institutional maternal mortality ratio
- ◆ Inpatient early neonatal death rate
- ◆ Mother postnatal visit within 6 days rate

4.1 Delivery in facility under 18 years rate

The delivery in facility under 18 years rate indicator measures the proportion of all deliveries among women younger than 18 years in public health facilities in South Africa. The numerator is the number of deliveries among women under 18 in public health facilities, while the denominator includes all deliveries in public health facilities over the same time period. The indicator is expressed as a percentage. Because this indicator monitors the proportion of deliveries in facility by young women under 18 years, it can be used as a proxy for the adolescent birth rate.

The South Africa Demographic and Health Survey (SADHS)^a findings from 1998 to 2003 indicate that most young women become sexually active by the age of 18 years and that 14.8% of women are likely to fall pregnant by the age of 18 years. Most women start using a contraceptive method at the age of 20 years, and more than half of all women who give birth will have their first child before their 21st birthday.

Despite the existence of the Choice on Termination of Pregnancy Act (92 of 1996),^b which gives women the right to safe choices and access to safe legal abortion in South Africa, these services remain unequally available and/or accessible, especially in the rural areas of South Africa.

National overview

The national delivery in facility under 18 years rate shows a downward trend, from 7.7% in 2012/13 to 6.8% in 2016/17, with a slight fluctuation in 2013/14 (Table 1).

Table 1: National delivery in facility under 18 years rate trends, 2012/13–2016/17

	2012/13	2013/14	2014/15	2015/16	2016/17
National delivery in facility under 18 years rate (%)	7.7	7.8	7.4	7.1	6.8

Source: DHIS.

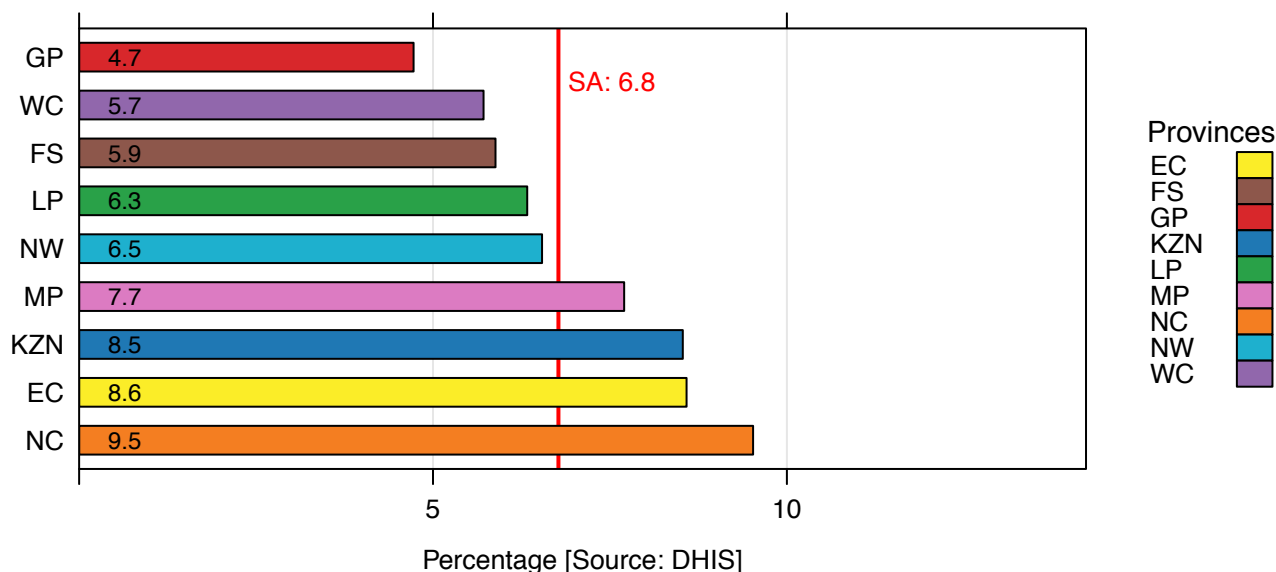
Provincial overview

The provincial rates are shown in Figure 1. Gauteng (GP) had the lowest rate (4.7%) which is 0.3 percentage points down from 2015/16 (5.0%). The Northern Cape (NC) had the highest rate since 2011/12, and it increased slightly from 9.3% in 2015/16 to 9.5% in 2016/17.

a National Department of Health. South Africa Demographic and Health Survey, 2016. Key Indicators Report. National Department of Health. Pretoria. 2016.

b Republic of South Africa. Choice on Termination of Pregnancy Act, No.92 of 1996. Pretoria: Government Printer; 1996.

Figure 1: Delivery in facility under 18 years rate by province, 2016/17



District overview

At district level, the delivery in facility under 18 years rate ranged widely, from 12.9% in Alfred Nzo (Eastern Cape (EC)) to 3.6% in Johannesburg (GP) (Figure 2).

Map 1 illustrates a definite urban-rural gradient where districts with capitals or metros, have lower rates than the more rural districts.

Map 1: Delivery in facility under 18 years rate by sub-district, 2016/17

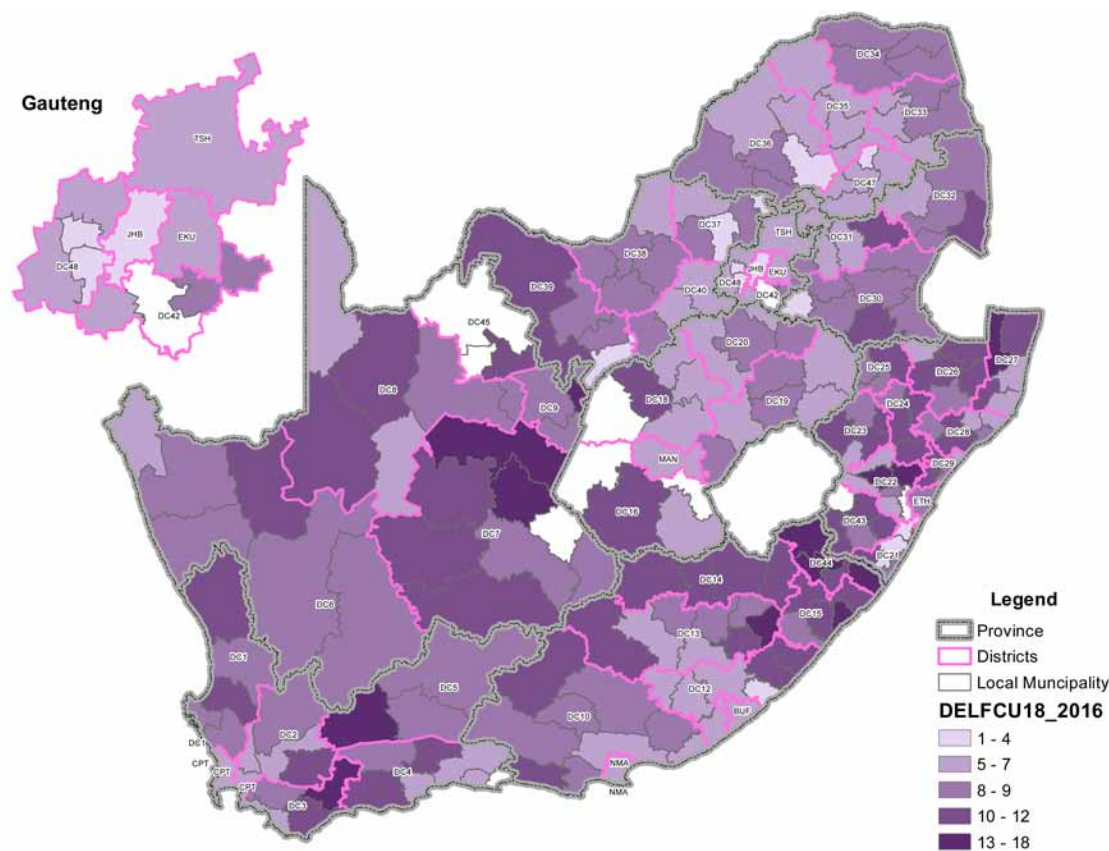


Figure 2: Delivery in facility under 18 years rate by district, 2016/17

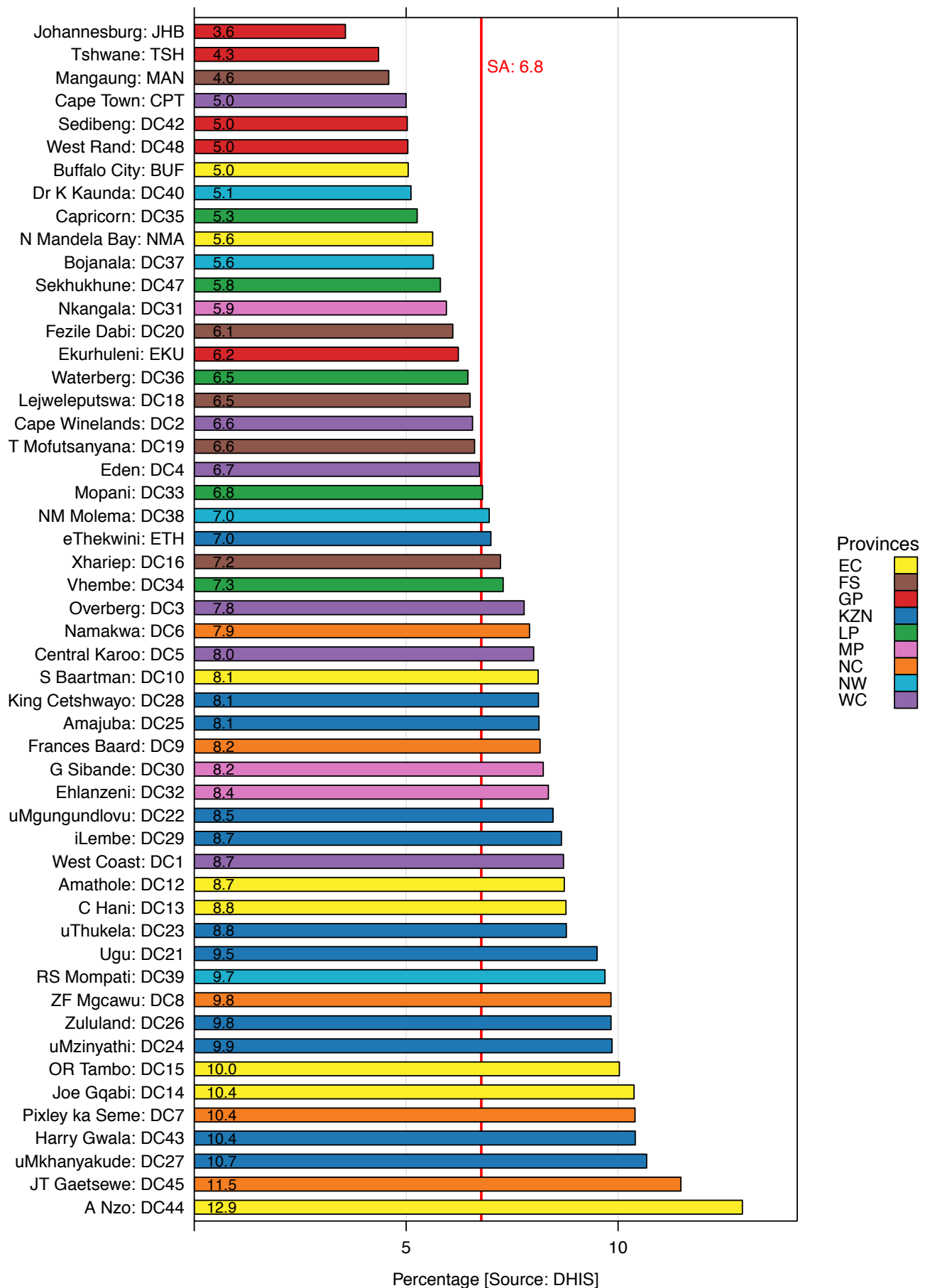
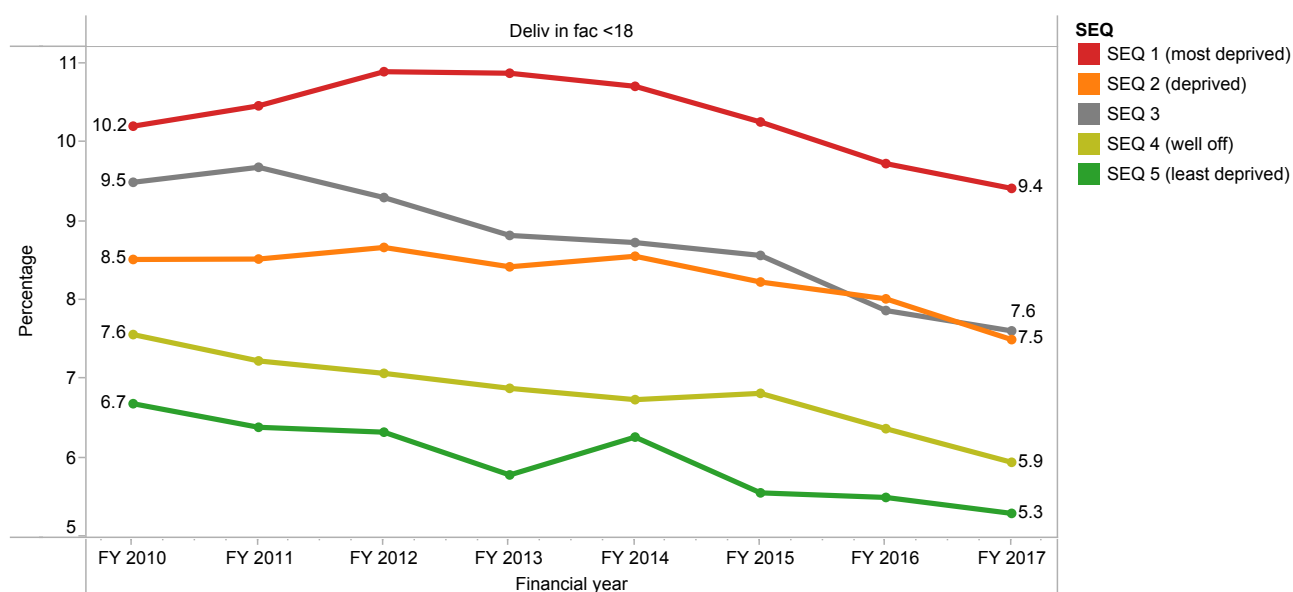


Figure 3 shows a steady decrease in delivery in facility under 18 years rate for all socio-economic quintiles (SEQs) in 2016/17, with rates ranging from 9.4% to 5.3%.

Figure 3: Trends in average district values by socio-economic quintile for delivery in facility under 18 years rate, 2009/10–2016/17



Key findings

- ◆ Three aspects stand out in this data:
 - There has been a marked reduction in delivery in facility under 18 years rate in South Africa since 2013/14.
 - The rural provinces (Northern Cape, Eastern Cape and KwaZulu-Natal) and rural districts (Alfred Nzo (EC), JT Gaetsewe (NC), uMkhanyakude (KZN) and Pixley Ka Seme (NC)) have the highest delivery in facility under 18 years rates.
 - The districts in the lowest SEQs have the highest teenage pregnancy rates.
- ◆ The difference in the delivery in facility under 18 years rate between the metros, cities and rural areas clearly indicates the inequity of services and the need for focused interventions on rural populations and access to sexual and reproductive services for adolescents.
- ◆ Preventing teenage pregnancies is a more complex issue requiring other departments like the Department of Basic Education to help provide social solutions.

Recommendations

- ◆ Districts with the highest teenage pregnancy rates should be targeted for evidence-based interventions.
- ◆ Linking the school's health programme to preventing teenage pregnancies would be a feasible option through intensive contraceptive use, together with educational interventions in high prevalence areas.

4.2 Institutional maternal mortality ratio

The World Health Organization (WHO) defines maternal mortality as the "death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes".^c

The National Indicator Data Set^d of the National Department of Health defines a maternal death as a death occurring during pregnancy, childbirth and the puerperium of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy and irrespective of the cause of death (obstetric and non-obstetric). The maternal mortality ratio (MMR) is a measure of maternal mortality and is defined as the number of maternal deaths per 100 000 live births. The numerator is the number of maternal deaths, while the denominator includes the number of live births and is expressed per 100 000. This is a proxy for the population-based maternal mortality ratio, aimed at monitoring

^c World Health Organization. Health statistics and information systems: Maternal mortality ratio (per 100 000 live births). Available from: <http://www.who.int/healthinfo/statistics/indmaternalmortality/en/> [Accessed 16 July 2016].

^d 2013 National Indicator Data Set definition.

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trends in health facilities between official surveys. It focuses on obstetric causes (around 30% of all maternal mortality) and provides an indication of health system results in terms of prevention of unplanned pregnancies, antenatal care, delivery and postnatal services.

The MMR can be calculated from two sources in South Africa, namely the District Health Information Software (DHIS) (institutional MMR (iMMR)) and the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD). This section mainly focuses on the iMMR calculated from the DHIS data.

National overview

South Africa has shown a decreasing trend in the iMMR over the past five years (Table 2). The national iMMR in 2016/17 was slightly above the target of 115 per 100 000 live births with 116.9 per 100 000 live births.

Table 2: National institutional maternal mortality ratio (DHIS) trends, 2012/13–2016/17

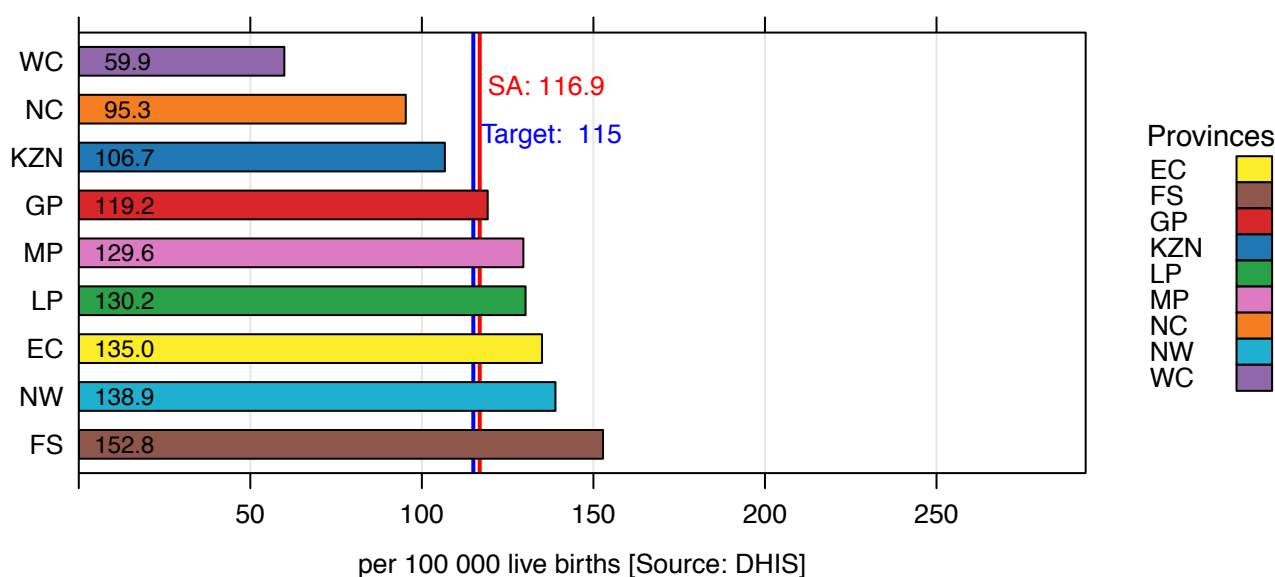
	2012/13	2013/14	2014/15	2015/16	2016/17
National institutional maternal mortality ratio (per 100 000 live births)	132.9	133.3	132.5	119.1	116.9

Source: DHIS.

Provincial overview

In 2016/17, only three provinces, Western Cape, Northern Cape and KwaZulu-Natal, met the national target (115 per 100 000 live births) or below with Western Cape having the lowest iMMR at 59.9 per 100 000 live births (Figure 4). Free State (FS) had the highest iMMR with 152.8 per 100 000 live births. Western Cape and Northern Cape have consistently performed below the target while Eastern Cape, Limpopo (LP), Free State and North West (NW) have not met the target for 2015/16 or 2016/17.

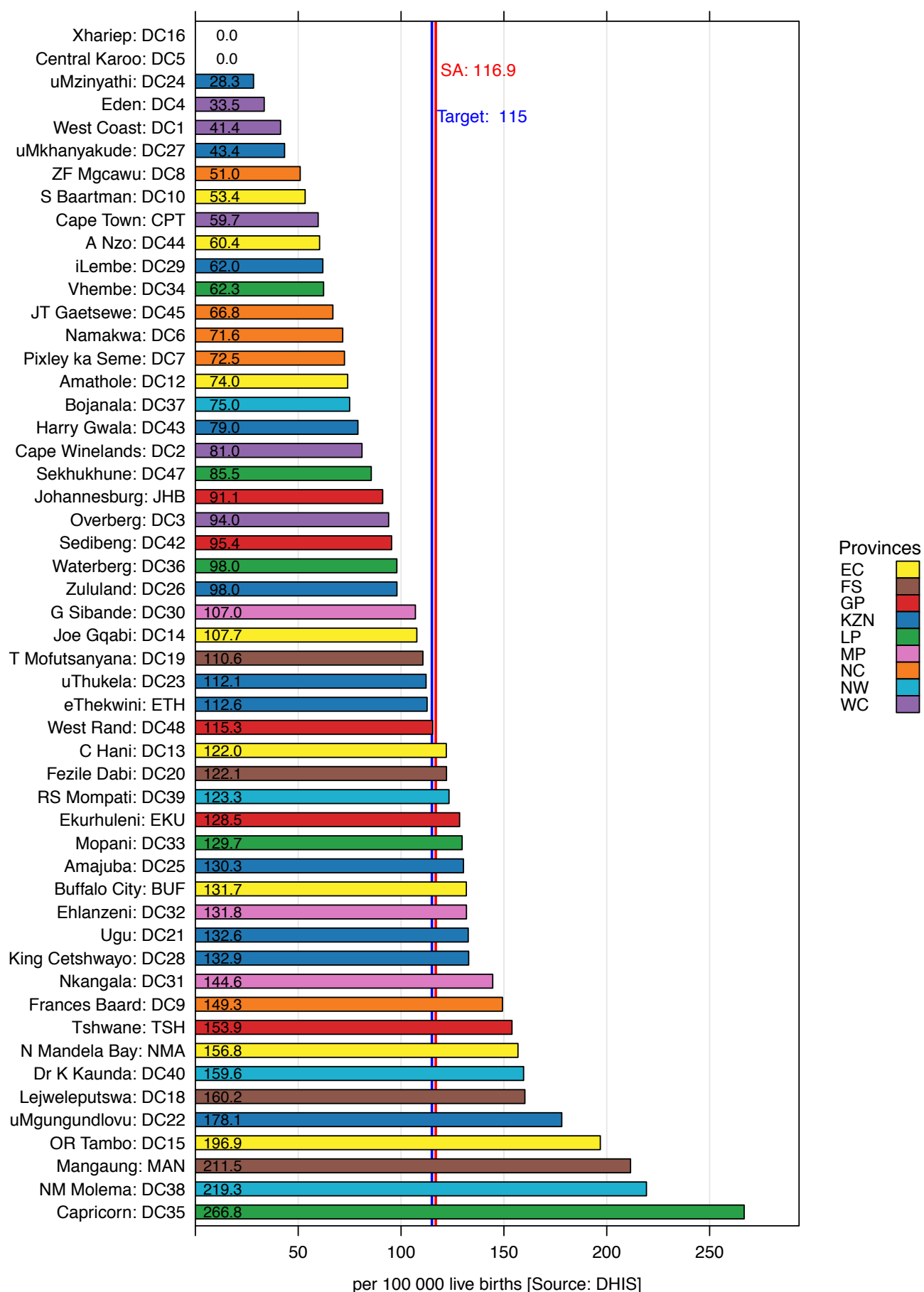
Figure 4: Institutional maternal mortality ratio by province, 2016/17



District overview

At a district level, the iMMR ranged widely, from 266.8 per 100 000 live births in Capricorn (LP) to zero per 100 000 live births in Xhariep (FS) and Central Karoo (WC) (Figure 5). Thirty districts met the target or had an iMMR less than 115 per 100 000 live births for 2016/17. Three districts had an iMMR of more than 200 per 100 000 live births in 2016/17, namely Mangaung (FS) (211.5 per 100 000 live births), NM Molema (NW) (219.3 per 100 000 live births) and Capricorn (LP) (266.8 per 100 000 live births).

Figure 5: Institutional maternal mortality ratio by district, 2016/17



Map 2 displays the iMMR by sub-district. Some of the blank sub-districts have no hospitals and some with hospitals have no maternal deaths reported in 2016/17.

Map 2: Institutional maternal mortality ratio by sub-district, 2016/17

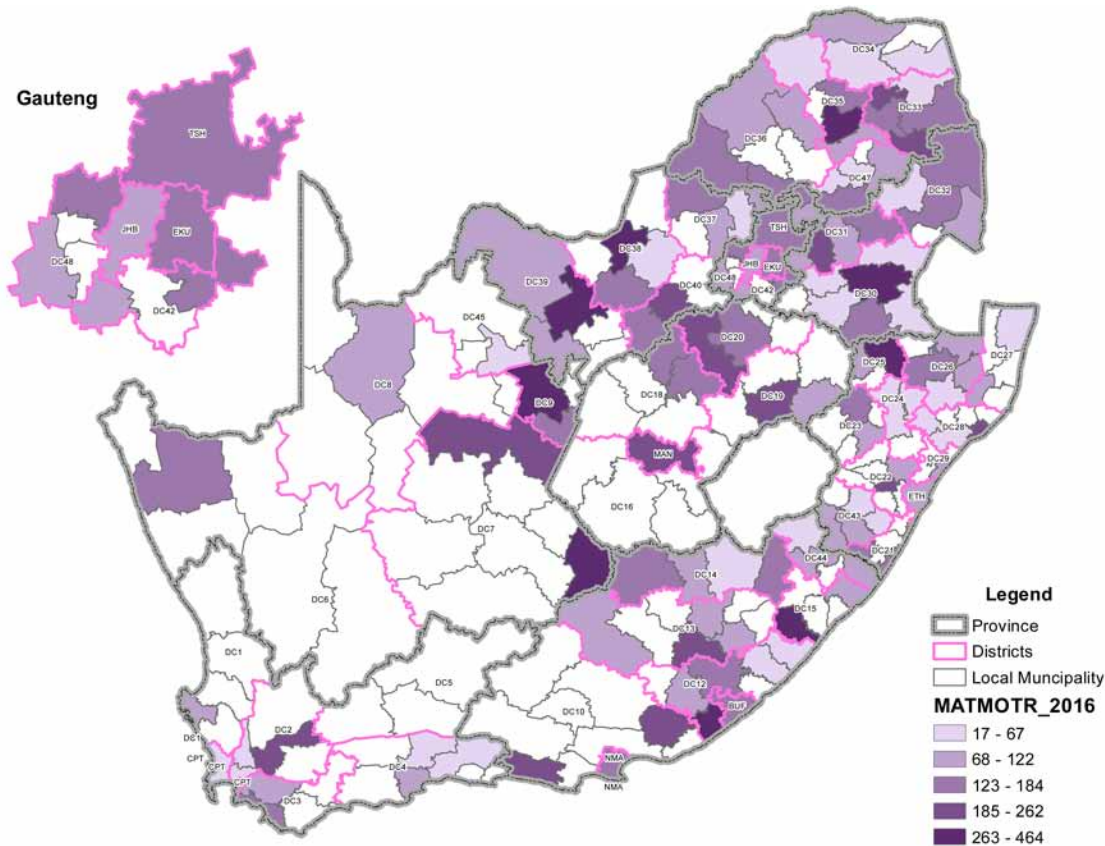


Figure 6 illustrates how the iMMR for SEQs 1–3 is steadily decreasing and that the gap between SEQs narrowed in 2016/17. Slight increases were noted for 2016/17 in SEQs 4 and 5 (well off and least deprived). Socio-economic quintiles iMMR ranged from 102.9 per 100 000 live births to 140.9 per 100 000 live births.

Figure 6: Trends in average district values by socio-economic quintile for institutional maternal mortality ratio, 2009/10–2016/17

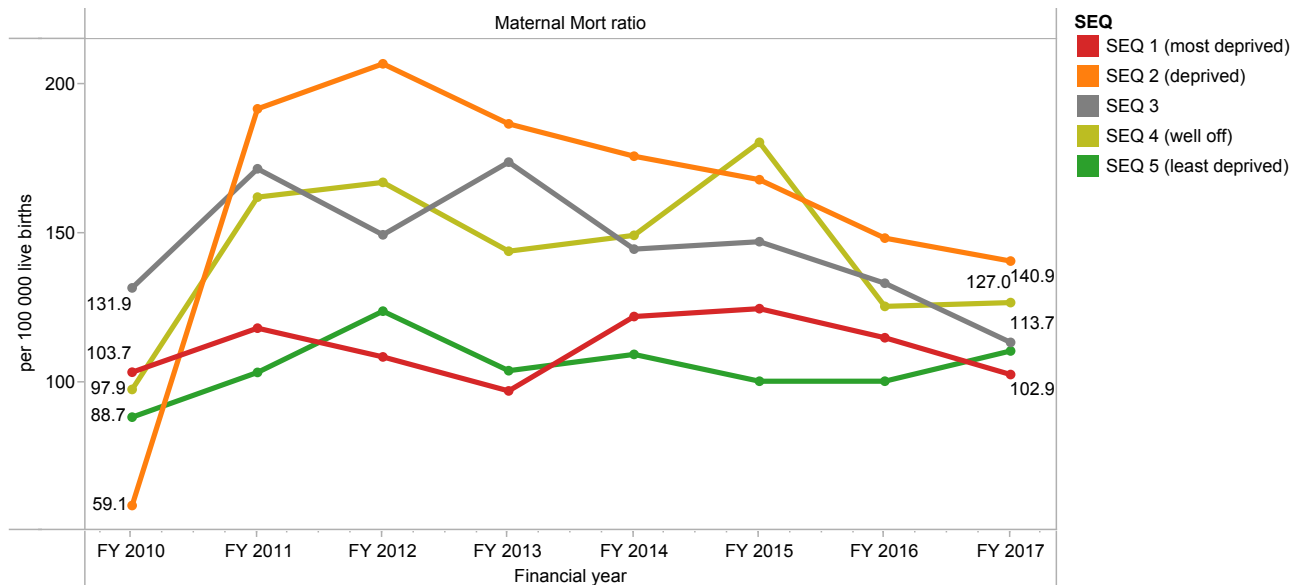


Table 3 and Figure 7 show the comparison between the iMMR (DHIS) and the NCCEMD MMR. The iMMR is for the 2016/17 financial year and the NCCEMD MMR is for the 2016 calendar year. There is a notable correlation between the maternal deaths reported to the NCCEMD and those reported in the DHIS.

Table 3: Maternal deaths and maternal mortality ratio: comparison between DHIS and NCCEMD data by province, 2016^e

	Live birth in facility (DHIS) (Number)	Maternal deaths NCCEMD (Number)	Maternal deaths (DHIS) (Number)	NCCEMD iMMR (per 100 000)	DHIS iMMR (per 100 000)
Western Cape	91 438	74	67	80.93	73.27
Northern Cape	20 091	22	17	109.50	84.62
Gauteng	202 253	242	227	119.65	112.24
KwaZulu-Natal	176 621	216	195	122.30	110.41
Eastern Cape	102 008	144	138	141.17	135.28
Mpumalanga	71 375	104	95	145.71	133.10
North West	55 268	83	74	150.18	133.89
Limpopo	117 154	191	146	163.03	124.62
Free State	40 544	69	66	170.19	162.79
SA	876 752	1 145	1 025	130.60	116.91

Source: DHIS.

^e DHIS data per 2016/17 financial year, NCCEMD by 2016 calendar year.

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Figure 7: Maternal mortality ratio: comparison between DHIS and NCCEMD data by district, 2010–2016



The thin line gives the national average, the bold line gives the district value.
 Maternal Mort ratio fac (blue) is the DHIS indicator.
 Mat Mort ratio NCCEMD (purple) is based on the number of maternal deaths from confidential enquiries per 100 000 live births (from DHIS).



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Mat Mort ratio NCCEMD (purple) is based on the number of maternal deaths from confidential enquiries per 100 000 live births (from DHIS).

Key findings

- ◆ There is fair correlation between the maternal deaths reported to the NCCEMD and those reported in the DHIS. However, in some districts there are huge discrepancies between iMMR reported by DHIS and NCCEMD for several years, e.g. Amathole (EC), Nelson Mandela (EC), Fezile Dabi (FS), Tshwane (GP), Sekhukhune (LP), Nkangala (Mpumalanga (MP)) and Eden (WC) districts. This needs to be corrected.
- ◆ Only three provinces, Western Cape, Northern Cape and KwaZulu-Natal, reached the national iMMR target of 115 per 100 000 live births.
- ◆ The rural provinces have a higher iMMR and again interventions related to reducing the rate needs to be prioritised in these provinces. Western Cape and Gauteng are urban provinces with a lower iMMR.
- ◆ The deprived population (SEQ2) has a higher iMMR than the other quintiles and the most deprived (SEQ1) population the lowest iMMR. This is an anomaly and hard to explain other than as poor data quality, or that district hospitals refer complicated cases to regional, central or tertiary hospitals.
- ◆ The districts with the highest iMMR are those with provincial central, tertiary or large regional hospitals, e.g. Frances Baard (NC), Capricorn (LP), OR Tambo and Buffalo City (both EC). These hospitals also had high early neonatal death rates. These hospitals receive referrals from their own and other districts. It would be ideal to be able to do the analysis with respect to catchment areas as opposed to districts. Assessing a whole catchment area will give one a better idea of the quality of care within the country.
- ◆ There is no correlation between rural district and iMMR or urban districts and iMMR.

Recommendations

- ◆ Districts and provinces with big discrepancies between the DHIS maternal deaths and NCCEMD maternal deaths must review their processes and ensure more accurate reporting. Reasons for these discrepancies warrant further investigation.
- ◆ Even though there has been a consistent decrease in the iMMR, focused interventions are required for those districts not meeting the national target.
- ◆ The institutionalisation of maternal death reporting at facility level and ensuring that all deaths are recorded and reported within 24 hour after the death.
- ◆ Providing the iMMR per catchment area instead of the district would help in assessing high risk areas in the country. These areas could then be targeted.
- ◆ The large district and provincial tertiary hospitals lie in the districts with the highest iMMR and these hospitals should be assessed as to their resources and capacity to manage the number of ill pregnant women they treat.

4.3 Inpatient early neonatal death rate

The inpatient early neonatal death rate (ENDR) or inpatient death 0–7 days measures the number of deaths among live-born babies that occur within seven days of birth and is expressed per 1 000 live births. The numerator is the number of deaths in facility 0–7 days, while the denominator includes the number of live births in facility. It monitors trends in early neonatal deaths in health facilities and indications of health system results in terms of antenatal- and early neonatal care and delivery.

The inpatient ENDR provides an indication of the quality of antenatal, intrapartum and postnatal care and is a key indicator to address in order for South Africa to end preventable deaths among neonates and children under 5 years.

National overview

In 2016/17 the national inpatient ENDR was 9.9 per 1 000 live births, a decrease from 10.5 per 1 000 live births in 2015/16, and is the first time the inpatient early neonatal death rate has been under 10 per 1 000 live births in the past 5 years (Table 4).

Table 4: National inpatient early neonatal death rate, 2012/13–2016/17

	2012/13	2013/14	2014/15	2015/16	2016/17
National inpatient early neonatal death rate (per 1 000 live births)	10.2	10.1	10.1	10.5	9.9

Source: DHIS.

Provincial overview

Three provinces (Western Cape, Mpumalanga and KwaZulu-Natal) performed below the national target of 10 per 1 000 live births and two provinces (North West and Gauteng) met the national target (Figure 8). Figure 9 shows the progress across the provinces over time, Western Cape, Mpumalanga and Free State show upward trends that are concerning.

Figure 8: Inpatient early neonatal death rate by province, 2016/17

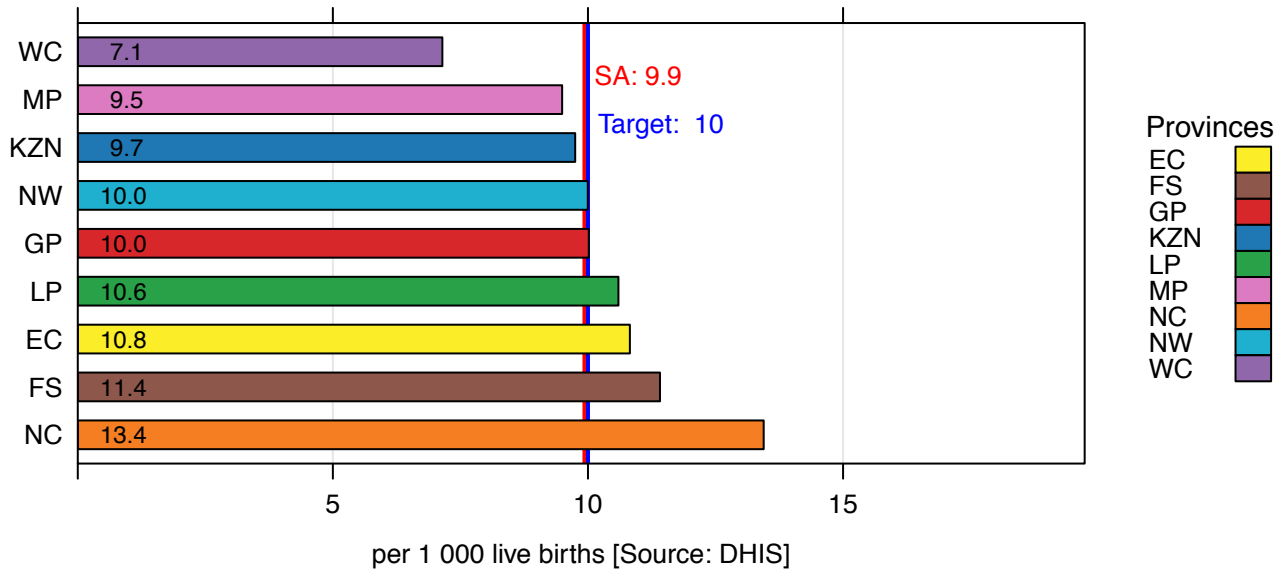
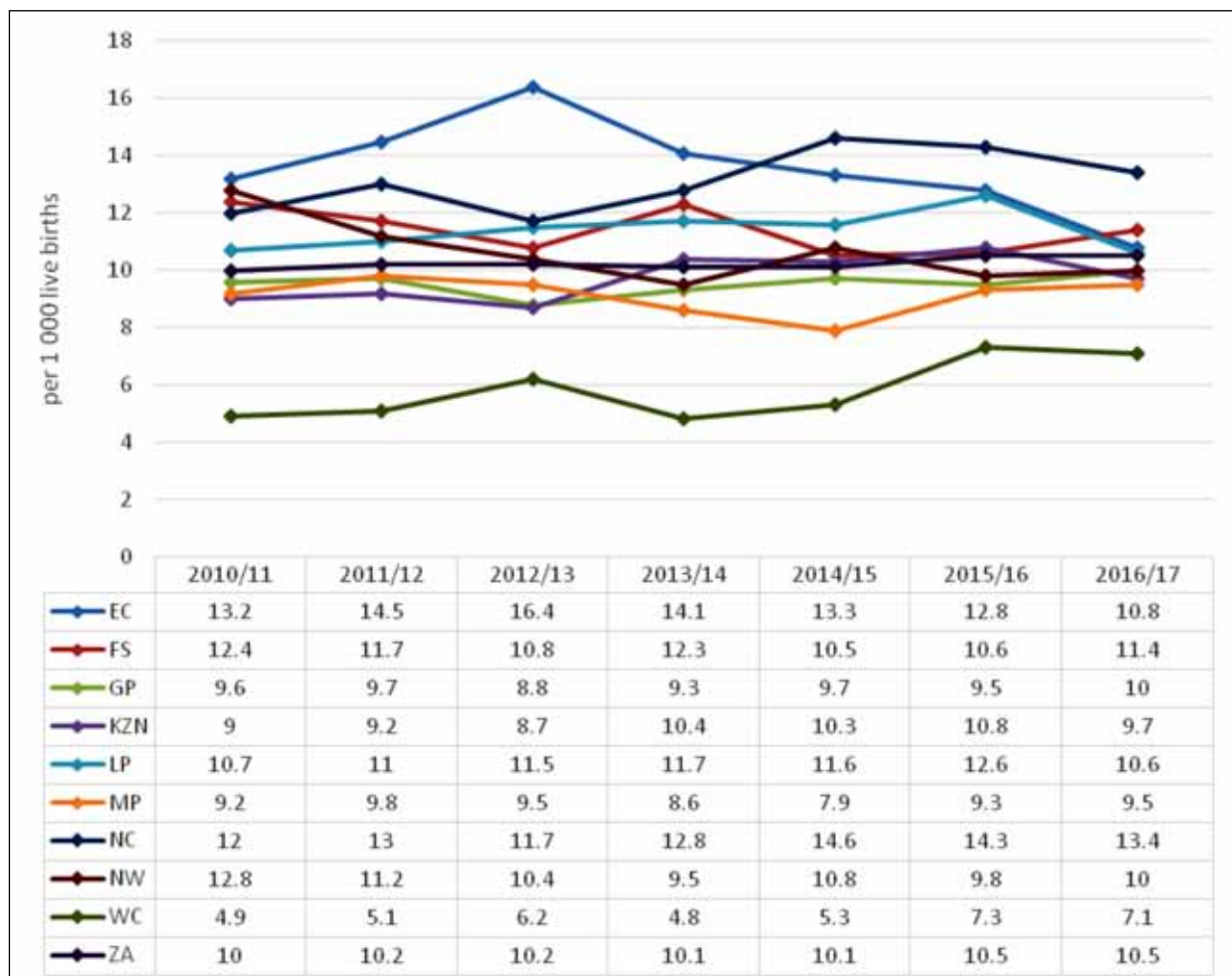


Figure 9: Annual trends for inpatient early neonatal death rate by province, 2010/11–2016/17



District overview

At district level, the inpatient early neonatal death rate ranged widely, from 17.9 per 1 000 live births in Capricorn (LP) to 5.2 per 1 000 live births in Xhariep (FS). It is encouraging that more than half of all the districts (30 out of 52) achieved the national target (Figure 10 and Map 3). Xhariep (FS) remained the district with the lowest inpatient ENDR even though it increased from 2.7 per 1 000 live births in 2015/16 to 5.2 in 2016/17. Capricorn (LP) remained the district with the highest rate, however, the rate did decrease from 22.0 per 1 000 live births in 2015/16 to 17.9 in 2016/17.

Map 3: Inpatient early neonatal death rate by sub-district, 2016/17

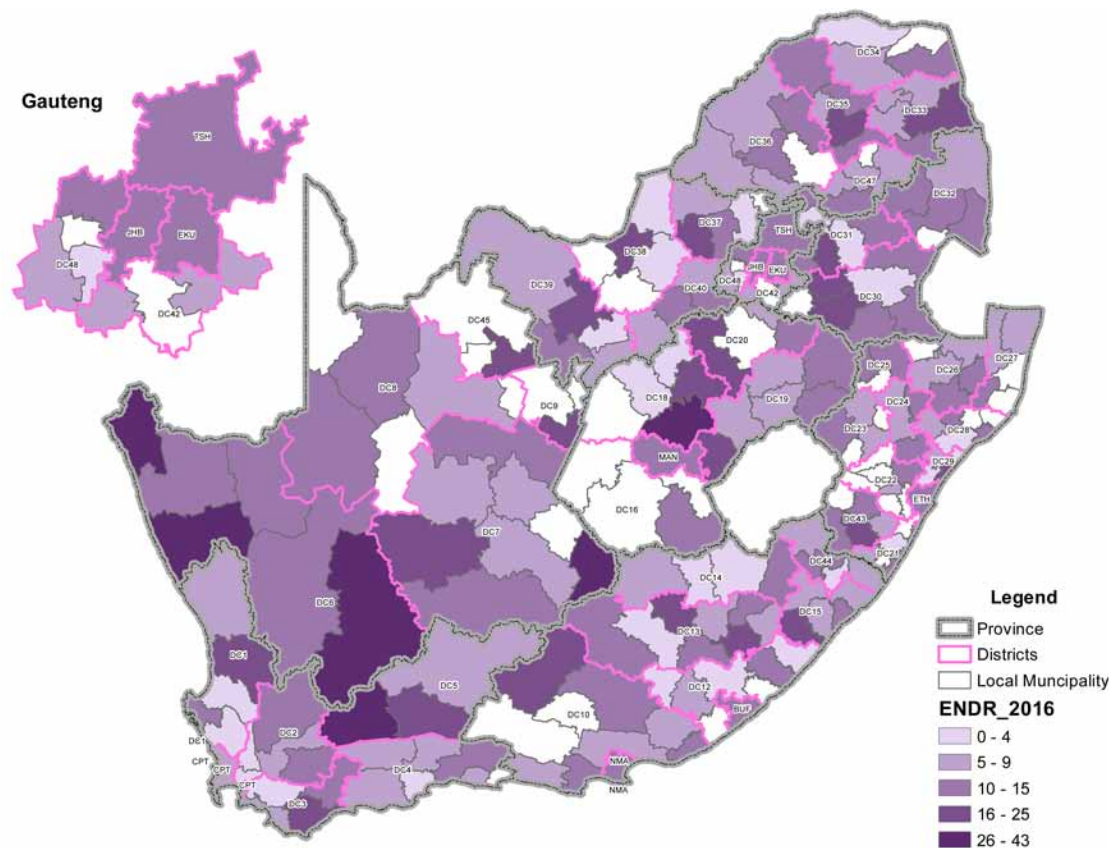
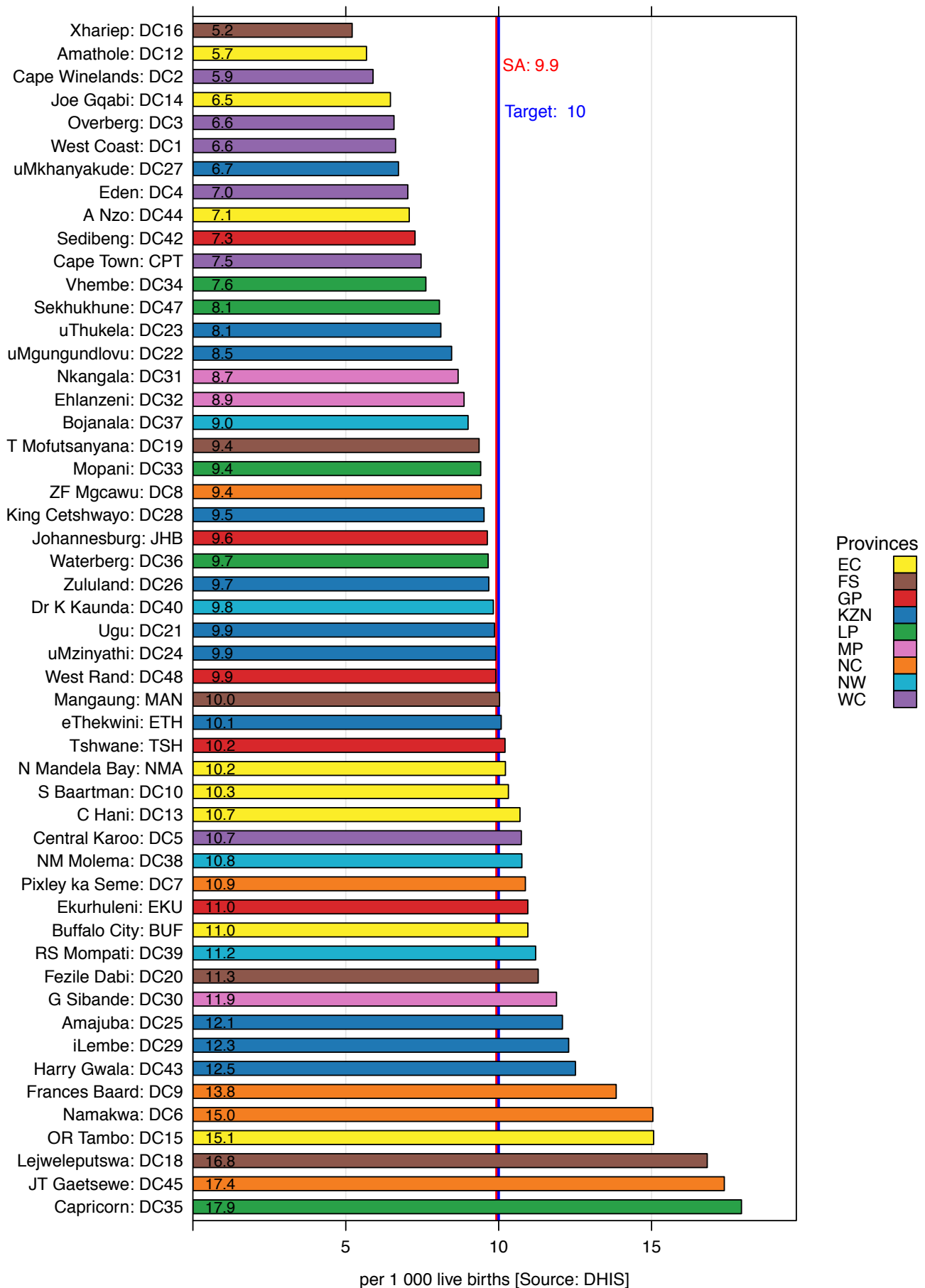
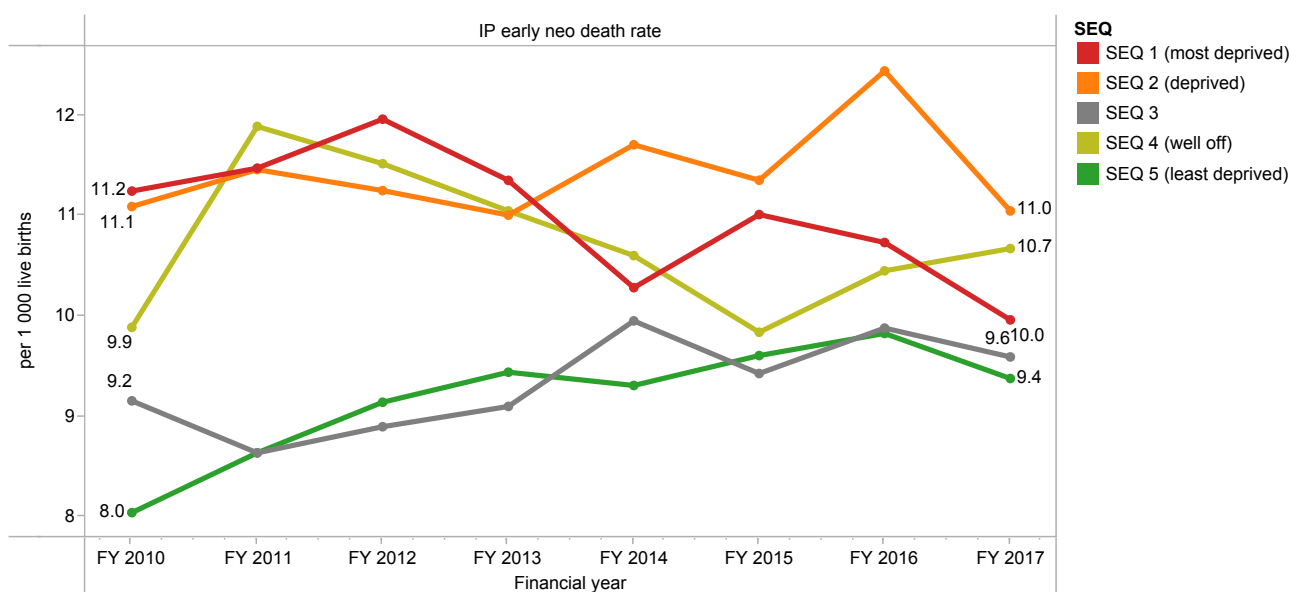


Figure 10: Inpatient early neonatal death rate by district, 2016/17



Huge fluctuations for inpatient ENDR are evident in SEQ's since 2009/10; however, 2016/17 is the first year where the gap between the SEQs is closer (Figure 11).

Figure 11: Trends in average district values by socio-economic quintile for inpatient early neonatal death rate, 2009/10–2016/17



Key findings

- ◆ There is no clear pattern of early neonatal deaths in this data. Some districts without large referral hospitals have high inpatient ENDRs, namely Harry Gwala (KZN), Amajuba (KZN), and JT Gaetsewe (NC), and these are interspersed with districts that have large district and provincial central hospitals: Lejweleputswa(FS), Capricorn (LP), OR Tambo (EC) and Francis Baard (NC).
- ◆ Capricorn (LP) had the highest inpatient ENDR as well as the highest iMMR in 2016/17. Some other districts also had high inpatient ENDRs and iMMRs, namely Buffalo City, Nelson Mandela Bay and OR Tambo in Eastern Cape; Lejweleputswa and Mangaung in Free State; Tshwane in Gauteng; King Cetshwayo in KwaZulu-Natal and Frances Baard in the Northern Cape.
- ◆ Xhariep (FS) remained the district with the lowest inpatient ENDR even though it increased from 2.7 per 1 000 live births in 2015/16 to 5.2 in 2016/17. One reason might be that all complicated deliveries and neonatal cases are referred to other districts.
- ◆ It appears, as expected, that the poorer communities (SEQ 1 and 2) have higher inpatient early neonatal death rates.
- ◆ Some very rural communities, e.g. Joe Gqabi (EC) and uMkhanyakude (KZN) have relatively low inpatient ENDRs. An explanation needs to be sought for this as there may be valuable lessons for the rest of the country. One reason might be that babies die outside the facilities and that the deaths are not recorded at facilities.

Recommendations

- ◆ The District Clinical Specialist teams should check the data from their districts to see if it correlates with the DHIS data.
- ◆ The early neonatal care of uMkhanyakude should be examined to explain their low early neonatal death rates.
- ◆ It would be ideal if the stillbirth rate can be included again in the analysis as this would enable an assessment of the quality of antenatal care. If this could be linked with the number of visits, it would be even more valuable.

4.4 Mother postnatal visit within 6 days rate

Postnatal care takes place in the period directly after the delivery of the baby. The mother postnatal visit within 6 days rate provides insights into the access and utilisation of postnatal care. The purpose of the postnatal visit is to manage the normal psychological and physical changes that occur within those first few days after delivery, and to assist, counsel, and provide screening, care and treatment for any problems that threaten the health and wellbeing of the mother and baby.

The mother postnatal visit within 6 days rate measures the mothers who received postnatal care within 6 days after delivery as a proportion of deliveries in health facilities. The indicator is expressed as a percentage. The numerator is the number of mother postnatal visits within 6 days after delivery, and the denominator is the total number of deliveries in facility. The mother postnatal visit within 6 days rate indicator monitors access to and utilisation of postnatal care.

National overview

In 2016/17 the national average for mother postnatal visit within 6 days rate was 70.3% which is below the national target of 75% (Table 5). The national rate improved from 68.5% in 2015/16 to 70.3% in 2016/17.

Table 5: National mother postnatal visit within 6 days rate, 2012/13–2016/17

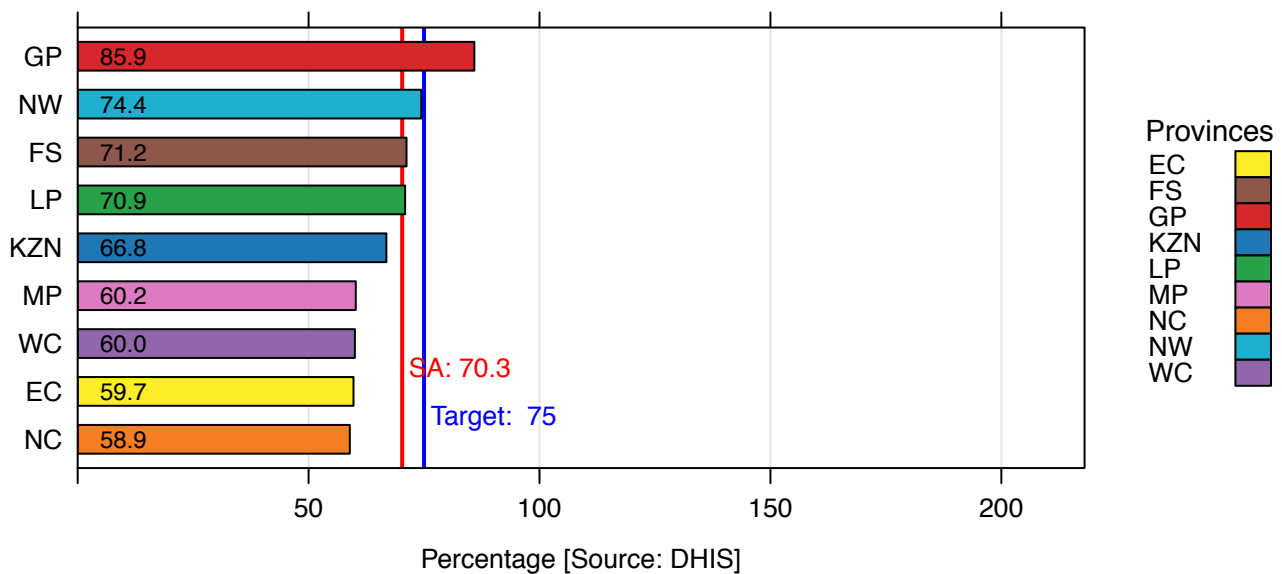
	2012/13	2013/14	2014/15	2015/16	2016/17
National mother postnatal visit within 6 days rate (%)	65.2	73.0	74.3	68.5	70.3

Source: DHIS.

Provincial overview

Only Gauteng (85.9%) met the national target for mother postnatal visit within 6 days rate in 2016/17 (Figure 12). Northern Cape had the lowest rate at 58.9%, probably due to the large distances women have to travel to clinics in this province.

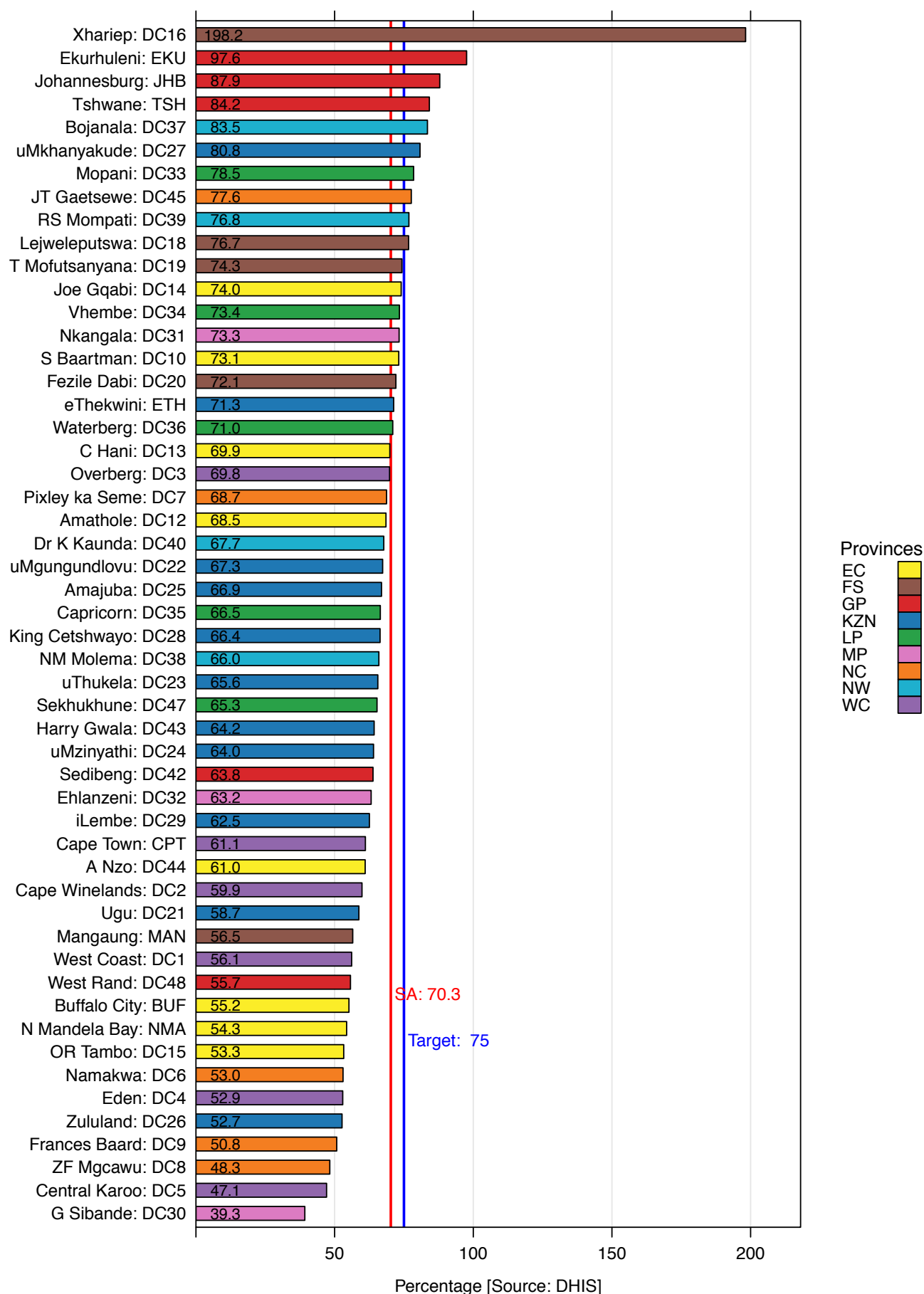
Figure 12: Mother postnatal visit within 6 days rate by province, 2016/17



District overview

At district level, the mother postnatal visit within 6 days rate ranged widely, from 39.3% in Gert Sibande (MP) to 198.2% in Xhariep (FS) (Figure 13). Only 10 of 52 districts (19.2%) met the national target of 75%. Six districts showed a decrease of more than 10 percentage points between 2015/16 and 2016/17, namely Gert Sibande (MP) (10.4), Sedibeng (GP) (11.0), uThukela (KZN) (11.4), iLembe (KZN) (11.7), uMzinyathi (KZN) (12.4) and Cape Town (WC) (15.2). Central Karoo (WC) had the highest percentage point increase among the districts of 21.1 in the same period.

Figure 13: Mother postnatal visit within 6 days rate by district, 2016/17



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Map 4 shows the geographical distribution of mother postnatal visit within 6 days rate by district and sub-district.

Map 4: Mother postnatal visit within 6 days rate by sub-district, 2016/17

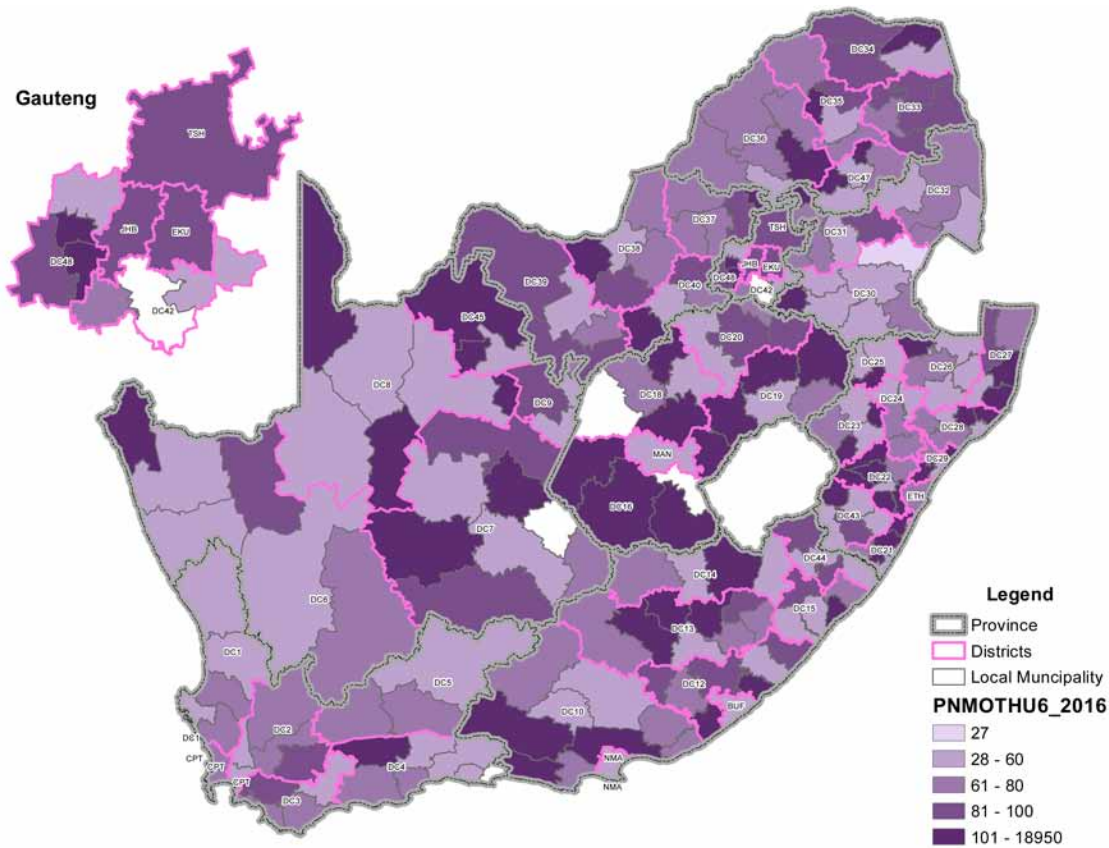
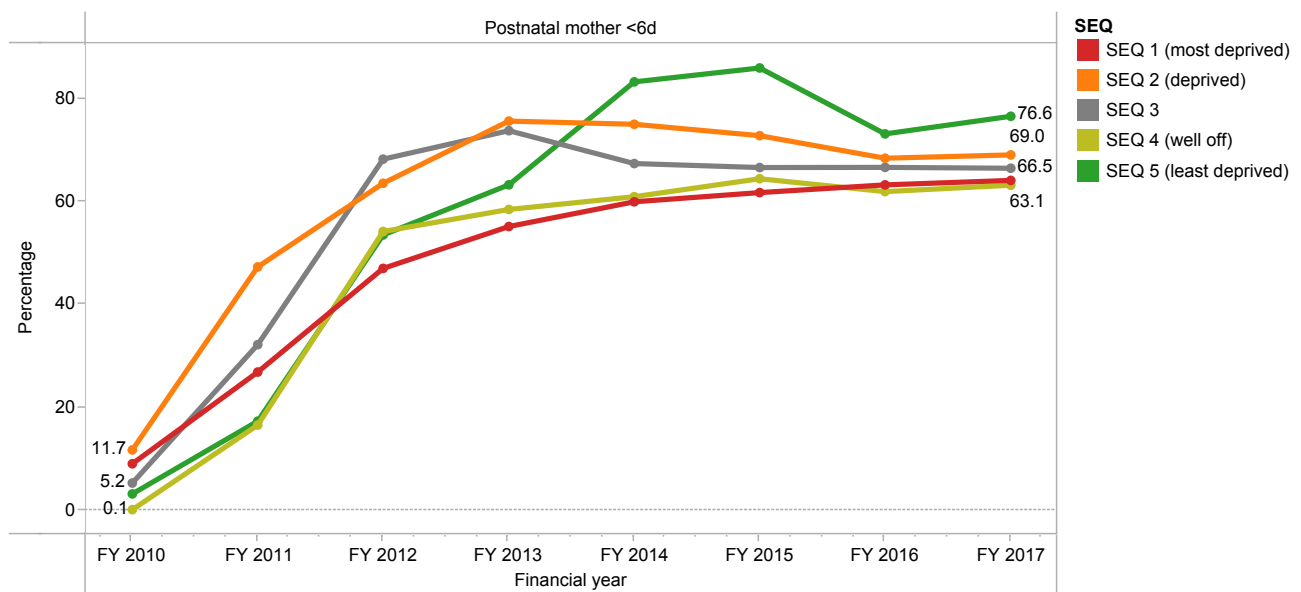


Figure 14 shows that the mother postnatal visit within 6 days rate was the highest in SEQ5 and lowest in SEQ1 and SEQ4.

Figure 14: Trends in average district values by socio-economic quintile for mother postnatal visit within 6 days rate, 2009/10–2016/17



Key findings

- ◆ Data indicates an increasing trend of early postnatal visits which is encouraging.
- ◆ Some districts, e.g. Xhariep (FS), had a mother postnatal visit within 6 days rate of more than a 100%. The constant mobility and cross border referrals has been a common finding in most areas, especially for deliveries. This is probably the reason for Xhariep, due to the women mostly delivering in Mangaung and then doing their postnatal follow-up closer to their homes, thus the denominator is artificially low. Another reason might be poor data quality.
- ◆ Only 10 of the 52 districts (19.2%) reached the national target and these districts include the three metropolitan districts in Gauteng.
- ◆ The South Africa Demographic and Health Survey of 2016^f indicates that 96% of women give birth in health facilities; however, data from the Burden of Disease unit of the South African Medical Research Council indicates that about 15–20% of maternal deaths occur outside of health facilities and these are mostly postpartum deaths. There is obviously a very real need to ensure all women are seen early postpartum to detect the women who are ill.

Recommendations

- ◆ Efforts must continue to increase the postnatal visits within 6 days after delivery.
- ◆ The data are recorded for women visiting the clinics and outpatient departments at hospitals according to the data element definition of the 2013 National Indicator Data Set (NIDS) that excluded postnatal women admitted in hospitals. However, the 2017 NIDS stipulates that as from April 2017, all postnatal women admitted in hospital should be examined and the data should also be recorded.
- ◆ The role of ward-based outreach teams (WBOTs) needs to be explored in this area. Ideally the number of women seen postnatally by WBOTs should be recorded and linked with the postnatal visits already recorded in the DHIS.
- ◆ Methods by which the delivery sites can communicate with WBOTs need to be developed.
- ◆ Hospitals should submit data for the data element 'Mother postnatal visit within 6 days after delivery' for women who are hospitalised within 6 days after the delivery.
- ◆ Linking the mother with the existing MomConnect^g system needs to be strengthened to send reminders for postnatal visits.

^f National Department of Health (NDoH), Statistics South Africa (Stats SA), South African Medical Research Council (SAMRC). South Africa Demographic and Health Survey, 2016: Key Indicators. Pretoria, South Africa, and Rockville, Maryland, USA: NDoH, Stats SA, SAMRC, and ICF. <http://www.statssa.gov.za/publications/Report%2003-00-09/Report%2003-00-092016.pdf> [Accessed 30 July 2017].

^g MOMCONNECT. Available from: <http://www.rmchsa.org/momconnect/> [Accessed 30 July 2017].