

8 Immunisation

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Immunisation of children is a successful public health measure to reduce infant morbidity and mortality from vaccine-preventable diseases.^a In the last century, vaccines have saved more lives than any other health intervention.^b The World Health Organization (WHO) estimates that every year more than two million deaths are prevented worldwide due to immunisation.

In May 2012, the Global Vaccines Action Plan (GVAP) was endorsed by 194 Member States of the World Health Assembly. The GVAP is a framework to achieve the Decade of Vaccine vision by delivering universal access to immunisation to prevent millions of deaths by 2020 through more equitable access to existing vaccines. The plan aims to strengthen routine immunisation to meet vaccination coverage targets, accelerate control of vaccine-preventable diseases with polio eradication as the first milestone, introduce new and improved vaccines, and spur research and development for the next generation of vaccines and technologies. The plan is expected to reduce global childhood mortality.^c

8.1 Immunisation coverage under 1 year

Immunisation coverage under 1 year measures children under 1 year who completed their primary course of immunisation as a proportion of population under 1 year. The indicator is calculated as the total number of children under 1 year old that have received all these vaccines, divided by the target population of children under 1 year old expressed as a percentage. The data element definition for the numerator 'Immunised fully under 1 year new' indicates that a child is fully immunised when the child has received all prescribed vaccine doses before 1 year of age.^d The measles 2nd dose given at 12 months is excluded.

Currently the Expanded Programme on Immunisation (EPI) schedule in South Africa has 11 antigens. These include vaccines against polio, measles, tuberculosis, diphtheria, pertussis, tetanus, Haemophilus influenzae type B, hepatitis B, rotavirus and pneumococcal infection, which are provided free of charge at all public health facilities. As of 1 December 2015, the measles vaccination schedule changed (Table 1). The measles 1st dose vaccine is now administered at 6 months of age instead of 9 months and the measles 2nd dose at 12 months of age instead of 18 months.

Table 1: Expanded Programme on Immunisation South Africa – Revised immunisation schedule from December 2015

| Age of child | Vaccines needed | Key |
|--------------|----------------------|--|
| At birth | BCG | BCG = bacille Calmette-Guérin. |
| | OPV (0) | |
| 6 weeks | OPV (1) | OPV = oral polio vaccine. RV = Rotavirus vaccine. DTaP-IPV-Hib-HBV = Diphtheria, tetanus and acellular pertussis vaccine + inactivated polio vaccine + Haemophilus influenzae type B vaccine combined. |
| | RV (1) | |
| | DTaP-IPV-Hib-HBV (1) | |
| | PCV (1) | |
| 10 weeks | DTaP-IPV-Hib-HBV (2) | PCV = Pneumococcal conjugate vaccine. |
| 14 weeks | RV (2) | |
| | DTaP-IPV-Hib-HBV (3) | Td vaccine = Tetanus and reduced-strength diphtheria vaccine. |
| | PCV (2) | |
| 6 months | Measles vaccine (1) | |
| 9 months | PCV (3) | |
| 12 months | Measles vaccine (2) | |
| 18 months | DTaP-IPV-Hib-HBV (4) | |
| 6 years | Td vaccine | |
| 12 years | Td vaccine | |

Source: National Department of Health, PHC EML STGs, 2016.^e

- a World Health Organization. Immunisation coverage fact sheet. Available from: <http://www.who.int/mediacentre/factsheets/fs378/en/> [Accessed 7 August 2017].
- b Immunization: The most successful public health measure. Available from: <http://www.phac-aspc.gc.ca/im/measure-intervention-eng.php>. [Accessed 14 August 2017].
- c World Health Organization. Global vaccine action plan indicators. Available from :http://www.who.int/immunization/global_vaccine_action_plan/en/ [Accessed 14 August 2017].
- d 2013 National Indicator Data Set.
- e National Institute for Communicable Diseases. Communicable Diseases Communiqué, January 2016, Vol. 15(1). Available from: http://www.nicd.ac.za/assets/files/NICD%20Communicable%20Diseases%20Communique_Jan2016_final%20pdf.pdf [Accessed 7 August 2017].

National overview

During 2016/17, immunisation coverage nationally was 82.3%, almost 10 percentage points lower than the national target of 92.0% (Table 2). This was a 6.9 percentage point reduction from the immunisation coverage of 89.2% reported in 2015/16 and lowest during the last five years. Between 2012/13 and 2014/15 there has been a general upward trend, with immunisation coverage increasing from 83.6% in 2012/13 to 89.8% in 2014/15. The rate then declined slightly between 2014/15 and 2015/16 but showed a huge drop in 2016/17. The main reasons that contributed to this decline were: the global shortage of Hexavalent that lasted approximately 9 months and was resolved at a national level in October 2016; in some provinces and/or districts the available stock was distributed equally to different areas without considering the demands and population targets, thus painting an extremely heterogeneous picture of coverage.

Table 2: National immunisation coverage under 1 year, 2012/13–2016/17

| | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 |
|----|---------|---------|---------|---------|---------|
| | % | % | % | % | % |
| SA | 83.6 | 84.4 | 89.8 | 89.2 | 82.3 |

Source: DHIS.

Provincial overview

Figure 1 shows immunisation coverage by province. A wide provincial variation in immunisation coverage is seen ranging from 96.7% in Gauteng (GP) to 64.5% in Limpopo (LP). Only Gauteng surpassed the national target of 92% in 2016/17.

Table 3 summarises immunisation coverage at provincial level for the period 2012/13–2016/17. Between 2015/16 and 2016/17, except for KwaZulu-Natal (KZN) which marginally increased by 0.8 percentage points in immunisation coverage, the rest of the provinces showed a decline in coverage. The decline was most marked in Limpopo (14.7 percentage points). Similarly, the reduction is seen in Gauteng (9.7 percentage points); followed by North West (NW) (9.5 percentage points); Western Cape (WC) (9.3 percentage points); Eastern Cape (EC) (8.2 percentage points); Mpumalanga (MP) (7.5 percentage points); Northern Cape (NC) (3.4 percentage points) and Free State (FS) (2.0 percentage points), respectively.

Figure 1: Immunisation coverage under 1 year by province, 2016/17

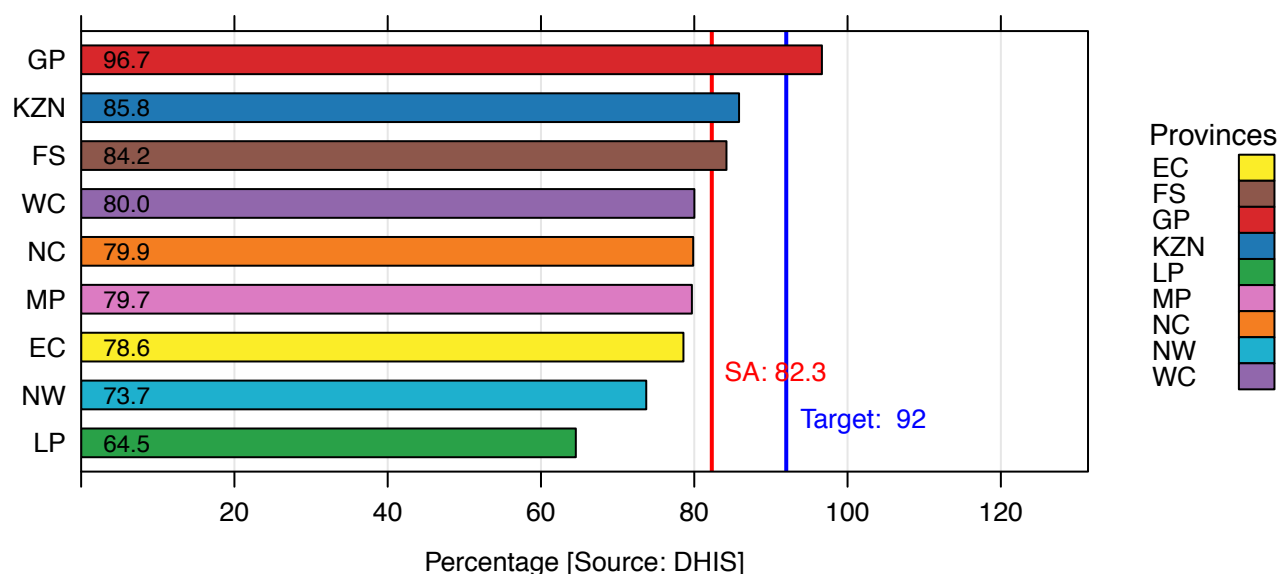


Table 3: Immunisation coverage under 1 year by province, 2012/13–2016/17

| Province | 2012/13 % | 2013/14 % | 2014/15 % | 2015/16 % | 2016/17 % | Percentage point change between 2015/16 and 2016/17 |
|---------------|--------------|--------------|--------------|--------------|--------------|---|
| Eastern Cape | 72.3 | 72.3 | 80.9 | 86.8 | 78.6 | -8.2 |
| Free State | 96.2 | 86.6 | 90.1 | 86.2 | 84.2 | -2.0 |
| Gauteng | 102.6 | 109.0 | 107.7 | 106.4 | 96.7 | -9.7 |
| KwaZulu-Natal | 85.6 | 85.8 | 89.9 | 85.0 | 85.8 | 0.8 |
| Limpopo | 71.1 | 70.3 | 82.2 | 79.2 | 64.5 | -14.7 |
| Mpumalanga | 67.8 | 71.1 | 80.1 | 87.2 | 79.7 | -7.5 |
| Northern Cape | 86.6 | 84.9 | 85.4 | 83.3 | 79.9 | -3.4 |
| North West | 72.4 | 74.2 | 82.1 | 83.2 | 73.7 | -9.5 |
| Western Cape | 88.8 | 84.9 | 90.9 | 89.3 | 80.0 | -9.3 |

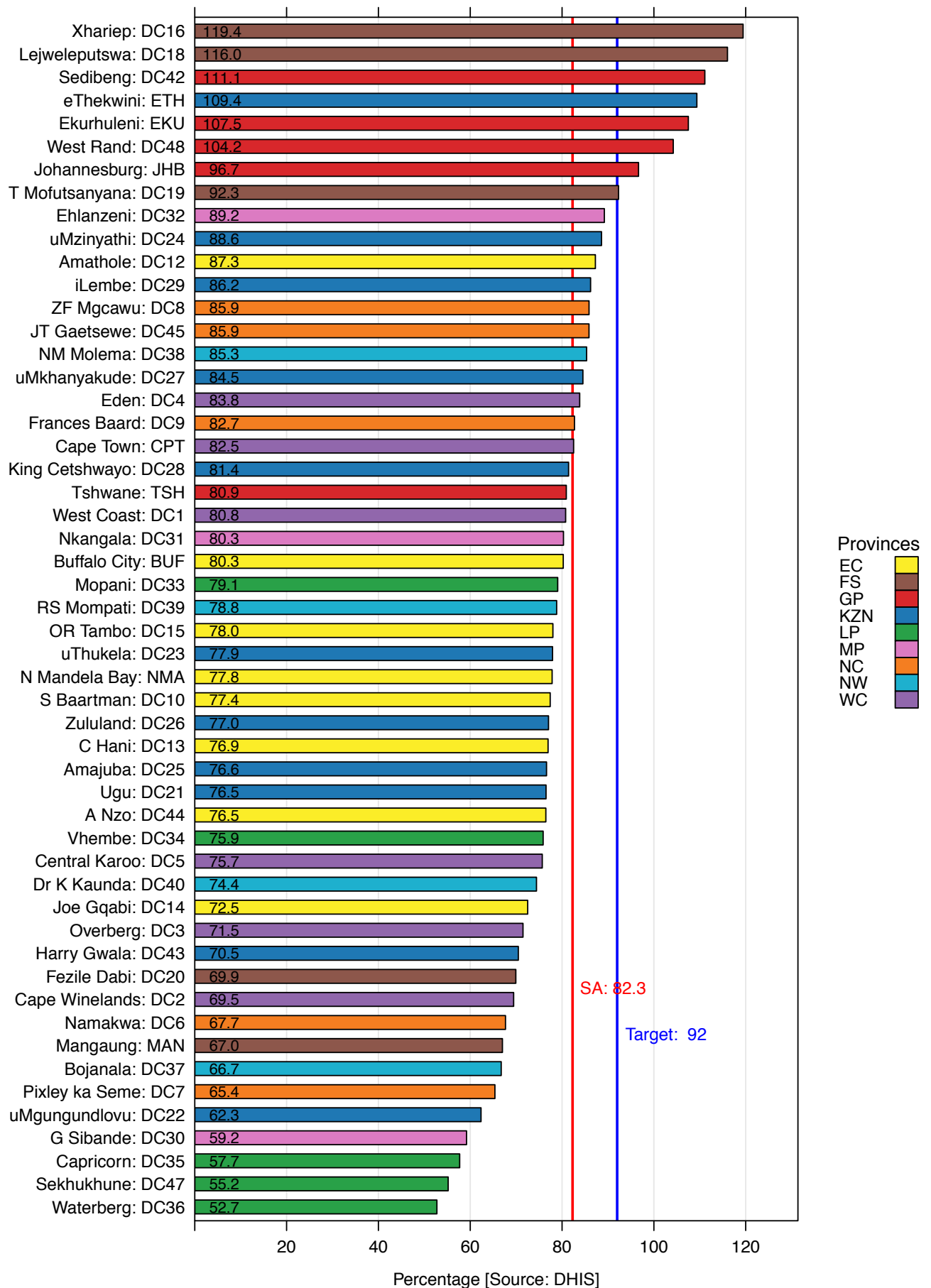
Source: DHIS.

District overview

Figure 2 shows the wide variation in immunisation coverage across districts, which is further illustrated in Map 1. At district level immunisation coverage ranged from 119.4% in Xhariep (FS) to 52.7% in Waterberg (LP).

Eight districts (including four of the five districts in Gauteng) exceeded the national target of 92%.

Figure 2: Immunisation coverage under 1 year by district, 2016/17



Map 1: Immunisation coverage under 1 year by sub-district, 2016/17

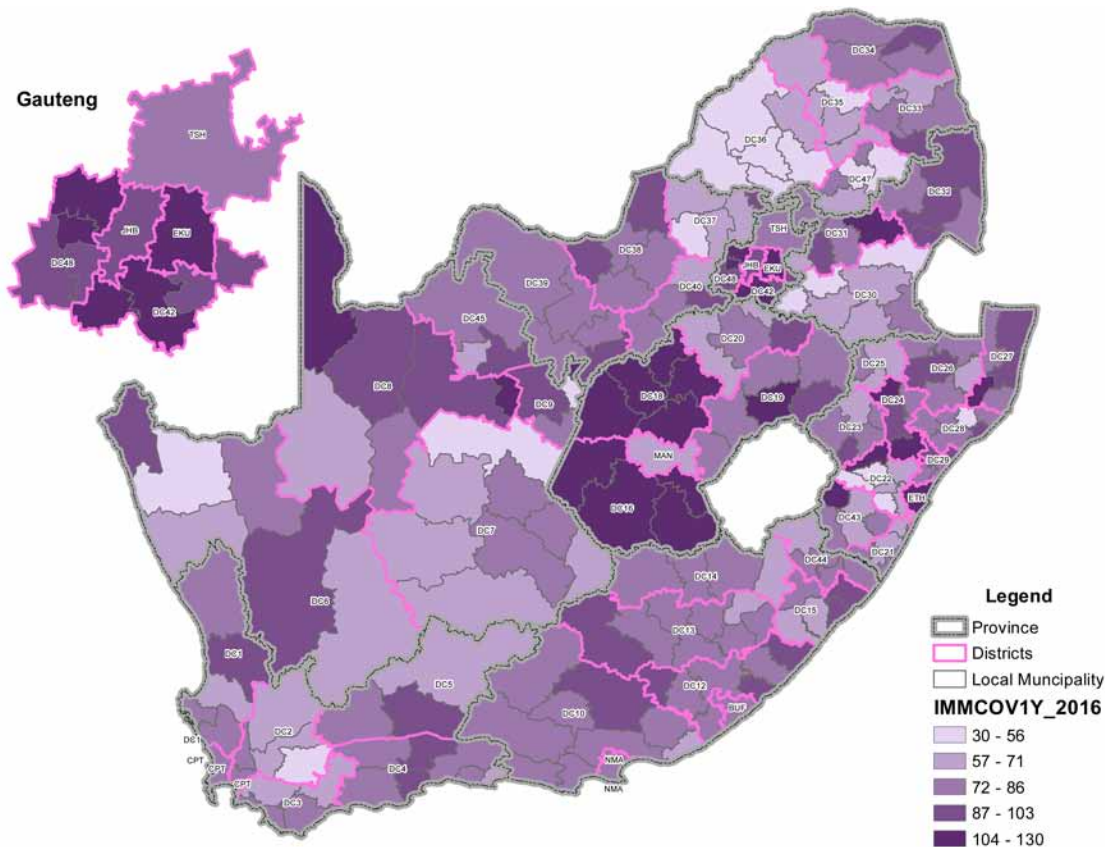


Table 4 shows immunisation coverage for the period 2015/16 to 2016/17. In summary, only seven districts showed an increase in immunisation coverage between 2015/16 and 2016/17. All districts in six provinces (Eastern Cape, Gauteng, Limpopo, Mpumalanga, North West and Western Cape) demonstrated a decline in 2016/17 when compared to the previous year.

The decline in 2016/17 from 2015/16 is most marked in the districts in Limpopo with the reduction ranging from 10–19 percentage points.

In Mpumalanga, the decline in Gert Sibande was the highest amongst all districts in South Africa. It dropped 21.0 percentage points from 80.2% in 2015/17 to 59.2% in 2016/17.

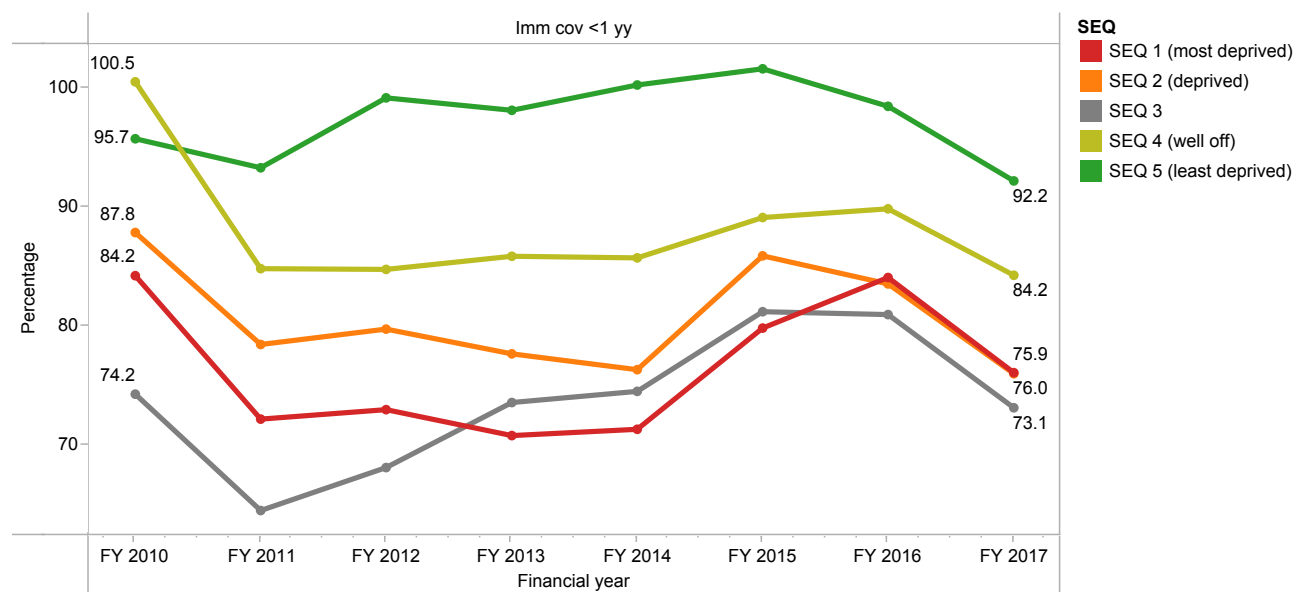
Table 4: Immunisation coverage under 1 by district, 2015/16–2016/17

| Province | District | 2015/16 % | 2016/17 % | Percentage point change between 2015/16 and 2016/17 |
|--------------|--------------------|-----------|-----------|---|
| Eastern Cape | Alfred Nzo | 81.5 | 76.5 | -5.0 |
| | Amathole | 98.8 | 87.3 | -11.5 |
| | Buffalo City | 92.5 | 80.3 | -12.2 |
| | Chris Hani | 85.3 | 76.9 | -8.4 |
| | Joe Gqabi | 80.2 | 72.5 | -7.7 |
| | Nelson Mandela Bay | 80.0 | 77.8 | -2.2 |
| | OR Tambo | 88.9 | 78.0 | -10.9 |
| | Sarah Baartman | 80.1 | 77.4 | -2.7 |
| Free State | Fezile Dabi | 71.3 | 69.9 | -1.4 |
| | Lejweleputswa | 109.1 | 116.0 | 6.9 |
| | Mangaung | 74.6 | 67.0 | -7.6 |
| | Xhariep | 123.2 | 119.4 | -3.8 |
| | Thabo Mofutsanyana | 88.8 | 92.3 | 3.5 |
| Gauteng | Ekurhuleni | 114.5 | 107.5 | -7.0 |
| | Johannesburg | 105.7 | 96.7 | -9.0 |
| | Sedibeng | 112.5 | 111.1 | -1.4 |
| | Tshwane | 97.6 | 80.9 | -16.7 |
| | West Rand | 107.2 | 104.2 | -3.0 |

| Province | District | 2015/16 % | 2016/17 % | Percentage point change between 2015/16 and 2016/17 |
|---------------|----------------|--------------|--------------|---|
| KwaZulu-Natal | Amajuba | 80.9 | 76.6 | -4.3 |
| | eThekwini | 97.6 | 109.4 | 11.8 |
| | iLembe | 77.6 | 86.2 | 8.6 |
| | Ugu | 82.9 | 76.5 | -6.4 |
| | uMgungundlovu | 72.9 | 62.3 | -10.6 |
| | uMkhanyakude | 87.5 | 84.5 | -3.0 |
| | uMzinyathi | 92.2 | 88.6 | -3.6 |
| | uThukela | 84.7 | 77.9 | -6.8 |
| | Zululand | 81.5 | 81.4 | -0.1 |
| | King Cetshwayo | 78.1 | 77.0 | -1.1 |
| Limpopo | Capricorn | 74.0 | 57.7 | -16.3 |
| | Mopani | 88.7 | 79.1 | -9.6 |
| | Vhembe | 88.3 | 75.9 | -12.4 |
| | Waterberg | 66.7 | 52.7 | -14.0 |
| | Sekhukhune | 74.4 | 55.2 | -19.2 |
| Mpumalanga | Ehlanzeni | 90.8 | 89.2 | -1.6 |
| | Gert Sibande | 80.2 | 59.2 | -21.0 |
| | Nkangala | 87.0 | 80.3 | -6.7 |
| Northern Cape | Frances Baard | 84.1 | 82.7 | -1.4 |
| | JT Gaetsewe | 96.7 | 85.9 | -10.8 |
| | Namakwa | 61.1 | 67.7 | 6.6 |
| | Pixley Ka Seme | 77.7 | 65.4 | -12.3 |
| | ZF Mgcawu | 82.1 | 85.9 | 3.8 |
| North West | Bojanala | 76.6 | 66.7 | -9.9 |
| | Dr K Kaunda | 89.8 | 74.4 | -15.4 |
| | NM Molema | 88.7 | 85.3 | -3.4 |
| | RS Mompoti | 87.1 | 78.8 | -8.3 |
| Western Cape | Cape Town | 93.7 | 82.5 | -11.2 |
| | Cape Winelands | 79.0 | 69.5 | -9.5 |
| | Central Karoo | 76.9 | 75.7 | -1.2 |
| | Eden | 84.9 | 83.8 | -1.1 |
| | Overberg | 86.7 | 71.5 | -15.2 |
| | West Coast | 82.5 | 80.8 | -1.7 |

Source: DHIS.

Figure 3 shows the average immunisation coverage over the past five years by socio-economic quintile (SEQ). An inequitable trend is noted, with coverage highest in SEQ5 (least deprived) and SEQ4 (well off), and lowest in SEQ3. There was a decrease in immunisation coverage across all SEQs between 2015/16 and 2016/17.

Figure 3: Trends in average district values for immunisation coverage under 1 year by socio-economic quintile, 2009/10–2016/17

8.2 Measles 2nd dose coverage

Measles 2nd dose coverage measures the proportion of children aged 1 year (12–23 months) who received measles 2nd dose as a proportion of 1-year population. The indicator monitors protection of children against measles. Because the measles 1st dose is only around 85% effective, the 2nd dose is important as a booster. Vaccines given as part of mass vaccination campaigns should not be included in routine data collection.^a

National and provincial overview

In 2016/17, after the change in schedule, the measles 2nd dose coverage in South Africa was 96.2%. This was well above the national target of 80% and an 11.4 percentage point improvement from 2015/16.

Table 5 illustrates the trends in national and provincial measles 2nd dose coverage for the period 2012/13 to 2016/17. All provinces showed an increasing trend in the last four years from 2013/14 to 2016/17 and a substantial increase in coverage between 2015/16 and 2016/17. For the period 2015/16 to 2016/17, measles 2nd dose coverage increased by 19.7 percentage points in the Northern Cape, 17.2 percentage points in KwaZulu-Natal, 13.7 percentage points in Gauteng, 13.5 percentage points in the Free State, 10.5 percentage points in the Eastern Cape, 7.7 percentage points in Mpumalanga, 7.0 percentage points in the North West, 6.6 percentage points in Limpopo and 5.1 percentage points in the Western Cape.

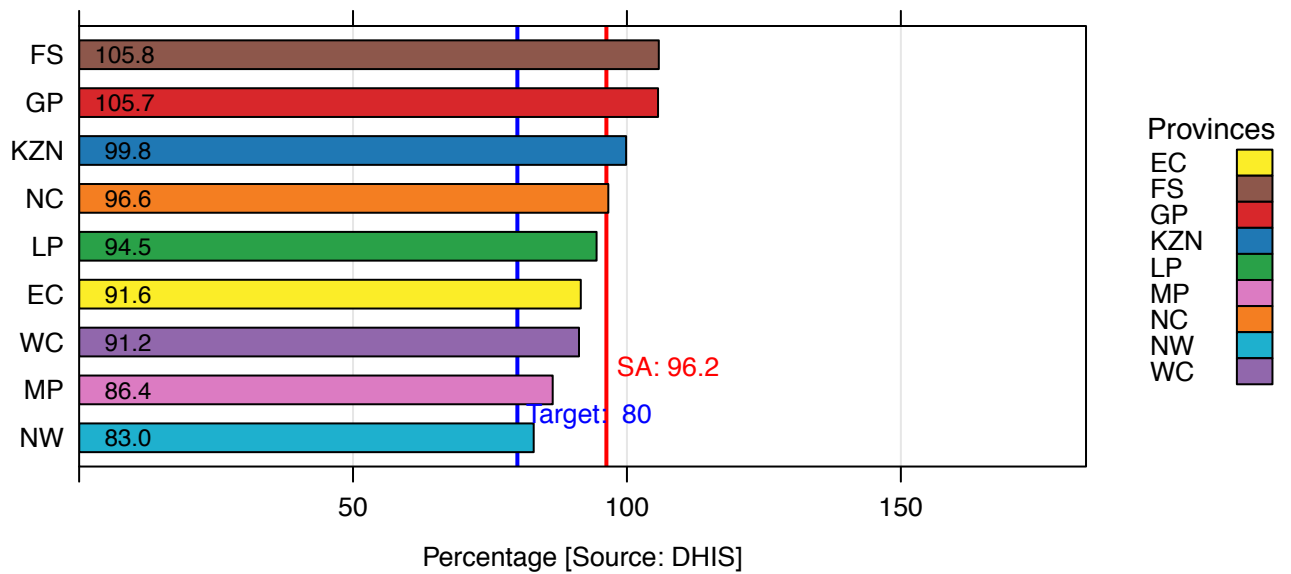
Table 5: National and provincial measles 2nd dose coverage, 2012/13–2016/17

| | 2012/13 % | 2013/14 % | 2014/15 % | 2015/16 % | 2016/17 % |
|---------------|--------------|--------------|--------------|--------------|--------------|
| Eastern Cape | 65.6 | 67.6 | 73.6 | 81.1 | 91.6 |
| Free State | 85.8 | 80.0 | 81.3 | 92.3 | 105.8 |
| Gauteng | 86.8 | 85.1 | 94.9 | 92.0 | 105.7 |
| KwaZulu-Natal | 78.1 | 77.0 | 86.3 | 82.6 | 99.8 |
| Limpopo | 72.4 | 73.5 | 83.3 | 87.9 | 94.5 |
| Mpumalanga | 67.0 | 69.6 | 74.6 | 78.7 | 86.4 |
| Northern Cape | 77.2 | 75.7 | 77.1 | 76.9 | 96.6 |
| North West | 62.9 | 66.3 | 77.7 | 76.0 | 83.0 |
| Western Cape | 70.1 | 71.2 | 76.3 | 86.2 | 91.2 |
| SA | 74.9 | 75.0 | 82.8 | 84.8 | 96.2 |

Source: DHIS.

During 2016/17, all provinces reached measles 2nd dose coverage of more than 90% except Mpumalanga (86.4%) and North West (83.0%) (Figure 4). The Free State and Gauteng had the highest coverage reaching 105.8% and 105.7% respectively and KwaZulu-Natal reached almost all targeted children with 99.8% coverage.

Figure 4: Measles 2nd dose coverage by province, 2016/17



District overview

An encouraging measles 2nd dose coverage rate was demonstrated across all districts in 2016/17. Except for Waterberg (LP), Bojanala (NW) and Gert Sibande (MP), the rest of the districts (94% of all districts in South Africa) exceeded the national target of 80%. Similarly, 23 districts exceeded the national average of 96.2%.

The wide variation in measles 2nd dose coverage among districts can be seen in Figure 5 and Map 2. At district level, measles 2nd dose coverage ranged from 63.0% in Gert Sibande (MP) to 167.1% in Xhariep (FS).

Map 2: Measles 2nd dose coverage by sub-district, 2016/17

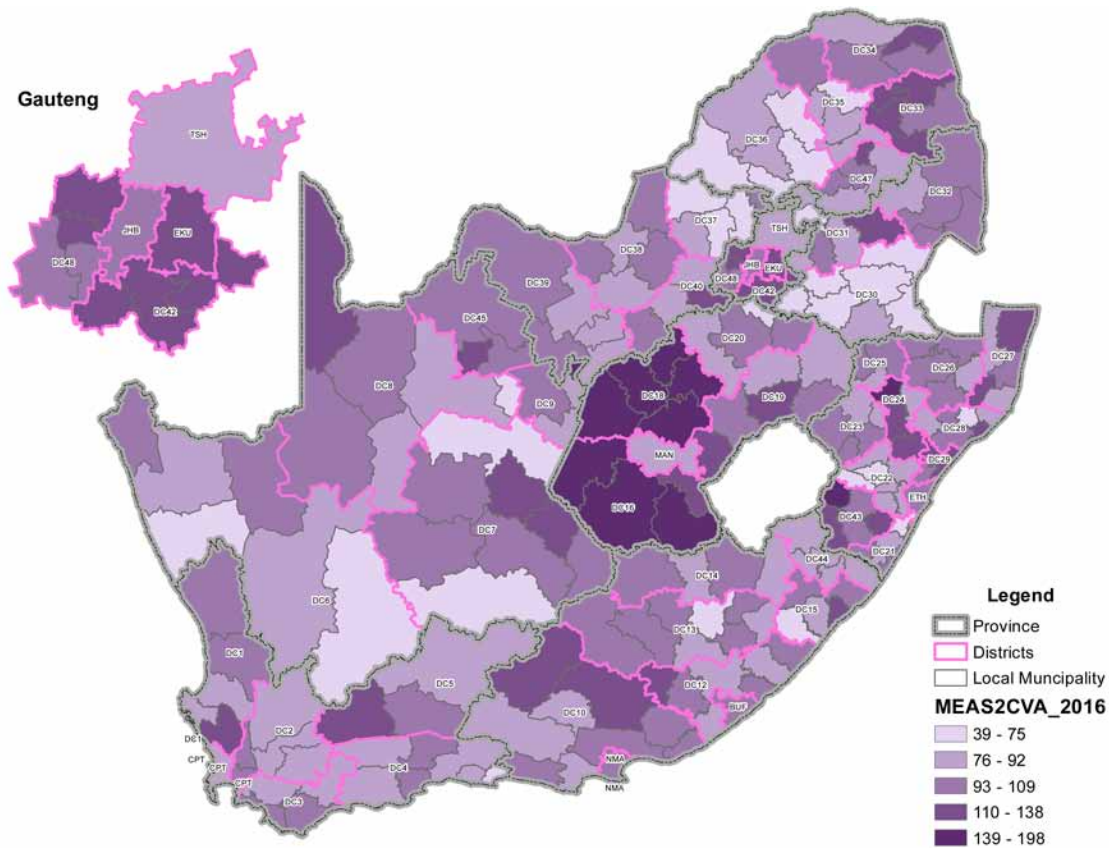
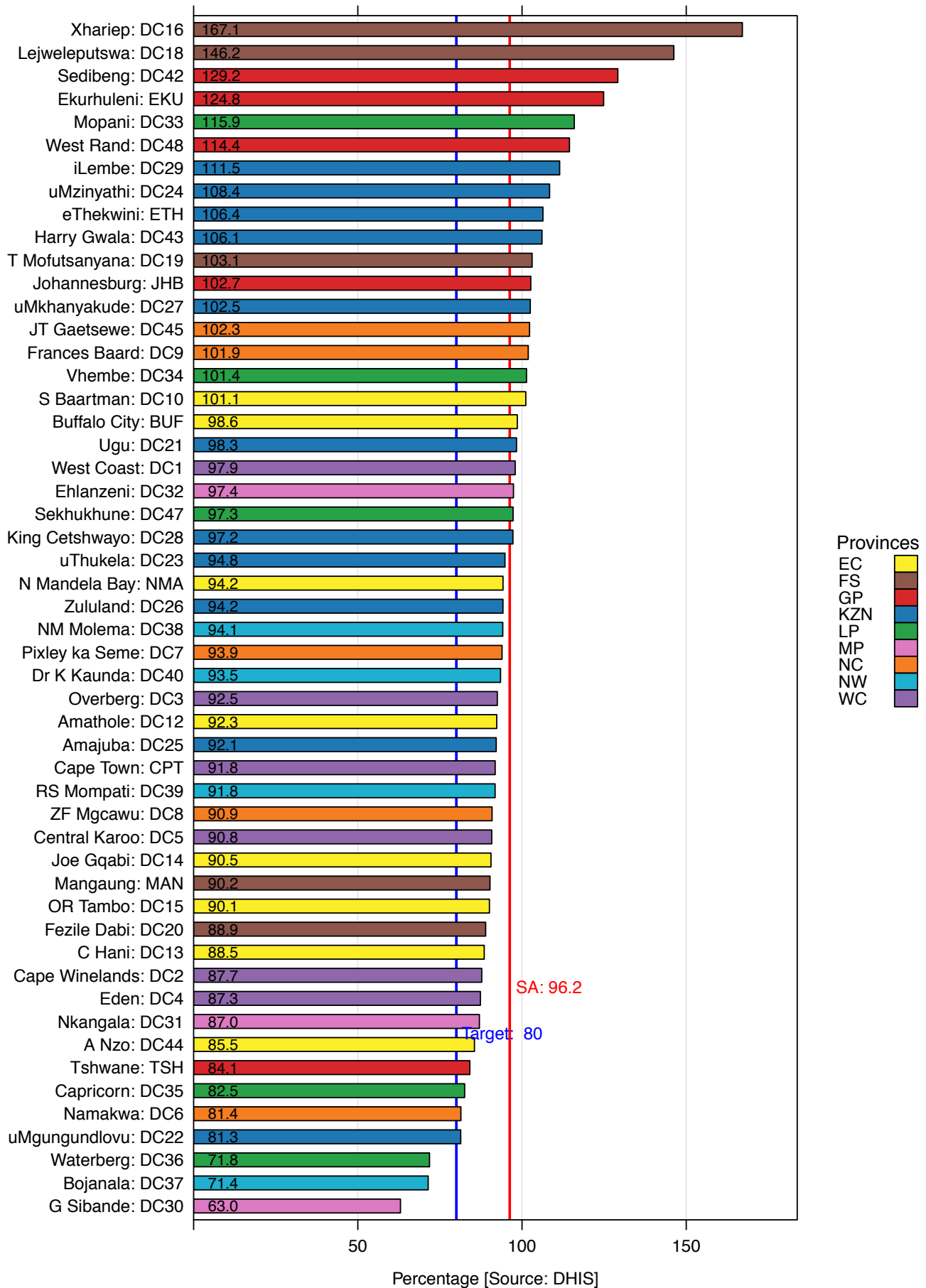


Figure 5: Measles 2nd dose coverage by district, 2016/17



All the metro districts had measles dose coverage above the national target of 80% in 2016/17 (Table 6).

Table 6: Measles 2nd dose coverage in metropolitan districts, 2016/17

| District | Measles 2 nd dose coverage (%) |
|-------------------------|---|
| Buffalo City (EC) | 98.6 |
| Nelson Mandela Bay (EC) | 94.2 |
| Mangaung (FS) | 90.2 |
| Ekurhuleni (GP) | 124.8 |
| Johannesburg (GP) | 102.7 |
| Tshwane, (GP) | 84.1 |
| eThekwini (KZN) | 106.4 |
| Cape Town (WC) | 91.8 |

Source: DHIS.

The majority of districts showed an increase in measles 2nd dose coverage from 2015/16 to 2016/17. Four districts showed an improvement of more than 30 percentage points between 2015/16 and 2016/17 and nine districts an improvement of between 20 and 30 percentage points.

The coverage declined between 2015/16 and 2016/17 in only three districts namely, Eden (3.7 percentage points), Central Karoo (1.9 percentage points) (both WC) and Gert Sibande (MP) (9.4 percentage points) (Table 7).

Table 7: Measles 2nd dose coverage by district, 2015/16–2016/17

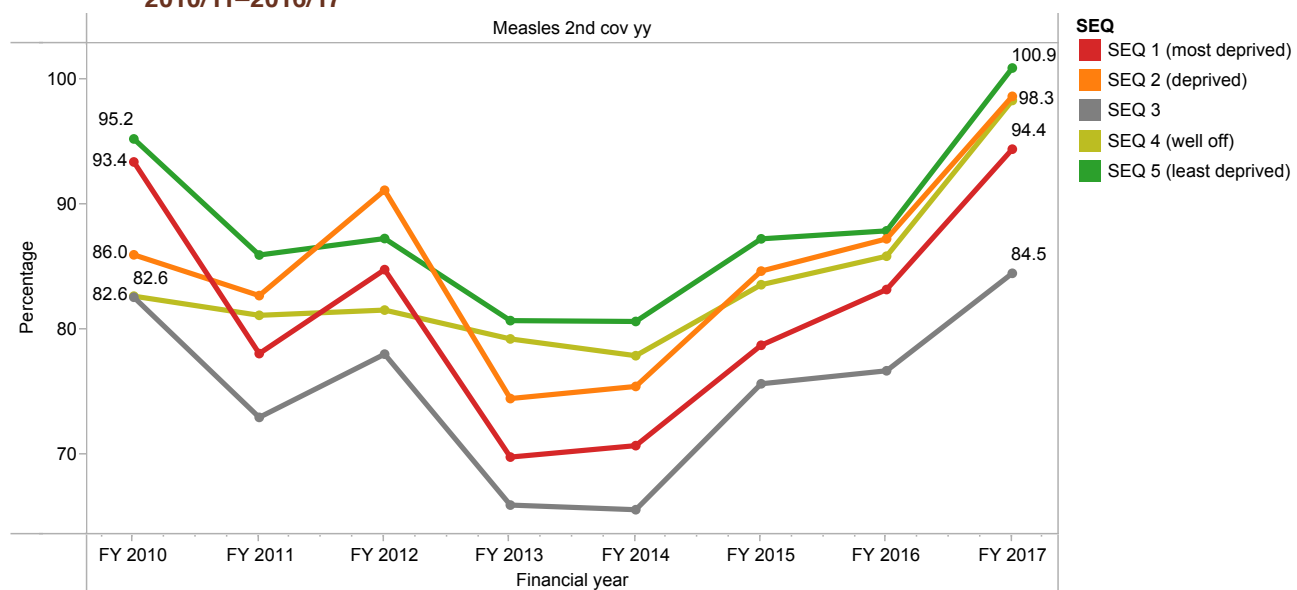
| Province | District | 2015/16 | 2016/17 | Percentage point change between 2015/16 and 2016/17 |
|---------------|--------------------|---------|---------|---|
| Eastern Cape | Alfred Nzo | 83.2 | 85.5 | 2.4 |
| | Amathole | 84.2 | 92.3 | 8.1 |
| | Buffalo City | 84.2 | 98.6 | 14.3 |
| | Chris Hanani | 79.6 | 88.5 | 8.9 |
| | Joe Gqabi | 86.2 | 90.5 | 4.3 |
| | Nelson Mandela Bay | 70.9 | 94.2 | 23.3 |
| | OR Tambo | 82.9 | 90.1 | 7.2 |
| | Sarah Baartman | 78.7 | 101.1 | 22.4 |
| Free State | Fezile Dabi | 75.5 | 88.9 | 13.5 |
| | Lejweleputswa | 115.2 | 146.2 | 31.1 |
| | Mangaung | 82.1 | 90.2 | 8.1 |
| | Xhariep | 133.3 | 167.1 | 33.8 |
| | Thabo Mofutsanyana | 94.6 | 103.1 | 8.5 |
| Gauteng | Ekurhuleni | 95.8 | 124.8 | 29.0 |
| | Johannesburg | 91.5 | 102.7 | 11.2 |
| | Sedibeng | 104.9 | 129.2 | 24.3 |
| | Tshwane | 83.4 | 84.1 | 0.7 |
| | West Rand | 101.8 | 114.4 | 12.7 |
| KwaZulu-Natal | Amajuba | 87.3 | 92.1 | 4.9 |
| | eThekwini | 87.1 | 106.4 | 19.2 |
| | iLembe | 75.1 | 111.5 | 36.4 |
| | Ugu | 84.9 | 98.3 | 13.4 |
| | uMgungundlovu | 69.4 | 81.3 | 12.0 |
| | uMkhanyakude | 82.3 | 102.5 | 20.2 |
| | uMzinyathi | 95.2 | 108.4 | 13.2 |
| | uThukela | 82.5 | 94.8 | 12.3 |
| | Zululand | 72.6 | 94.2 | 21.6 |
| | Harry Gwala | 75.2 | 106.1 | 30.8 |
| | King Cetshwayo | 88.9 | 97.2 | 8.4 |
| Limpopo | Capricorn | 77.2 | 82.5 | 5.3 |
| | Mopani | 98.1 | 115.9 | 17.8 |
| | Vhembe | 99.9 | 101.4 | 1.5 |
| | Waterberg | 66.4 | 71.8 | 5.5 |
| | Sekhukhune | 91.5 | 97.3 | 5.7 |
| Mpumalanga | Ehlanzeni | 82.0 | 97.4 | 15.4 |
| | Gert Sibande | 72.4 | 63.0 | -9.4 |
| | Nkangala | 78.5 | 87.0 | 8.5 |

Section A: Immunisation

| Province | District | 2015/16 | 2016/17 | Percentage point change between 2015/16 and 2016/17 |
|---------------|----------------|---------|---------|---|
| Northern Cape | Frances Baard | 75.3 | 101.9 | 26.6 |
| | JT Gaetsewe | 89.7 | 102.3 | 12.6 |
| | Namakwa | 70.6 | 81.4 | 10.8 |
| | Pixley Ka Seme | 76.5 | 93.9 | 17.4 |
| | ZF Mgcawu | 68.0 | 90.9 | 22.9 |
| North West | Bojanala | 69.7 | 71.4 | 1.7 |
| | Dr K Kaunda | 78.6 | 93.5 | 14.9 |
| | NM Molema | 82.7 | 94.1 | 11.4 |
| | RS Mompoti | 82.7 | 91.8 | 9.1 |
| Western Cape | Cape Town | 88.7 | 91.8 | 3.2 |
| | Cape Winelands | 78.4 | 87.7 | 9.3 |
| | Central Karoo | 92.5 | 90.8 | -1.7 |
| | Eden | 91.0 | 87.3 | -3.7 |
| | Overberg | 77.9 | 92.5 | 14.6 |
| | West Coast | 77.6 | 97.9 | 20.3 |

Figure 6 shows the trends in average district values for measles 2nd dose coverage of 100.9% in SEQ5 and 94.4% in SEQ1 respectively in 2016/17. There was a 6.5 percentage point difference in coverage between the highest and lowest SEQ for measles 2nd dose. Lowest coverage in SEQ3 was noted and there is a minimal improvement in coverage in the period from 2010/11 to 2016/17.

Figure 6: Trends in average district values by socio-economic quintile for measles 2nd dose coverage, 2010/11–2016/17



Key findings

Immunisation coverage under 1 year

- ◆ Performance is rather poor illustrating the lowest coverage within the last 5 years from 2012/13 to 2016/17. The immunisation coverage under 1 year was reported at 82.3% against the national target of 92% in 2016/17 due to the global shortage of DTaP-IPV-Hib-HBV that lasted approximately 9 months and was only resolved in October 2016.
- ◆ A wide provincial variation in immunisation coverage under 1 year was seen ranging from 96.7% in Gauteng to 64.5% in Limpopo.
- ◆ Gauteng with immunisation coverage under 1 year at 96.7% was the only province that reached the national target. Except for KwaZulu-Natal, all provinces showed a marked decrease in coverage from the previous year.
- ◆ Only eight districts reached the national target. Eighty-seven per cent of the districts in the country showed a decrease in coverage from the previous year.
- ◆ At district level, immunisation coverage under 1 year ranged from 119.4% in Xhariep (FS) to 52.7% in Waterberg (LP).

Measles 2nd dose coverage

- ◆ The measles 2nd dose coverage demonstrated the highest value in the last five years from 2012/13 to 2016/17. An increasing trend in the measles 2nd dose coverage (92.6%) was also observed during the same period and exceeded the national target of 80%. There was a 11.4 percentage point increase between 2015/16 and 2016/17.
- ◆ All provinces reached the national target of 80%.
- ◆ Only three districts, namely Waterberg (LP), Bojanala (NW) and Gert Sibande (MP) did not reach the national target of 80%.
- ◆ A wide variation in measles 2nd dose coverage among districts was observed with coverage ranging from 167.1% in Xhariep (FS) to 63.0% in Gert Sibande (MP).

Recommendations

- ◆ Immunisations performance should be reviewed at all levels especially in light of the notable drop in the immunisation coverage among the under 1 year target population in 2016/17 from the previous year. Efforts should be made to develop a micro-plan using the Reaching Every District (RED)^f approach and deploying appropriate strategies to reach all targeted children through fixed, mobile and outreach programmes, and monitoring the performance with monthly reviews being encouraged.
- ◆ Systems should be implemented to mitigate possible shortages of DTaP-IPV-Hib-HBV in future.
- ◆ Quarterly programme reviews (including immunisation performance), vaccine preventable disease surveillance, supply and logistics, data quality improvement, communication and social mobilisation should be planned and conducted at provincial level. Monthly programme reviews should be implemented at district and sub-district level.
- ◆ Social mobilisation and active tracing of defaulters
 - Mothers and caregivers should be provided with clear information on the clinic days for immunisation if EPI services cannot be provided each day of the week
 - Mobile clinics and mass vaccination campaigns should be better utilised to increase immunisation coverage in remote and high-risk areas
 - Ward-based outreach teams should be well utilised in health promotion and providing information to the communities including the benefits of immunisation and possible side-effects
 - Active tracing of dropout children who do not return for a 2nd or 3rd dose of immunisation
 - Community health workers, ward-based outreach teams and community caregivers should be actively utilised to trace children who have missed immunisations
 - Districts, sub-districts and facility managers should leverage the resources of partners in health promotion and monitoring a child's Road to Health Chart (RTHC) for appropriate services including immunisation
 - Health workers should ensure that mothers are registered on MomConnect as this will enable mothers to receive reminders of clinic visits
- ◆ Data quality improvement
 - Every contact with a child should be used as an opportunity to check his/her RTHC to ensure that he or she is up to date with immunisations. Provision of immunisations must be recorded on the RTHC to allow tracking of the child's immunisation.
 - Data quality improvement through close supervision of staff who provide immunisation service and data capturers for recording and reporting, and provide supportive supervision and training as required. Monthly reviews should take place at health facility and district levels to discuss data quality improvement.
 - Registers must be completed accurately in real time, and overall data quality should be improved.
 - Visits to verify data should be carried out at all levels by supervisors and managers.
 - Measures to include immunisation data from the private sector should be developed and implemented.

^f Reaching Every District' (RED) is the name given to a strategy of district capacity building to address common obstacles. Available from: http://www.who.int/immunization/programmes_systems/service_delivery/red/en/ [Accessed 14 August 2017].