

## 4. Output Indicators

### 4.1 Immunisation

Thando Ford-Ngomane

#### Immunisation coverage and drop out rate (DTPI-3)

Children below the age of five years are at risk of fatal acute infectious diseases resulting in infant and child mortality. Control of these infectious diseases is important for the reduction of childhood morbidity and mortality and would make a significant contribution towards the achievement of Millennium Development Goal 4 which aims to reduce child mortality by two thirds by the year 2015 when compared to the baseline of 1990 rates. The Expanded Programme on Immunisation in South Africa aims to protect children as early as possible from vaccine preventable diseases before exposure to the disease.

Immunisation coverage and immunisation drop out rates at PHC level indicate the level at which communities utilise the preventive services and thus serve as a proxy of the strength of the public health system.

Two of the indicators used to measure the effectiveness of the immunisation programme are immunisation coverage and immunisation drop out rate.



health

Department:  
Health  
REPUBLIC OF SOUTH AFRICA

#### Expanded Programme on Immunisation – EPI (SA) Revised Childhood Immunisation Schedule from April 2009

Age of Child	Vaccines needed	How and where is it given?
At Birth	BCG Bacilles Calmette Guerin	Right arm
	OPV (0) Oral Polio Vaccine	Drops by mouth
6 Weeks	OPV (1) Oral Polio Vaccine	Drops by mouth
	RV (1) Rotavirus Vaccine	Liquid by mouth
	DTaP-IPV//Hib (1) Diphtheria, Tetanus, acellular Pertussis, Inactivated Polio Vaccine and <i>Haemophilus influenzae</i> type b Combined	Intramuscular / Left thigh
	Hep B (1) Hepatitis B Vaccine	Intramuscular / Right thigh
10 Weeks	PCV <sub>7</sub> (1) Pneumococcal Conjugated Vaccine	Intramuscular / Right thigh
	DTaP-IPV//Hib (2) Diphtheria, Tetanus, acellular Pertussis, Inactivated Polio Vaccine and <i>Haemophilus influenzae</i> type b Combined	Intramuscular / Left thigh
	Hep B (2) Hepatitis B Vaccine	Intramuscular / Right thigh
14 Weeks	RV (2) Rotavirus Vaccine*	Liquid by mouth
	DTaP-IPV//Hib (3) Diphtheria, Tetanus, acellular Pertussis, Inactivated Polio Vaccine and <i>Haemophilus influenzae</i> type b Combined	Intramuscular / Left thigh
	Hep B (3) Hepatitis B Vaccine	Intramuscular / Right thigh
	PCV <sub>7</sub> (2) Pneumococcal Conjugated Vaccine	Intramuscular / Right thigh
9 Months	Measles Vaccine (1)	Intramuscular / Left thigh
	PCV <sub>7</sub> (3) Pneumococcal Conjugated Vaccine	Intramuscular / Right thigh
18 Months	DTaP-IPV//Hib (4) Diphtheria, Tetanus, acellular Pertussis, Inactivated Polio Vaccine and <i>Haemophilus influenzae</i> type b Combined	Intramuscular / Left arm
	Measles Vaccine (2)	Intramuscular / Right arm
6 Years (Both boys and girls)	Td Vaccine Tetanus and reduced strength of diphtheria Vaccine	Intramuscular / Left arm
12 Years (Both boys and girls)	Td Vaccine Tetanus and reduced strength of diphtheria Vaccine	Intramuscular / Left arm

\* Rotavirus Vaccine should NOT be administered after 24 weeks.

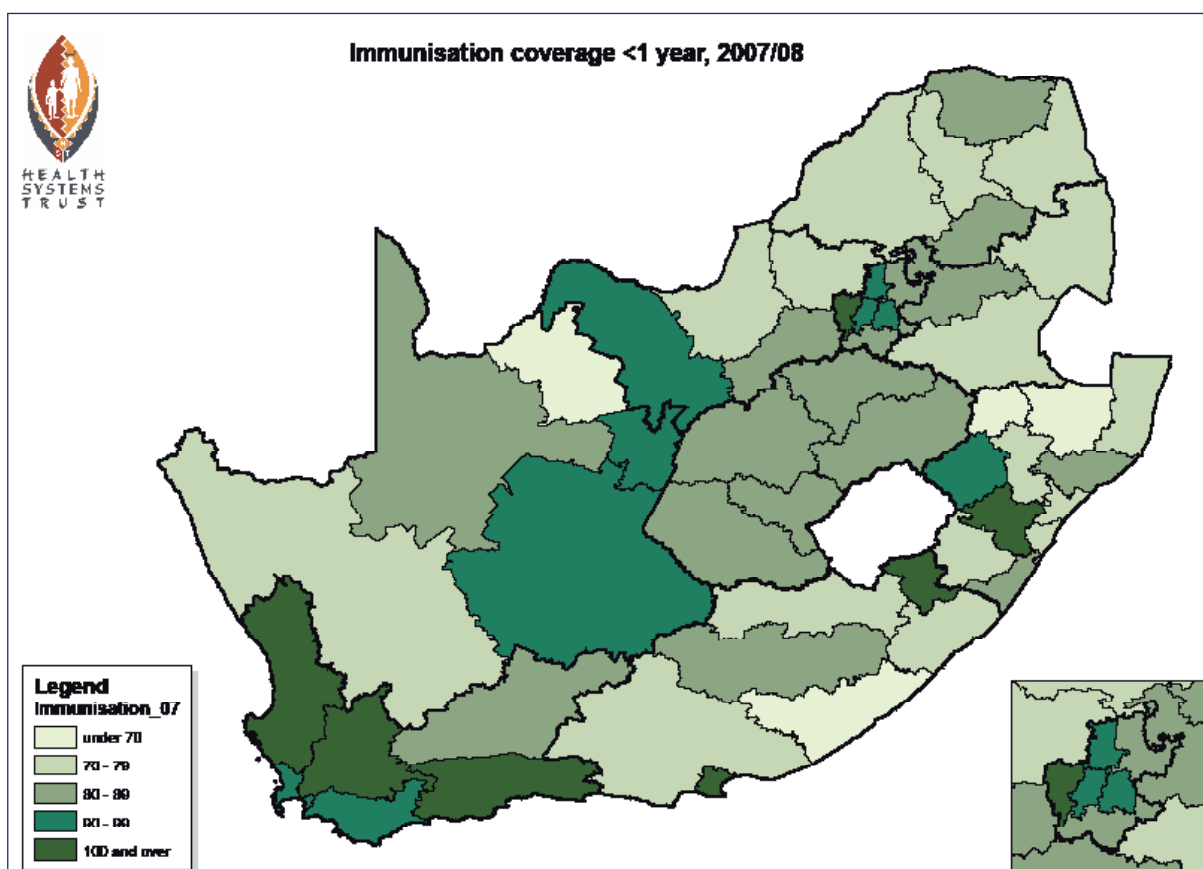
### 4.1.1 Immunisation coverage

Immunisation coverage measures the percentage of children under one year old who have received the following immunisations:

- At birth: TOPV (0), BCG
- 6 weeks: TOPV (1), DTP-HiB (1), Hep B (1)
- 10 weeks: TOPV (2), DTP-HiB (2), Hep B (2)
- 14 weeks: TOPV (3), DTP-HiB (3), Hep B (3)
- 9 months: Measles (1)

The indicator is calculated as the total number of children under one year old that have received all their immunisations up to the first measles, divided by the total population of children under one year old. This indicator is very sensitive to the denominator (population estimates).

**Map 9: Immunisation coverage in South Africa, 2007/08**

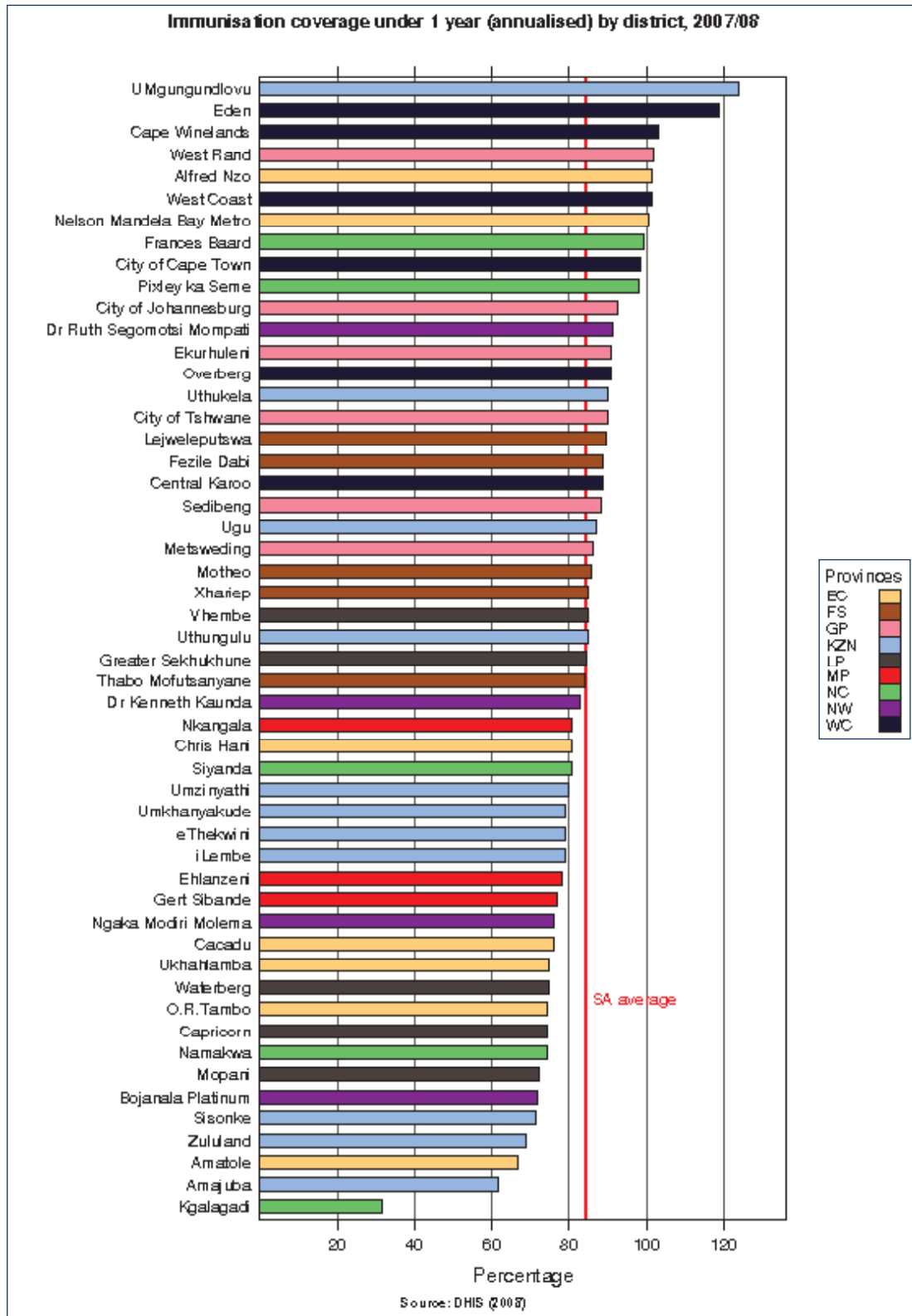


#### District View

The wide variation in immunisation coverage in 2007/08 can be seen in Map 9 and Figure 41, from a high of 123.9% in UMgungundlovu (KZN) to a low of 31.5% in Kgalagadi (NC). In the previous year, Kgalagadi district had immunisation coverage of 92.5%. The drop in immunisation coverage for 2007/08 is attributed largely to poor data quality rather than deterioration in performance.

The average immunisation coverage in the country for 2007/08 was 84.2%, which is an indication that this aspect of the PHC system is working well. Four of the districts within the top 10 were in the Western Cape, followed by two each in the Eastern Cape and Northern Cape and one each from KZN and Gauteng. Seven of these districts had an immunisation coverage of over 100%, whilst overall, 15 districts in SA had an immunisation coverage rate of more than 90% in 2007/08, resulting in a slight decline from the 2006/07 performance where 18 districts had an immunisation coverage of more than 90%. The fact that so many districts have coverage over 100%, suggests poor data quality and also probably means that the national average may be an overestimation of the true coverage. The SADHS 1998 and 2003 surveys found immunisation coverage of 55 and 64% respectively.

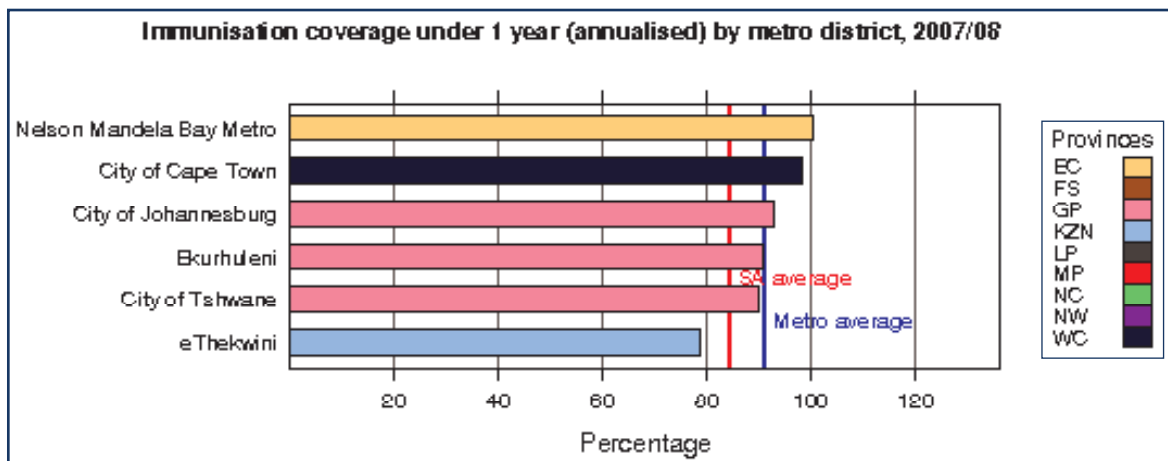
Figure 41: Immunisation coverage by district, 2007/08



**Metro View**

The average immunisation coverage in the metro districts was 90.9%, 6.7 percentage points higher than the national average. Four of the metros (City of Johannesburg, City of Cape Town, Ekurhuleni and Nelson Mandela Bay) had immunisation coverage rates of more than 90% in 2007/08. eThekweni (ranked 35) achieved a coverage of 78.8%, which is below the national average and the lowest among the metros. As indicated in previous District Health Barometers, any well resourced health district with relatively strong socio-economic areas should show performance above the national average and therefore eThekweni needs to improve its immunisation coverage.

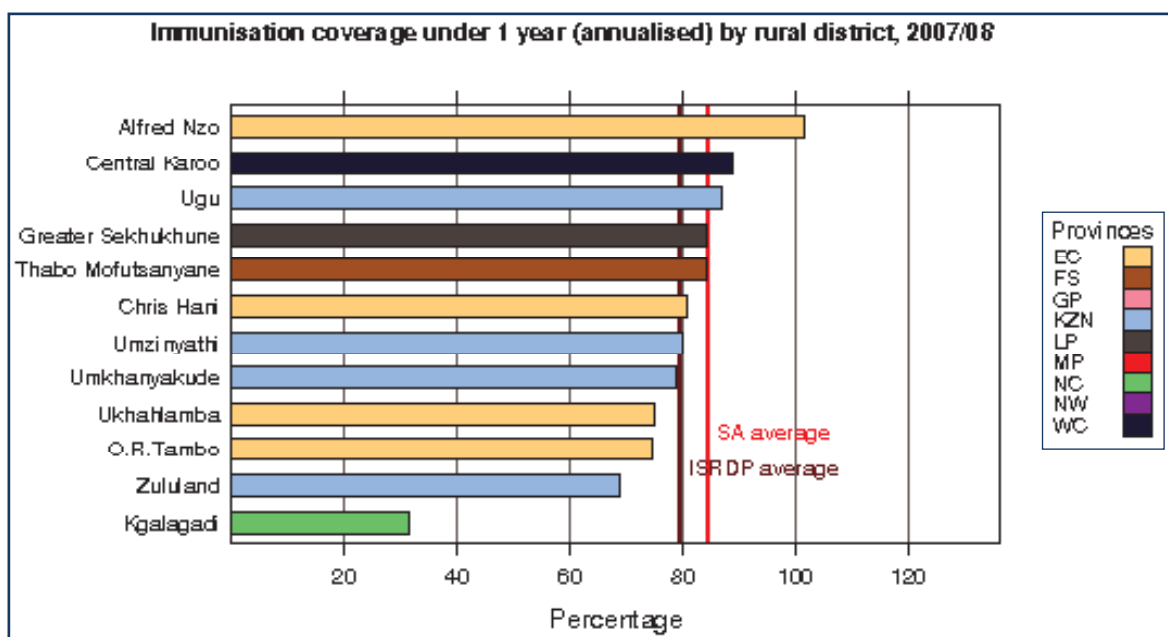
Figure 42: Immunisation coverage by metro district, 2007/08



**Rural nodes**

The average immunisation rate in the rural node districts was 79.3%, below the national average of 84.2%. Seven of the rural districts had immunisation coverage rates lower than the national average. The coverage rates ranged from a high of 101.6% in Alfred Nzo (EC) to 31.5% in Kgalagadi district (NC).

Figure 43: Immunisation coverage by rural district, 2007/08



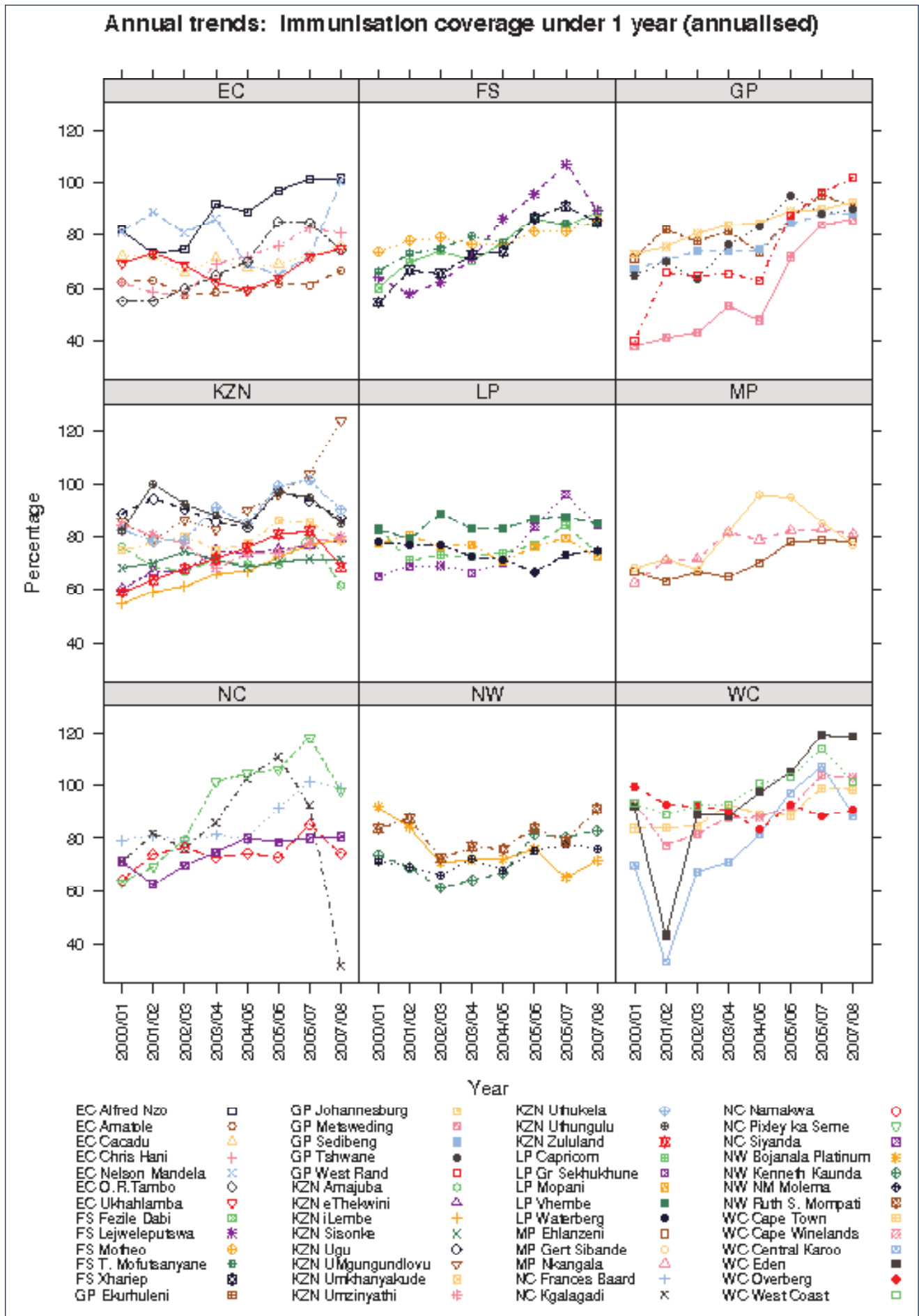
**Change and trends in immunisation coverage**

There was a marginal decline in the immunisation coverage nationally from 85.4% in 2006/07 to 84.2% in 2007/08, with 42% of districts (22 out of 52) having improved coverage. Nelson Mandela Bay Metro and UMGungundlovu both increased their immunisation coverage by more than 20 percentage points each in the last year, although there are definite inconsistencies in the data.

The continued uncertainty on the level of correctness of the under one year old population poses the problem of accurately measuring the performance of immunisation coverage. An undercount on children below one year of age could mean a measurable number of children are not accessing the public health service. It is in the best interests of the districts to work towards ensuring access to services to all children within their geographical boundaries with increased focus on mobile populations and areas of high population density. The private sector provides immunisation to a considerable number of children and is expected to report on this service; however, information from this sector is unavailable.

Figure 44 shows the trends in immunisation coverage for districts within provinces and highlights the overall improvement of coverage in Gauteng, Western Cape and Free State provinces in the last eight years.

Figure 44: Trend in immunisation coverage by province and district, 2000/01 - 2007/08



IMMUNISATION COVERAGE

### 4.1.2 Immunisation drop out rate (DTPI-3)

The immunisation drop out rate measures the percentage of children who dropped out between the first and the third dose of the DTP-Hib vaccine. It measures out of 100 children who received their first DTP-Hib vaccination, how many did not receive their third dose. The advantage of this indicator is that both the numerator and the denominator are available from routine health data and are thus not subject to the inherent complications associated with a population-based denominator, as with the immunisation coverage indicator. However, the indicator has fluctuated quite extensively over the last few years and it is difficult to determine whether this is due to poor data quality or variable service delivery.

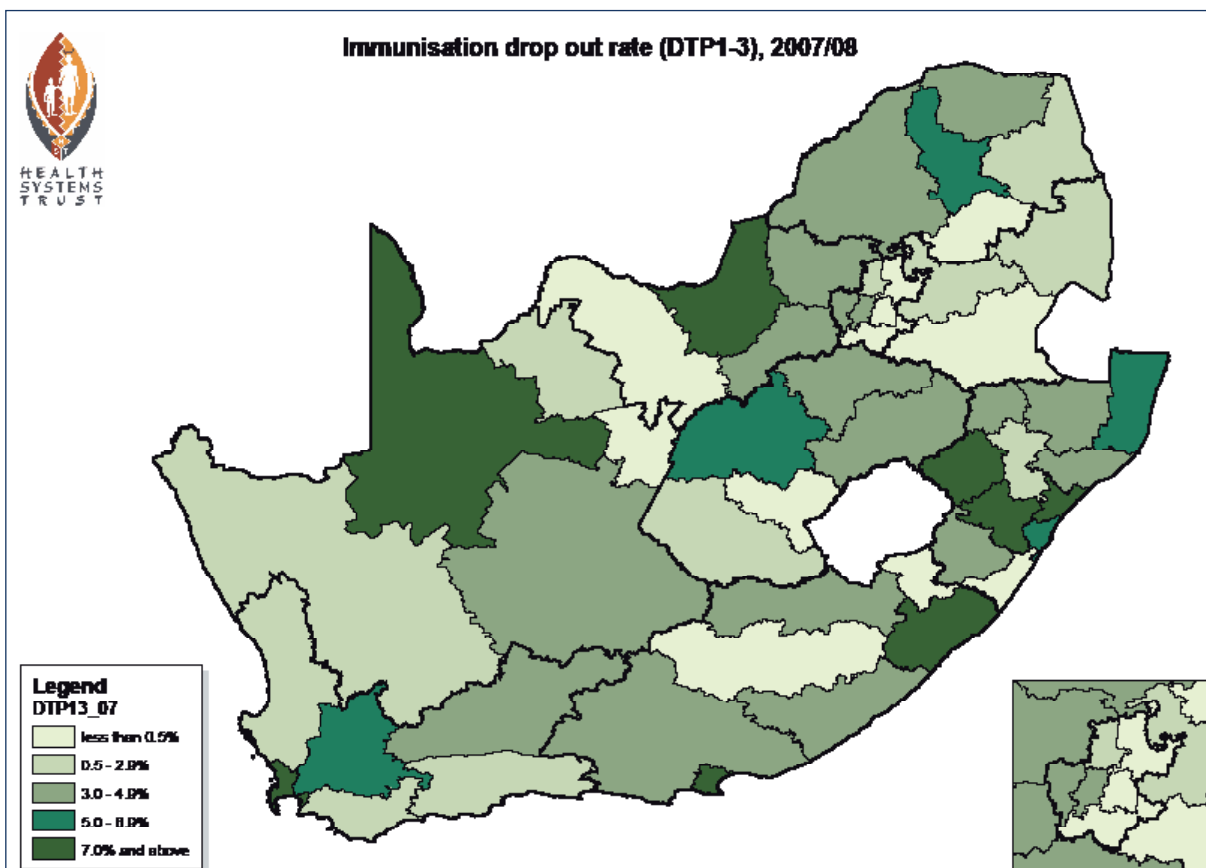
#### District View

The national average for 2007/08 was 3.4%, up from 3.2% in 2006/07. Only one district, Siyanda (NC), had a drop out rate higher than 10%, and 25 districts were below the national average in 2007/08. The districts in Mpumalanga generally had low drop out rates with the overall provincial drop out rate of 1.0%, the lowest in the country.

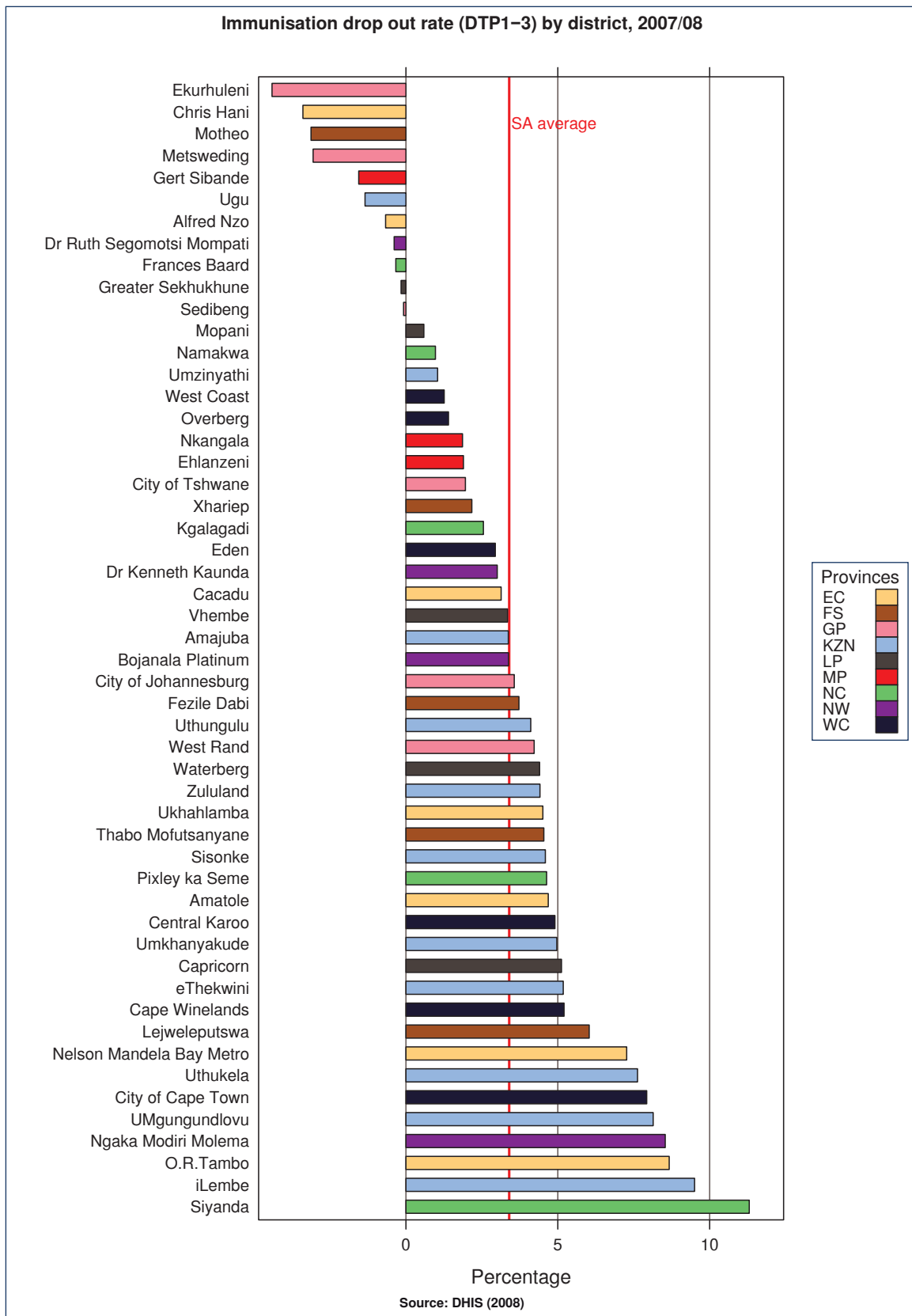
As illustrated in figure 45, a number of districts (Chris Hani, Alfred Nzo, Motheo, Sedibeng, Metsweding, Ekurhuleni, Ugu, Greater Sekhukhune,

Gert Sibande, Frances Baard and Dr. Ruth Segomotsi Mompati) showed negative drop out rates in the 2007/08 year, indicating that more children were immunised with DTP3, than DTP1, possibly as a result of inwards migration.

Map 10: Immunisation drop out rate (DTP1-3) in South Africa, 2007/08



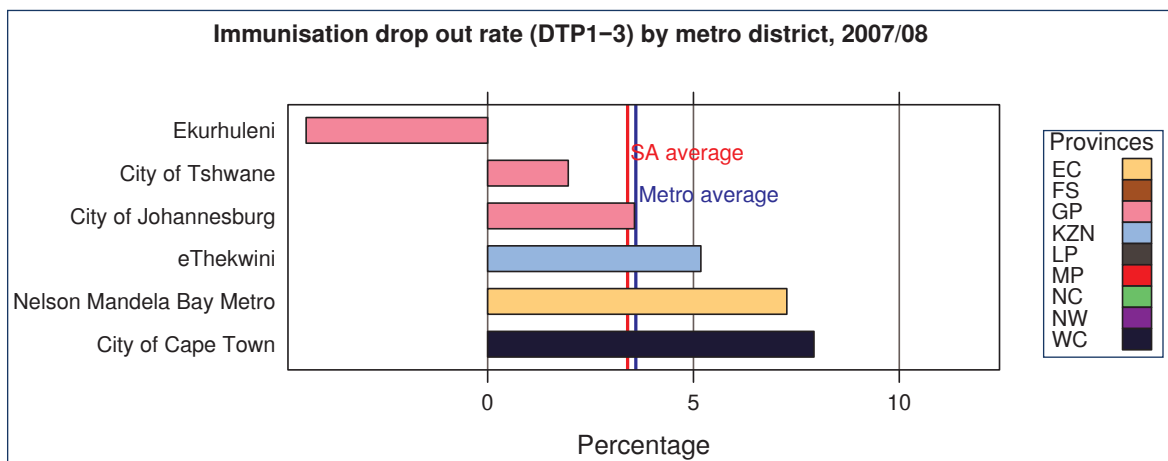
**Figure 45: Immunisation drop out rate (DTP1-3) by district, 2007/08**



**Metro View**

The metro district rates in 2007/08 varied from -4.4% in Ekurhuleni to 7.9% in the City of Cape Town. The best rates were for the three metros in Gauteng for the second year running. eThekwini, City of Johannesburg, Nelson Mandela Bay Metro and City of Cape Town all had drop out rates higher than the national average. The metro average however, was marginally higher than the national average of 3.4%.

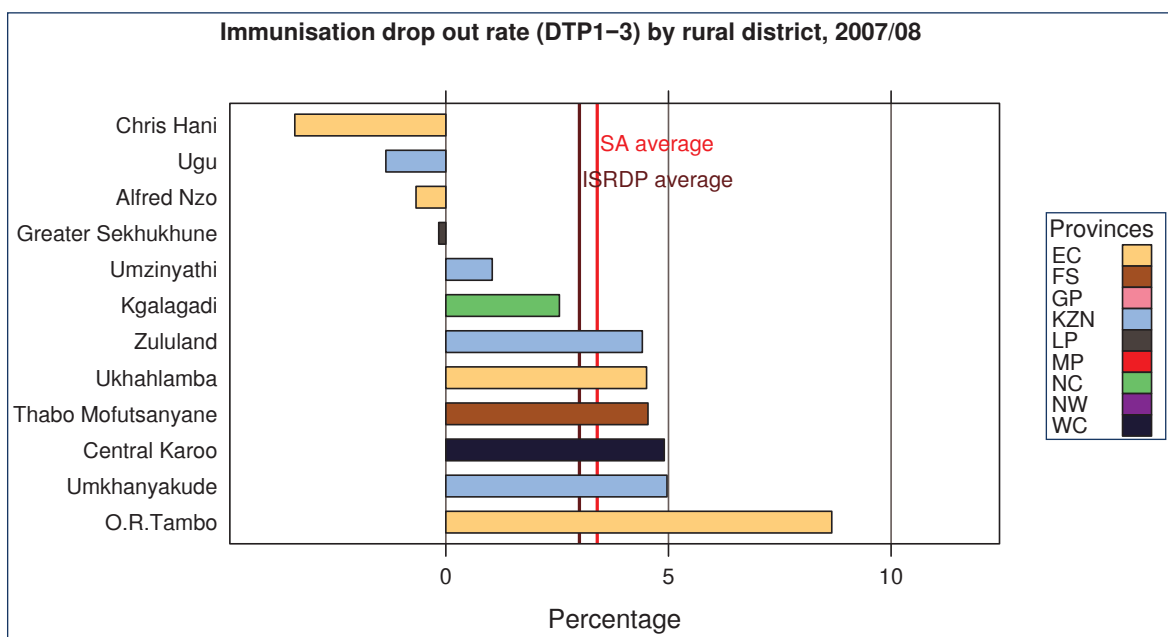
Figure 46: Immunisation drop out rate by metro district (DTP1-3), 2007/08



**Rural nodes**

The average drop out rate of the rural districts improved from 4.3% in 2006/07 to 3.0% in 2007/08 and was lower than the national average of 3.4%, with O.R. Tambo (EC) having the 3rd highest drop out rate in the country. Chris Hani (EC), Alfred Nzo (EC), Ugu (KZN) and Greater Sekhukhune (LP) districts were ranked among the top ten performing districts in SA. Ugu had a negative drop out rate for the third year running, implying that more children were given their third than their first DTP-Hib vaccination.

Figure 47: Immunisation drop out rate (DTP1-3) by rural district, 2007/08

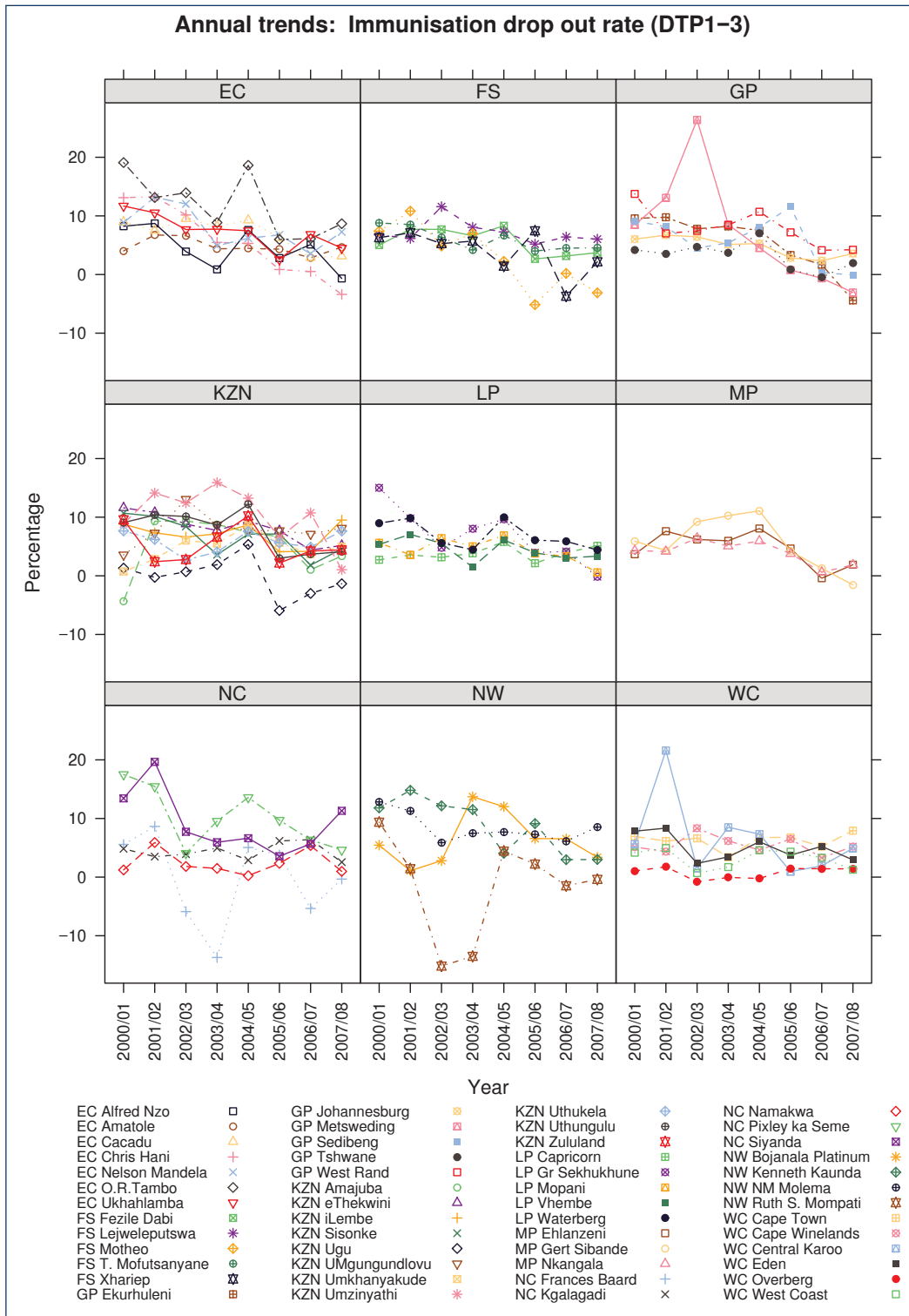


**Change and trends in immunisation drop out rate (DTP1-3)**

Overall the immunisation drop out rate in SA increased from 3.2% in 2006/07 to 3.4% in 2007/08. Nineteen districts decreased their drop out rates, while 30 districts showed increased drop out rates between 2006/07 and 2007/08. The ISRDP average improved from 4.3% in 2006/07 to 3.0% in 2007/08 whilst the metro average increased from 2.9% to 3.6%, with only one metro (Ekurhuleni) showing improvement. The overall trends by district within provinces can be seen in Figure 48, and illustrate that for some districts within certain provinces there is wide variation and fluctuation from the general trend of the majority of districts. i.e Motheo (Free State), Pixley ka Seme and Frances Baard (NC) and Dr Ruth Segomotsi Mompati (NW).



Figure 48: Trend in immunisation drop out rate (DTP1-3) by province and district, 2000/01 - 2007/08



IMMUNISATION DROP OUT RATE

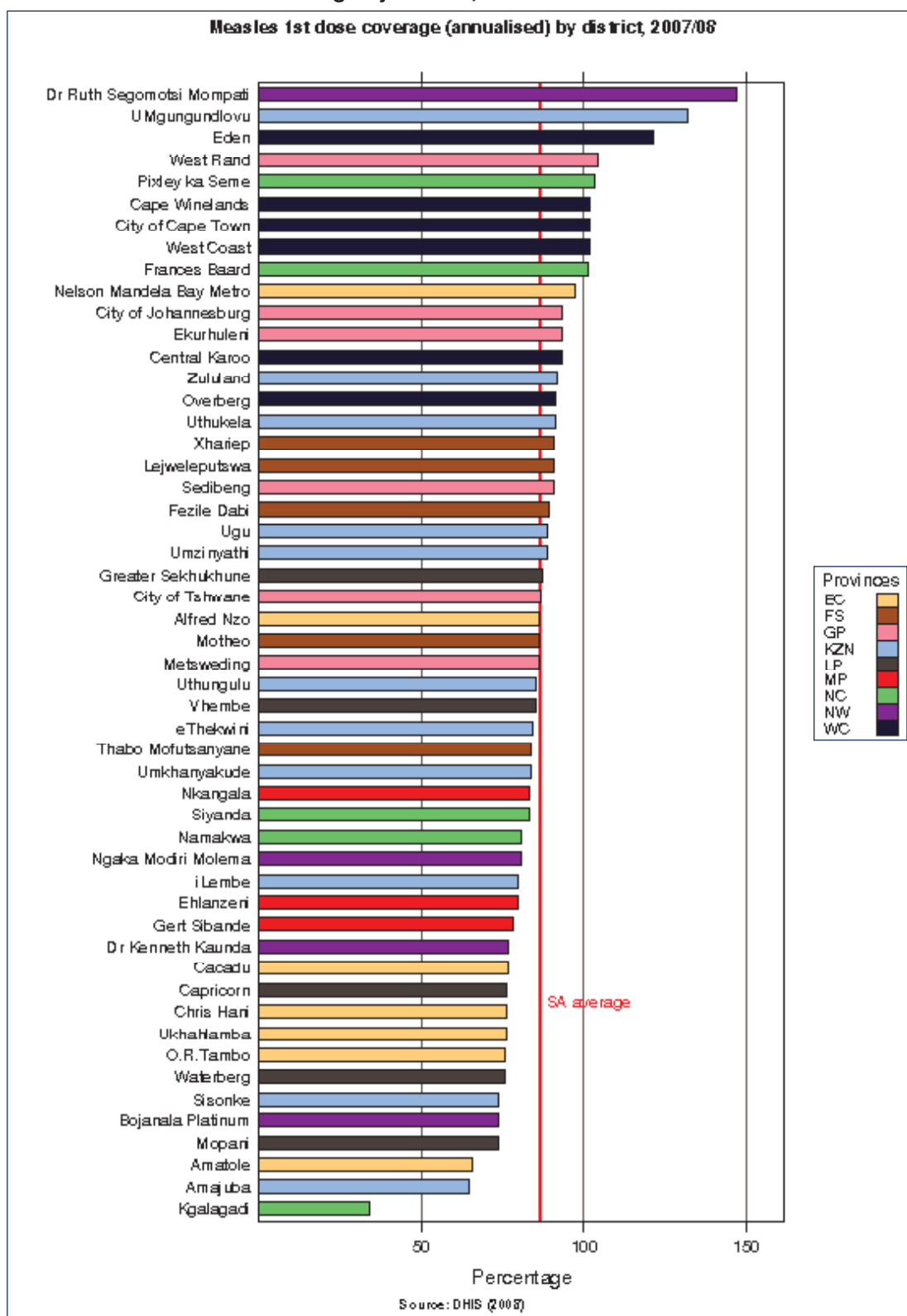
### 4.1.3 Immunisation coverage (Measles 1st dose) and drop out rate (Measles 1 – 2)

The level of attendance at primary health care facilities for preventive and promotive services declines after the first year of life. These indicators monitor whether children below the age of five have received the required two doses of measles. The proportion of children immunised against measles is one of the indicators specified under Target 5 of MDG4.

#### Measles 1st dose coverage

The wide variation in Measles 1st dose coverage in 2007/08 can be seen in Figure 49 and varied from a very high value of 147.1% in Dr Ruth Segomotsi Mompoti (NW) to a low of 33.7% in Kgalagadi (NC). The average coverage in SA for 2007/08 was 86.6% and 22 districts had coverage rates of more than 100%. The average coverage in the metro districts was 92.5% and in the rural districts was 82.5%.

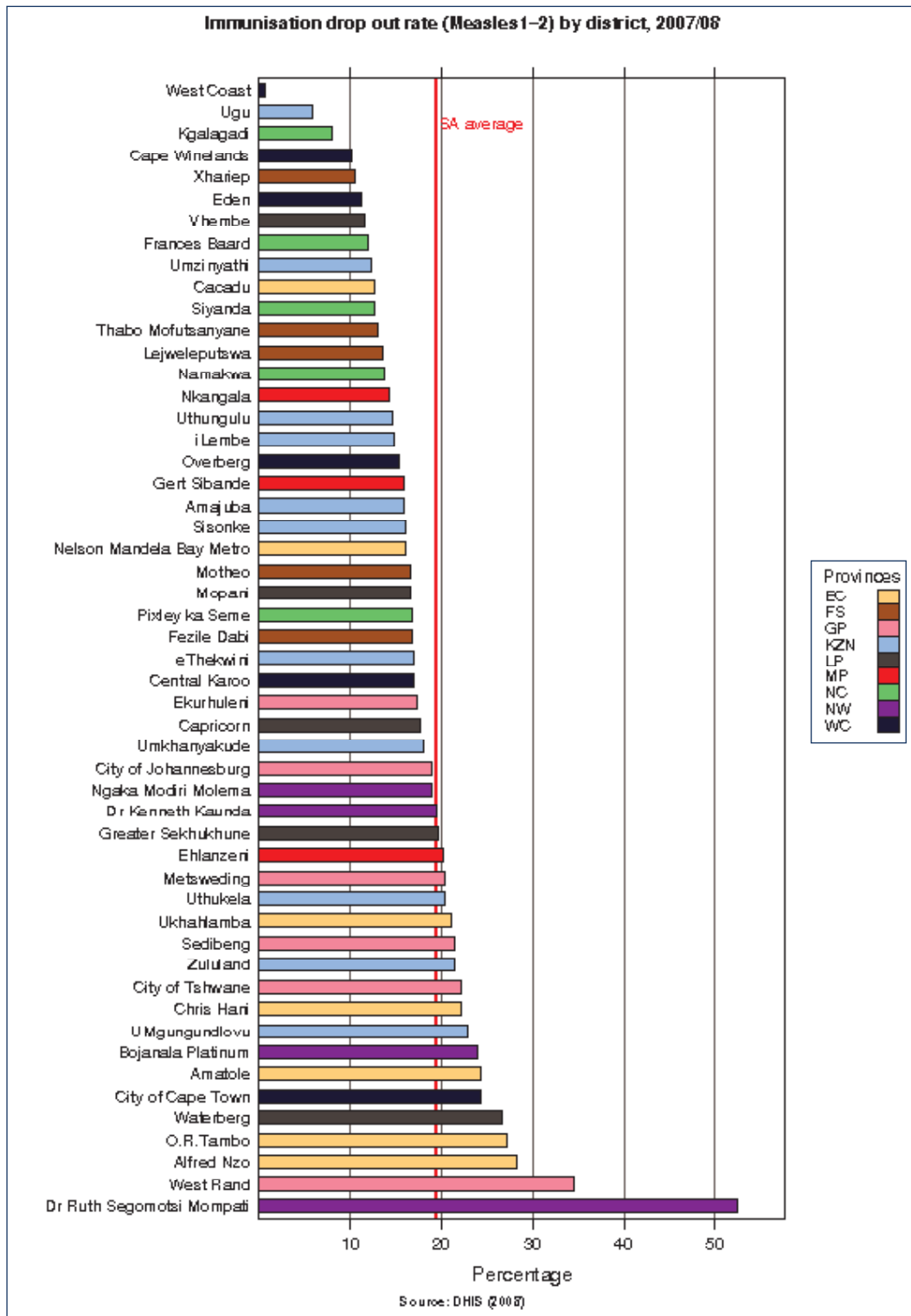
Figure 49: Measles 1st dose coverage by district, 2007/08



**Drop out rate (Measles 1 – 2)**

The measles immunisation drop out rate monitors the drop out between the first and second measles vaccine given at 9 months and 18 months of age respectively. West Coast district (WC) had the lowest district measles drop out rate of 0.6% in 2006/07 and the Free State province had the lowest overall provincial measles drop out rate of 14.7%. The high drop out rate in North West was largely due to the high drop out rate of 52.4% (the highest in the country) in Dr Ruth Segomotsi Mompoti in 2007/08. Although U Mngungundlovu district achieved exceptional rates of immunisation coverage in children below the age of one year (DTP1-3), the measles drop out rate in this district was 21.5% (second highest in the country) in 2007/08.

Figure 50: Immunisation drop out rate (Measles1-2) by district, 2007/08



#### 4.2 Caesarean Section Rate

**Khosi Nyawo**

The Caesarean section rate measures the proportion of deliveries in which a Caesarean section was performed. This is a facility based indicator and not a population based indicator. In other words it uses deliveries that take place in a facility (clinic, health centre or district hospital) as the denominator as opposed to using all deliveries (both facility and home deliveries) as the denominator. The numerator is the number of Caesarean section operations done in district hospitals. On the one hand it under-estimates the real rate as many complicated deliveries end up as Caesarean sections at secondary and tertiary level hospitals with the result that the numerator is too low. On the other hand there are a number of normal deliveries that take place outside of the formal health sector (home deliveries) and thus there is an over-estimate of the real rate as the denominator is too low.

**District View**

In 2007/08 the national average for district hospitals in South Africa was 15.6%<sup>15</sup>. This excluded any Caesarean section operations done in level 2, 3 and 4 hospitals. In 2006/07 the national average for district hospitals was 15.0%.

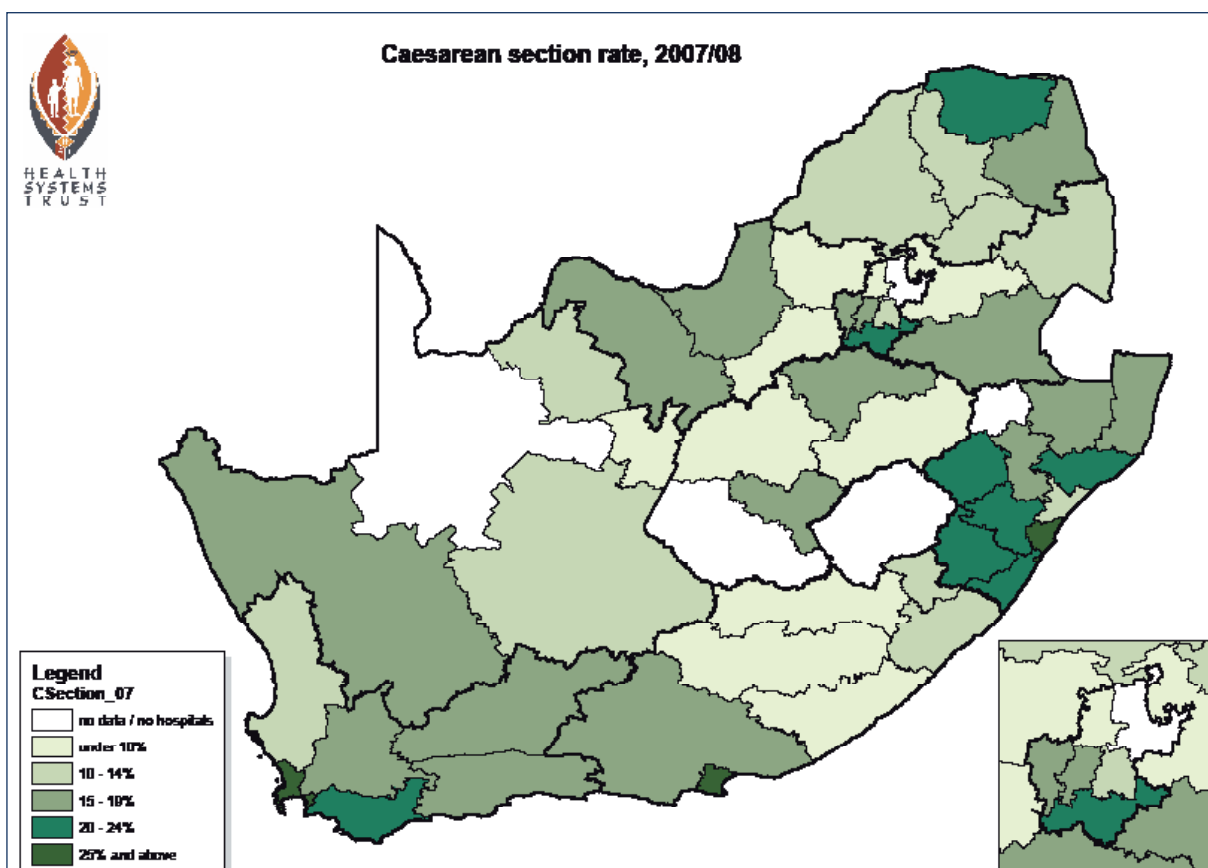
As can be seen in Map 11 and Figure 51, there was a wide variation in the Caesarean section rates among the 52 districts in 2007/08. At the top end of scale was Nelson Mandela Bay Metro (EC) with a rate of 32.8% whilst at the low end was Frances Baard (NC) with 2.0%. There are no district hospitals in Metsweding (GP) resulting in no data for this district. There was missing data from hospitals in Xhariep (FS) and Siyanda (NC) for the past two years and from Amajuba (KZN) for the past five years. There are also several months of data missing for district hospitals in Dr Kenneth Kaunda (NW) and Namakwa and Kgalagadi districts in the Northern Cape. All these cases suggest problems with the data collection processes and require investigation at the hospital and district levels to remedy the situation.

Six of the ten districts with the highest Caesarean section rates were in KwaZulu-Natal. Within these districts there were also variations among the individual district hospitals.

There were eleven districts with Caesarean section rates above 20% and ten districts (excluding Amajuba, Siyanda and Xhariep) with Caesarean section rates below 10%. Caesarean sections are one of the components of essential obstetric care (EOC) and such wide differences are indicative of very different levels in the quality of obstetric care and inequities in the health system around the country. There were also wide variations between districts in most of the provinces. These variations need to be investigated and the classification of hospitals in some of the provinces needs to be reviewed.

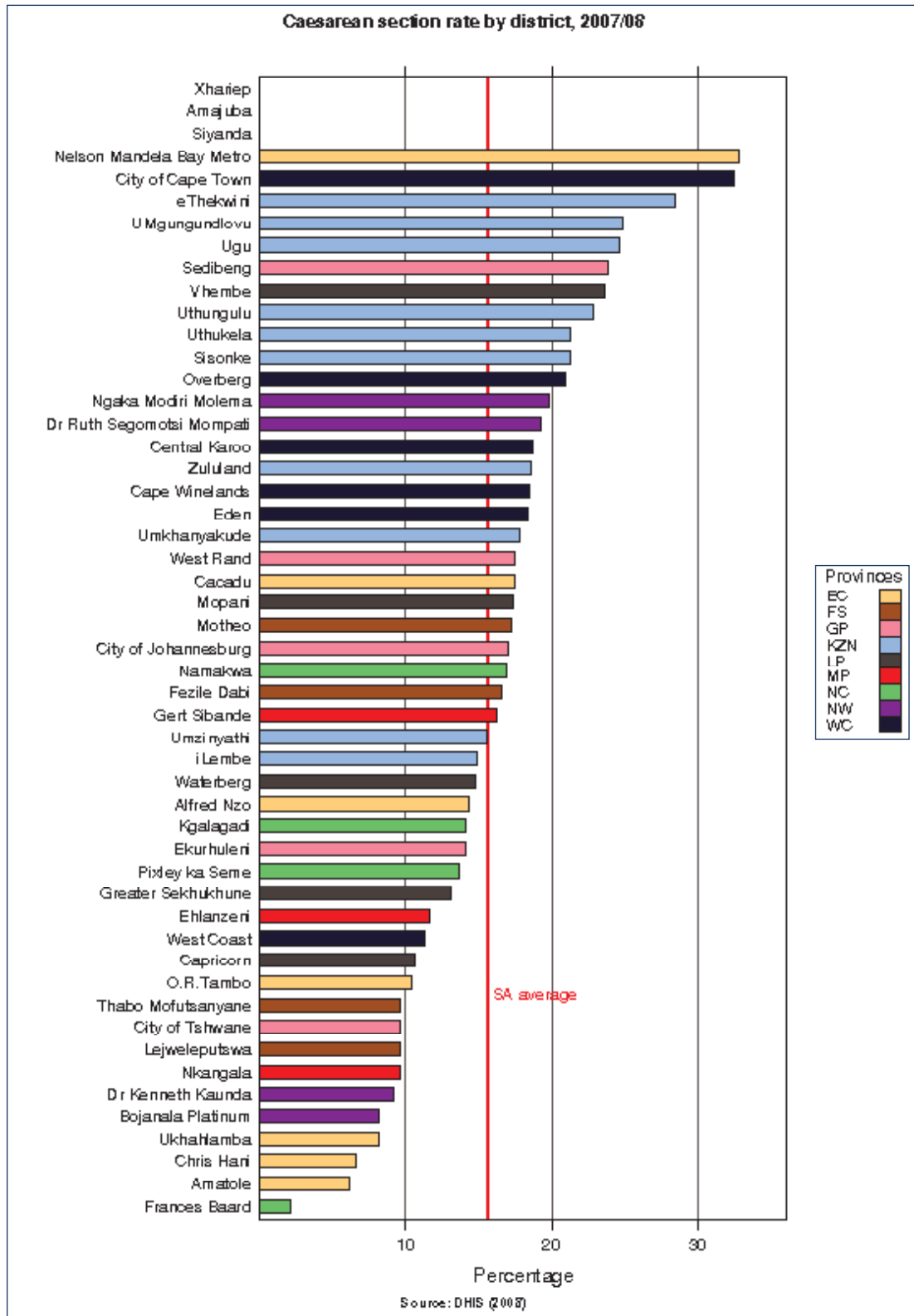
Frances Baard was the only district with an extremely low Caesarean section rate of 2.0%. The probable cause for this is that most of the Caesarean sections are being carried out at higher level hospitals. This results in inefficient use of scarce resources and unnecessarily pushes up the costs of health care.

**Map 11: Caesarean section rates in South Africa, 2007/08**



<sup>15</sup> The latest (2006) national targets for Caesarean section rates as stated by the Department of Health range from 12.5% for district hospitals, 22% for regional hospitals and 32% for central hospitals. Source: Health Indicators Update: Hospital Efficiency. Department of Health, Cluster Monitoring and Evaluation Directorate. 2006.

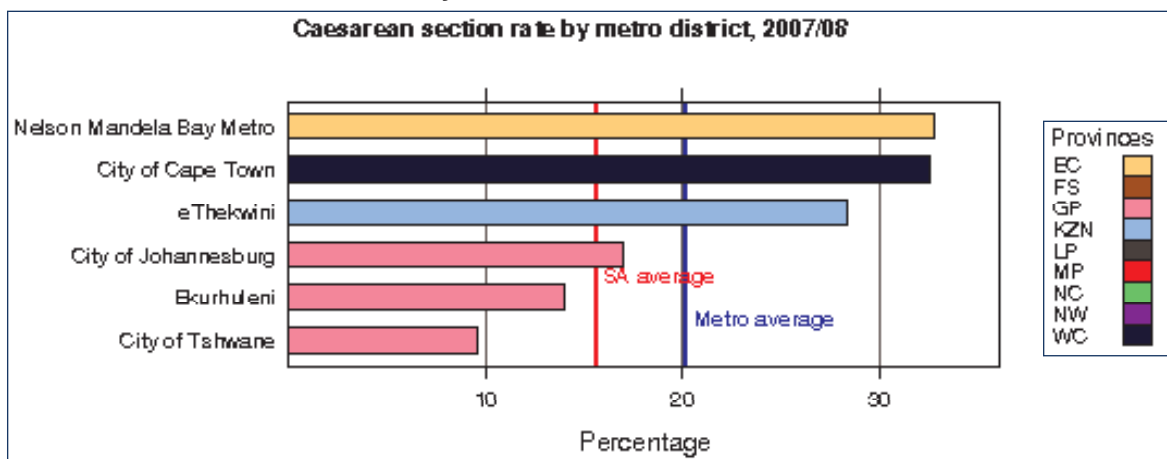
Figure 51: Caesarean section rates by district, 2007/08



**Metro View**

The metro average of 20.2% in 2007/08 was far higher than the South African average. This is largely due to the very high Caesarean section rate in Nelson Mandela Bay Metro of 32.8 % and the high rate in the City of Cape Town (32.5%). Five of the six metros were above 10%, four were above the national average and only the City of Tshwane had a low rate of 9.6%. The low Caesarean section rate in the City of Tshwane indicates that there may be data quality issues or it may mean that many cases are referred to a higher level of care (academic hospital). This may be due to limited resources and capacity in the district hospitals.

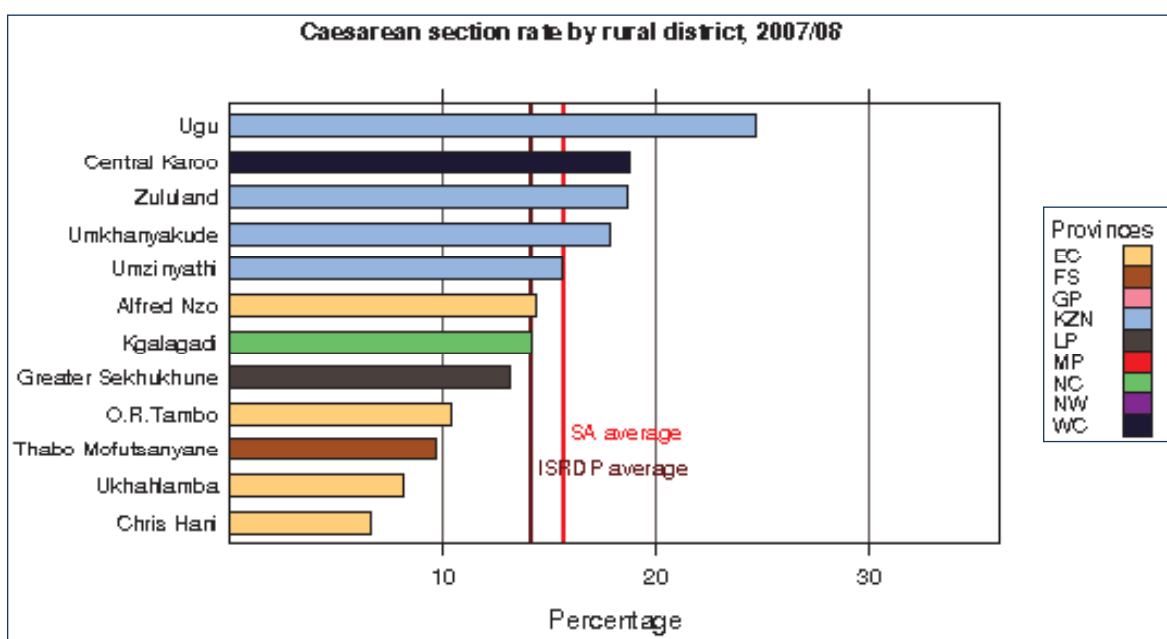
Figure 52: Caesarean section rate by metro district, 2007/08



**Rural Nodes**

In 2007/08 the average Caesarean section rate in the rural nodes was 14.1% as opposed to the national average of 15.6%. All of the rural KwaZulu-Natal districts and Central Karoo (WC) were above (or very close to) the national average, with all the Eastern Cape districts below the national average. The Caesarean section rate for Ugu district remains higher than any other rural node district. This may be due to cross border flow from the Eastern Cape, local capacity to perform Caesarean sections with fewer cases referred to higher levels or poor compliance to protocols. The reasons for the high rate in Ugu needs review.

Figure 53: Caesarean section rate by rural district, 2007/08



**Change and trends in Caesarean section rate**

Since 2000/01 there has been a three percentage point increase overall, with a gradual increase apparent in most districts. All of this increase has taken place since 2003/04 when there was an average Caesarean section rate of 12.5% compared to 15.6% in 2007/08. The Caesarean section rate in the rural nodes increased from 10.2% to 14.1% and in the metros from 18.7% to 20.2% over the same time period.

Between 2006/07 and 2007/08 there was an increase of 0.6 percentage points in the national Caesarean section rate. During this time 34 districts showed increased rates with the largest increase, 9.6 percentage points, in the Nelson Mandela Bay Metro (EC). There were five districts which had increases of more than three percentage points and only one district, Uthungulu (KZN) with a decrease of more than two percentage points.

The general increasing trend in the Caesarean section rate may be due to the increasing numbers of women who are ill with HIV related problems. However, it requires some research or case studies to ascertain the real reasons for this as there are both health risks and health systems costs associated with increased rates of Caesarean sections.

Figure 54: Trends in Caesarean section rate in district hospitals by province and district, 2000/01 - 2007/08

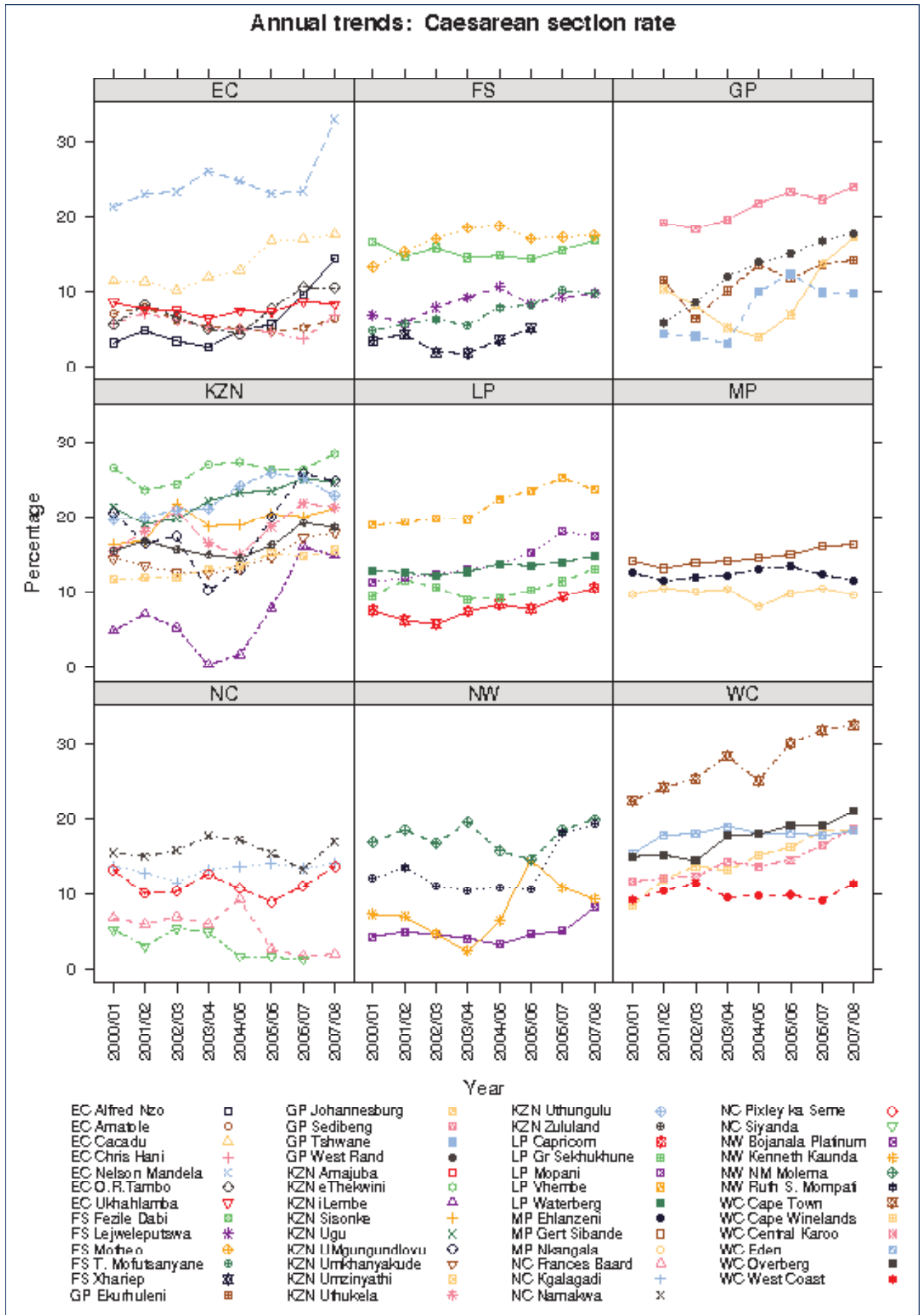
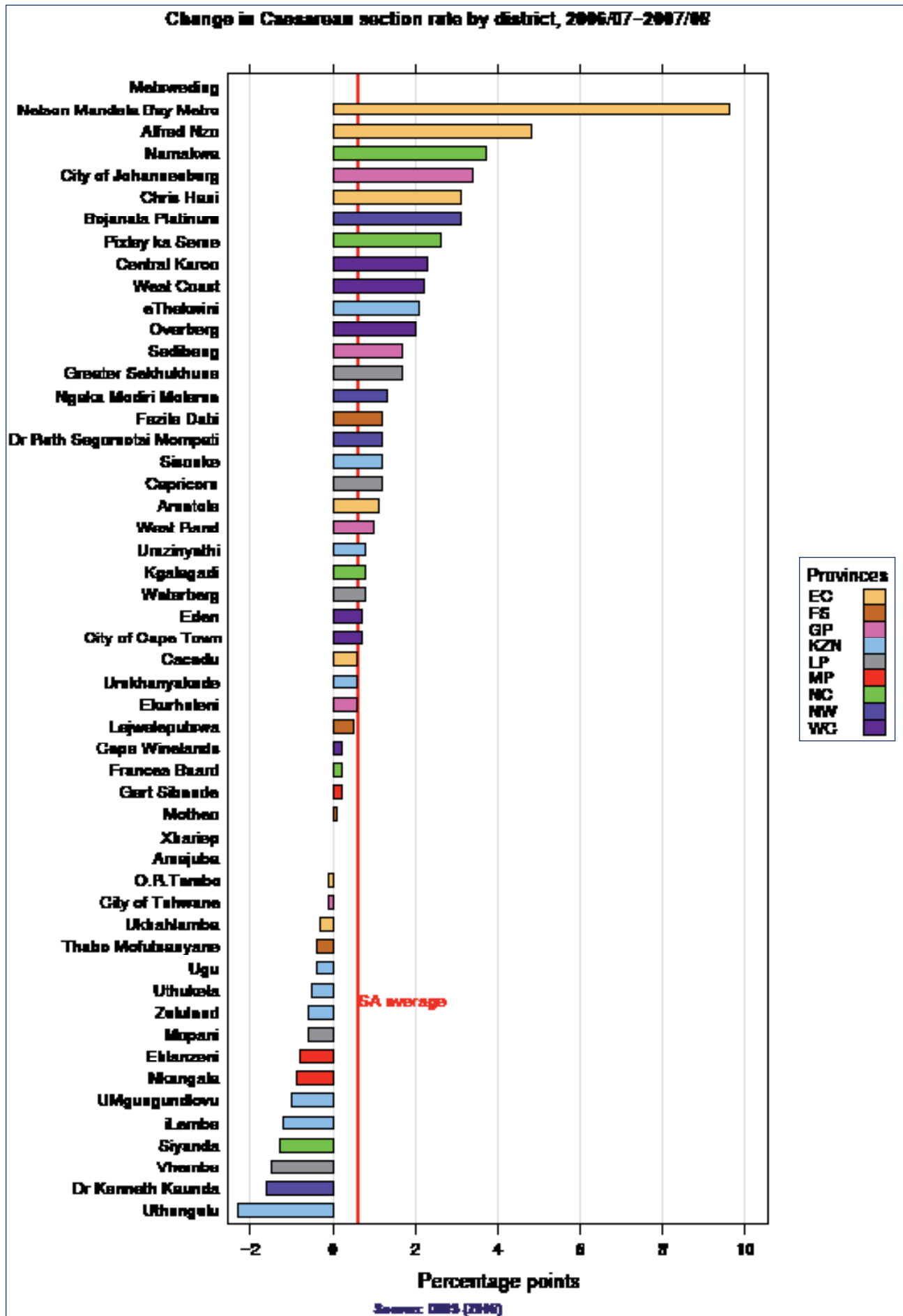


Figure 55: Change in Caesarean section rate by district, 2006/07 - 2007/08





### 4.3 Male Condom Distribution Rate

Marion Stevens

The male condom distribution rate is the number of condoms distributed via public health facilities by the Departments of Health in a year to men 15 years and older. The average number of condoms distributed in SA was 11.8 per man in 2007/08.

#### District View

The variation in condom distribution is shown in Figure 56 and varied from 55.2 condoms per man per year in Cape Town, which for a number of years has by far been the most proactive district in the country, to 1.7 in Kgalagadi district. The next lowest condom distribution rates in the country were in Motheo (FS) with a rate of 4.1 and Sedibeng (GP) with a rate of 4.6. Mopani (LP) had the second highest distribution rate in South Africa at 17.3 condoms per man per year.

Map 12: Male condom distribution rate in South Africa, 2007/08

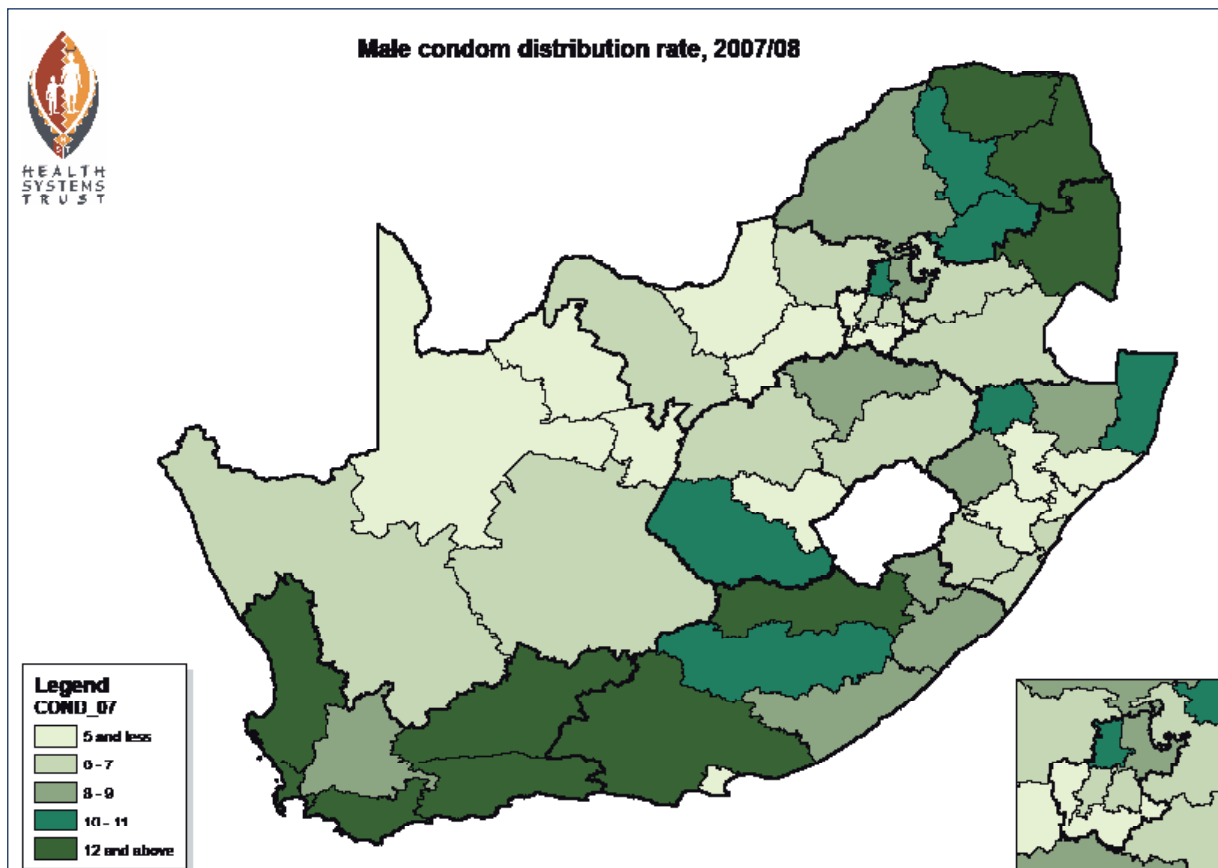
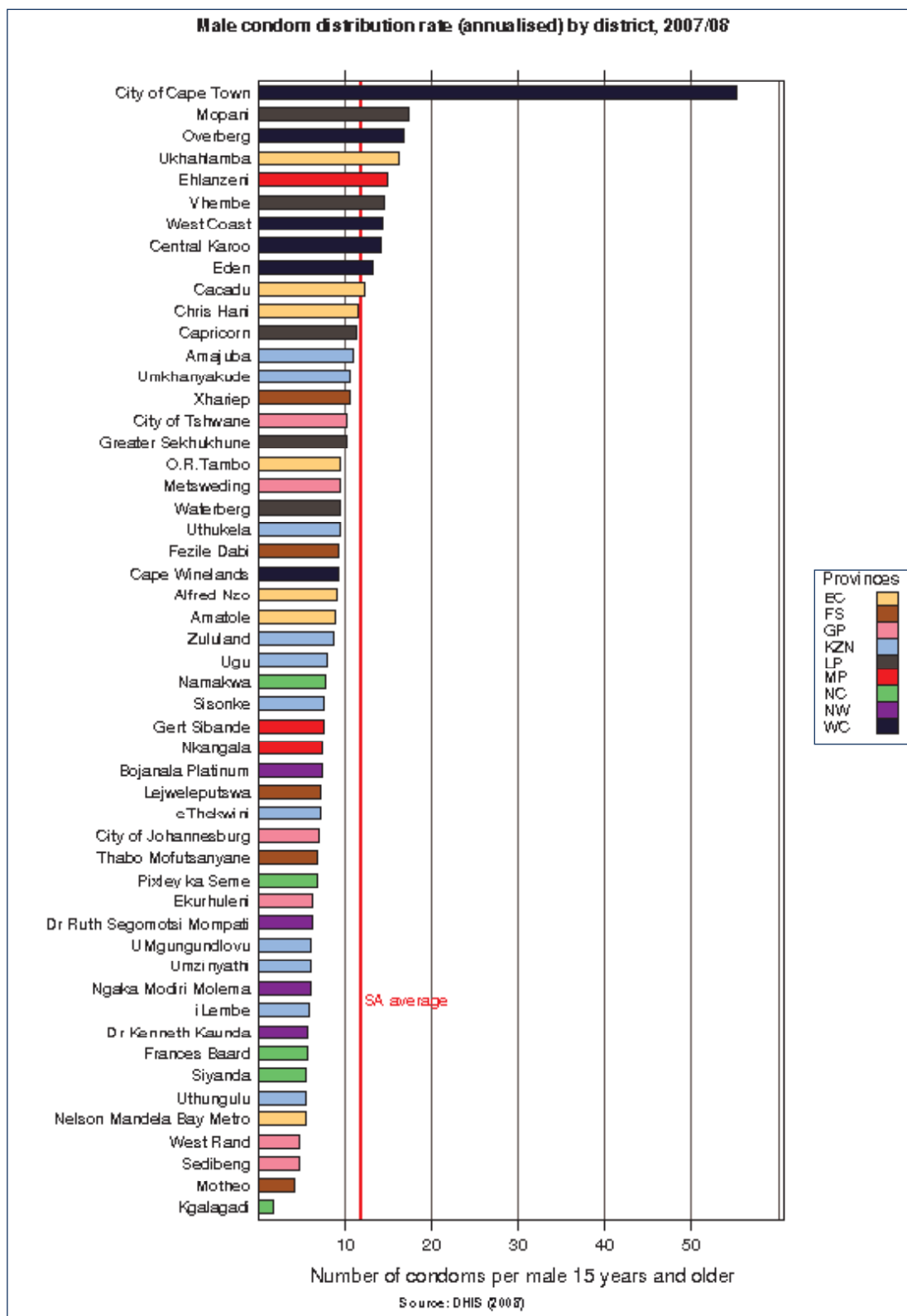


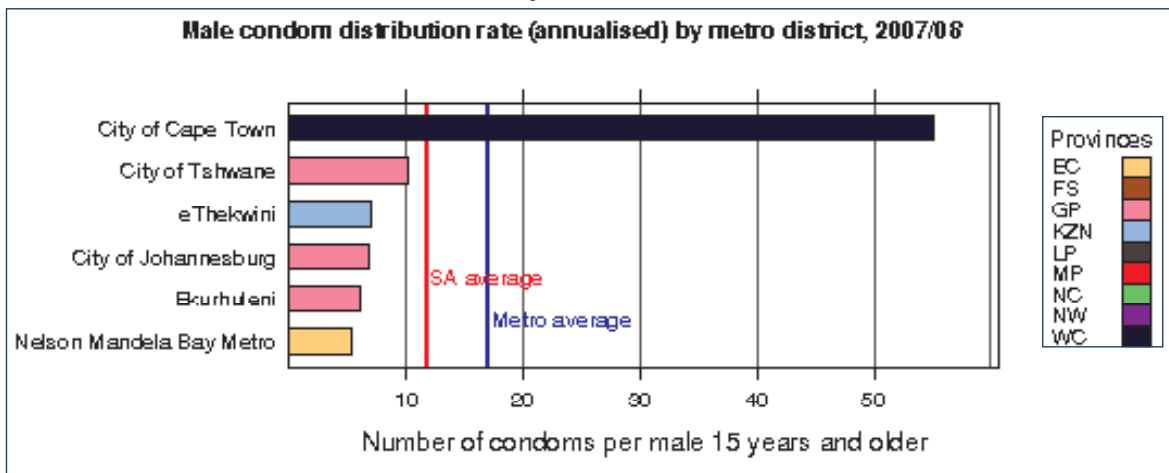
Figure 56: Male condom distribution rate by district, 2007/08



**Metro view**

All the metro districts continued to perform below the SA average in 2007/08, with the exception of Cape Town, which distributed ten times as many condoms (55.2) as Nelson Mandela Bay Metro (5.3). Ekurhuleni only distributed 6.2 and City of Johannesburg 6.8 condoms per male, less than many of the rural districts and below the rural district average.

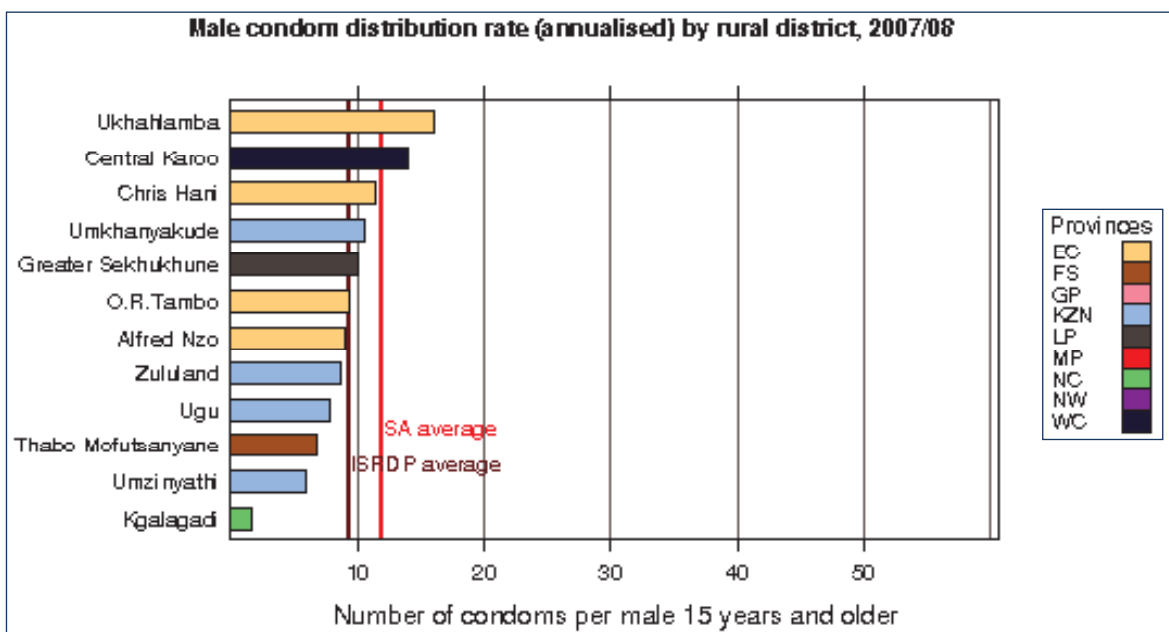
**Figure 57: Male condom distribution rate by metro district, 2007/08**



**Rural Nodes**

The average number of condoms distributed for each male in the rural districts in 2007/08 was 9.2 and has decreased from 9.8 in 2006/07. Only two of the rural districts, Ukhahlamba and Central Karoo, were above the national average in 2007/08.

**Figure 58: Male condom distribution rate by rural district, 2007/08**



**Change and trends in condom distribution**

As can be seen in Figure 59, the City of Cape Town has been the overall leader in condom distribution in the country, particularly in the last three years. NGOs working in the HIV/AIDS sector and the City of Cape Town have taken the initiative to work together to dramatically scale up condom distribution in the metro over the three year period, using methods which were proven to be successful in Khayelitsha in 2005. This success can and should be emulated by other districts in their HIV/AIDS prevention strategies.

In 2007/08 the City of Cape Town had the highest increase in SA, by distributing 8.9 more condoms per man per year than in 2006/07. As a result of this, the average distribution in the Western Cape province increased from 33.4 in 2006/7 to 40.5 condoms per man per year in 2007/08, with the West Coast district increasing from 8.3 male condoms distributed in 2006/07 to 14.3 in 2007/08.

The incidence of new STIs treated in the Western Cape has decreased from 3.4% in 2004/05 to 2.5% in 2007/08 whilst the STI incidence in the City of Cape Town decreased from 3.7% to 2.5% over the same time period, which could partially be attributed to the improved distribution of condoms.

In 2007/08, the average rate of male condom distribution in the rural districts in 2007/08 decreased from 2006/07 by 0.6 condoms per man per year to 9.2, but had increased from 7.5 in 2003/04. Eight of the 12 rural districts showed a decrease in 2007/08, which is of concern in terms of HIV prevention.

Figure 59: Change in male condom distribution rate by district, 2006/07 - 2007/08

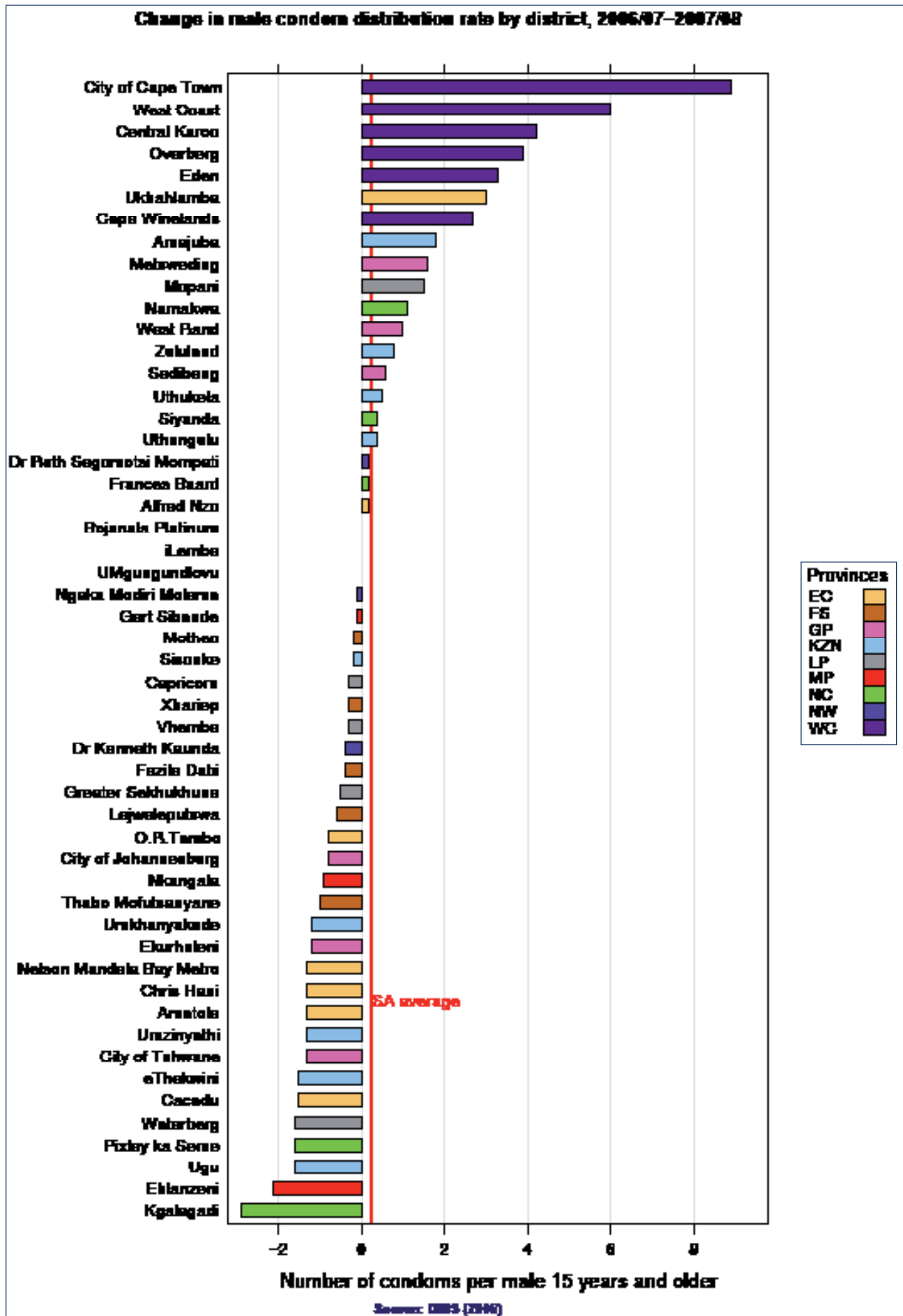
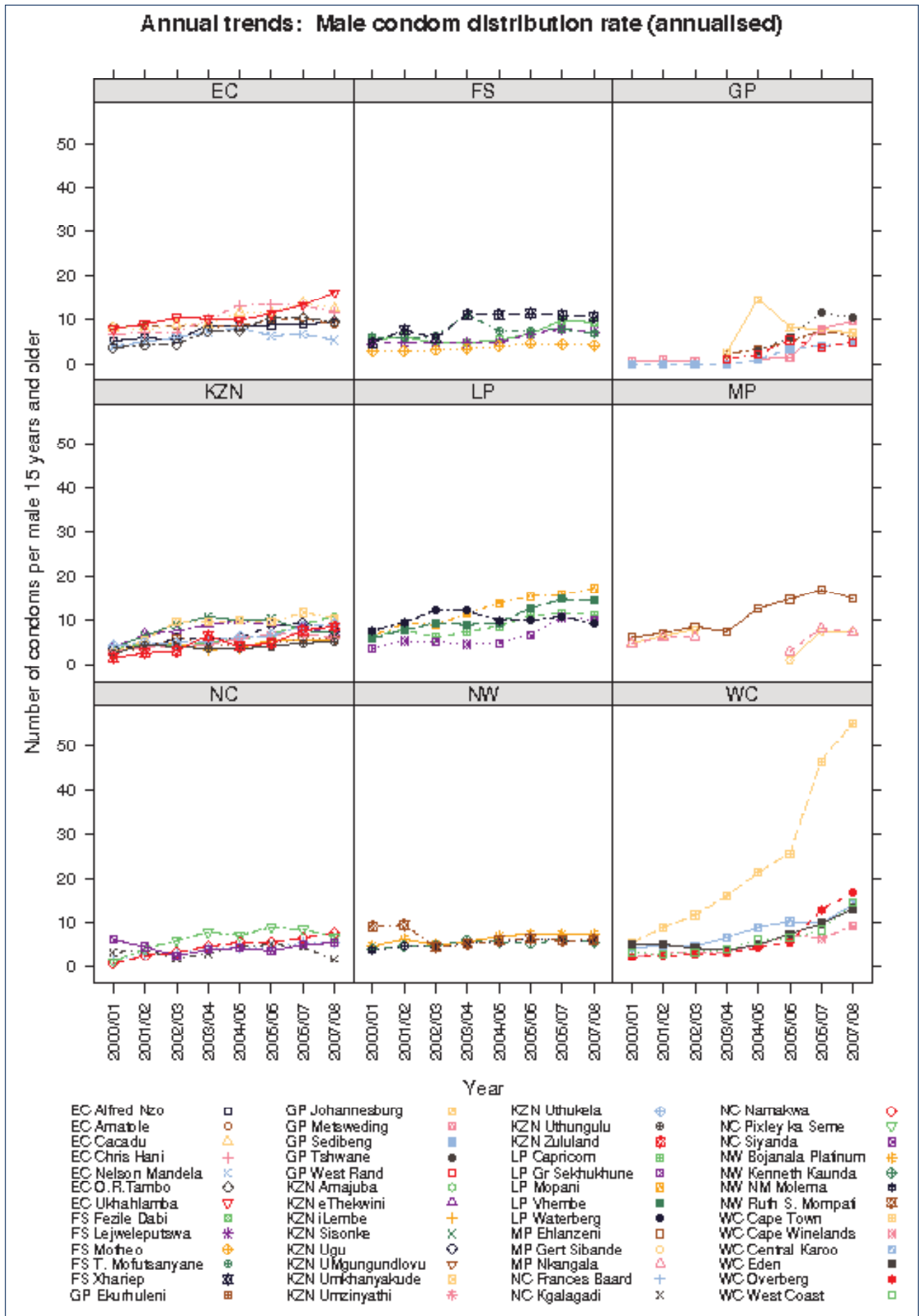


Figure 60: Trends in male condom distribution rate by province and district, 2000/01 - 2007/08



## 4.4 PMTCT Indicators

Tanya Doherty

Reducing maternal and child mortality are important Millennium Development Goals (MDGs). However, South Africa is currently not on track to meet either of these goals. Despite overall improvements in the health system, South Africa has seen no significant change in child mortality between 1990 and 2007. In 1990 the under-5 mortality rate was estimated at 60 per 1 000 live births and in 2007 it was estimated at 59. The MDG target for South Africa by 2015 is 20. The lack of improvement in child mortality in South Africa is largely due to the HIV epidemic, specifically the transmission of HIV from mother to child (MTCT). The maternal mortality ratio for South Africa was estimated to be 400/100 000 births in 2005 and is also considered to be rising<sup>16</sup>. Preventing mother-to-child transmission of HIV (PMTCT) has been recognised as an essential intervention in the fight against HIV/AIDS as well as improving maternal and child mortality. The imperative to provide an effective PMTCT programme is particularly great in South Africa where 28% of pregnant women attending public sector antenatal clinics in 2007 were HIV infected<sup>17</sup>.

The National Strategic Plan for HIV, AIDS and STIs, 2007-2011, recognises PMTCT as a mainstay of the response against HIV and AIDS in children and the Plan has a target to reduce MTCT to less than 5% by 2011. Since 2002 the South African Department of Health has been implementing a PMTCT programme with a set of core activities. These core activities form a continuum from prevention of HIV in women through to care and support for HIV infected women and infants. Until 2008 the antiretroviral component of the programme included a single dose of nevirapine which is estimated to reduce peri-partum transmission to around 12%<sup>18</sup>. From March 2008, the Department of Health amended the PMTCT protocol to include dual therapy for pregnant women<sup>19</sup>. This revised protocol is estimated to reduce peri-partum mother to child transmission to around 5-6%<sup>20</sup>. However, to date the National Indicator Data Set (NIDS) has not been amended to accommodate this change in the clinical protocol, further adding to the poor management of PMTCT data.

Despite the high burden of HIV and the importance and priority of the PMTCT programme, management at all levels have not monitored the programme adequately. Most of the indicators continue to be plagued by major data collection and quality issues. Generally the data underlying the PMTCT programme is less than optimal, specifically the nevirapine uptake in mothers and children. This is indicative of management neglect of the programme from national to facility level.

A number of the larger specific data issues are described. All of the PMTCT indicators for the Western Cape in the DHIS have been replaced with data supplied by the province from another information system. This is because the correct data were not correctly included in the national DHIS database. The Gauteng data for the HIV testing rate for 2007/08 were unusable due to problems in the denominator. Data in the DHIS were replaced by edited data from the province. In Limpopo high values for Vhembe and Waterberg districts (with rates of over 100% found for the proportion of ANC clients tested) were due to denominator issues.

### 4.4.1 Proportion of antenatal clients tested for HIV

In order to access PMTCT interventions a pregnant woman needs to know her HIV status, thus HIV testing is seen as the entry point into PMTCT care. This indicator measures the proportion of women who attend antenatal care that are tested for HIV. South Africa has a high antenatal coverage rate of 92% (2003 SADHS)<sup>21</sup> which, if HIV testing is well integrated within antenatal care, should result in high HIV testing coverage amongst antenatal clients. The target for antenatal HIV testing within the National Strategic Plan 2007-2011 is to reach a coverage of 95% by 2011.

16 UNICEF. The State of the World's Children 2009. Maternal and Newborn Health. New York, UNICEF, 2008. URL: <http://www.unicef.org/publications/>.

17 National Department of Health. National HIV and Syphilis Antenatal Sero-prevalence Survey 2007. Pretoria, South African Department of Health, 2008. An addendum to the antenatal survey results was released on 12 May revising the methodology and values of the survey results with no age weighting. These new values have been included in the Excel data file that is included in the CD that comes with this publication, however it was too late to update all the graphs and figures in this publication. Addendum for published 2007 National HIV and Syphilis prevalence survey report. URL: <http://www.doh.gov.za/docs/addendum-tables-f.html>.

18 Guay, L.A. et al. Intrapartum and neonatal single-dose nevirapine compared with zidovudine for prevention of mother-to-child transmission of HIV-1 in Kampala, Uganda: HIVNET 012 randomised trial. *Lancet*. 354 (9181): 795-802 (1999).

19 This includes AZT from 28 weeks gestation and single dose of nevirapine during labour (or HAART if the CD4 count is below 250 or if the woman has stage IV disease.) Infants receive a single dose of nevirapine and AZT for 7 days or for 28 days if mother has not received adequate antenatal cover with ARVs.

20 Lallamant, M. et al. Single-Dose Perinatal Nevirapine plus Standard Zidovudine to Prevent Mother-to-Child Transmission of HIV-1 in Thailand. *N Engl J Med*. 351 (3): 217-228 (2004).

21 Department of Health, Medical Research Council, OrcMacro. South Africa Demographic and Health Survey 2003. Pretoria: Department of Health; 2007. URL: <http://www.doh.gov.za/docs/misc/sadhs-f.html>.

## District view

Overall there have been impressive improvements in HIV test uptake across the country with the national average increasing from 69% to 80%. All districts achieved a testing rate of more than 60% with the exception of Metsweding (GP) which had the lowest testing rate of 50% and eThekweni metro 2nd lowest at 52.1%. Nine districts across five provinces recorded testing rates above 100%, with the highest in Vhembe (LP) at 120%. Most of these are probably due to errors in the recording of the denominator (first antenatal visits). The rates above 100% will have led to an over estimate of the national testing uptake average of 80%.

The improved testing rates overall are encouraging and suggest more effective screening of pregnant women and greater integration of HIV testing within antenatal care. Gauteng and KwaZulu-Natal provinces have the greatest differences between districts. In Gauteng, Sedibeng district achieved an uptake rate of 89% whilst Metsweding achieved only 50%. In KwaZulu-Natal, Umzinyathi achieved an uptake rate of 101% whilst eThekweni achieved only 52%.

Map 13: Proportion of antenatal clients tested for HIV in South Africa, 2007/08

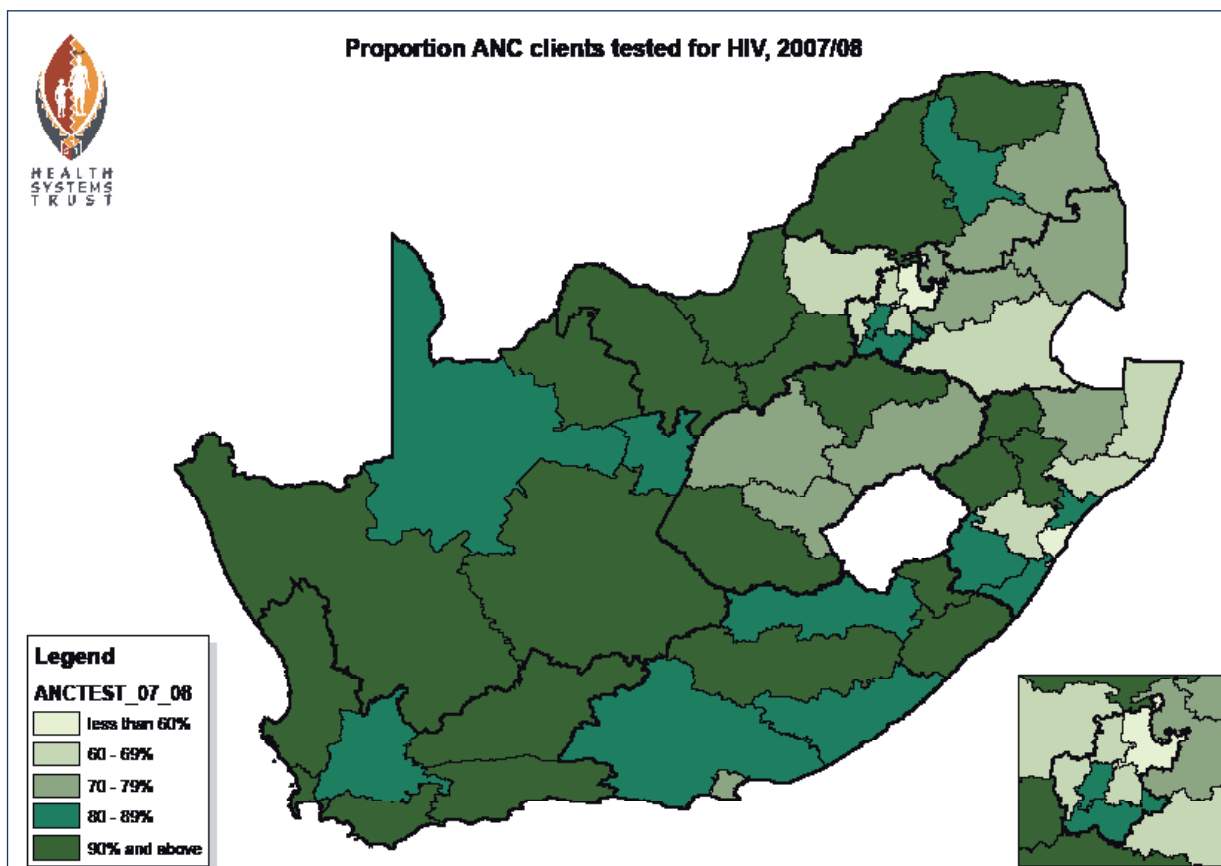
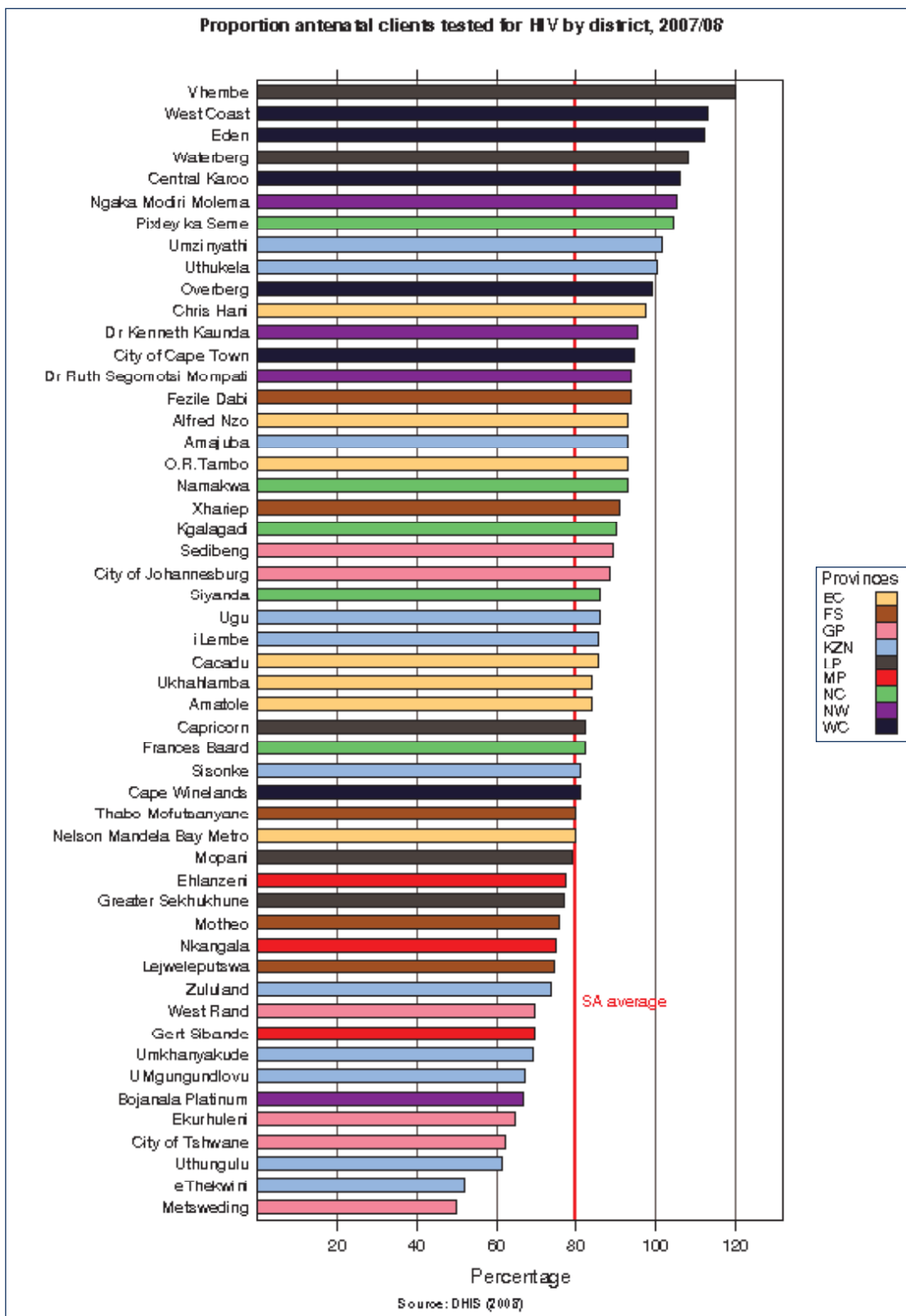


Figure 61: Proportion of antenatal clients tested for HIV by district, 2007/08

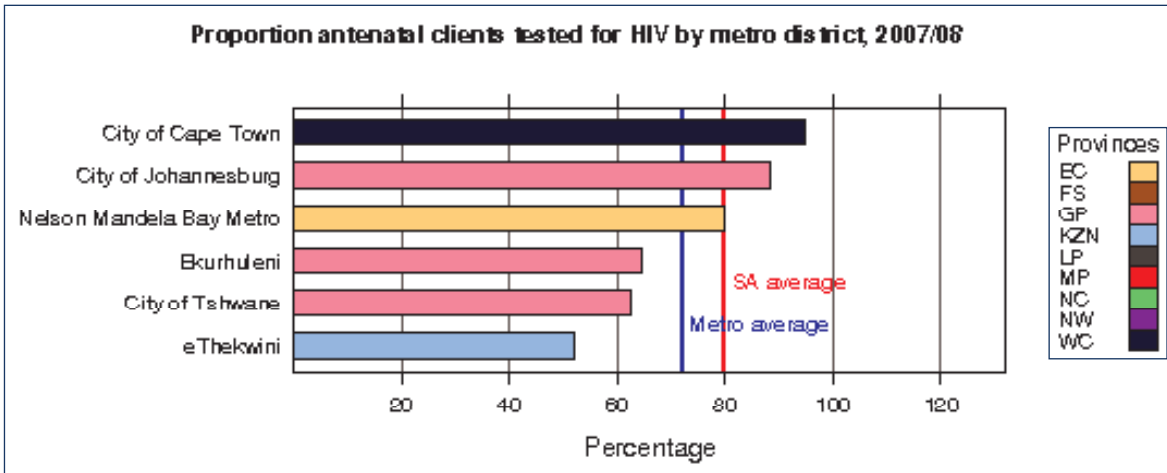


**Metro view**

The average HIV testing coverage rate for the metro districts was lower than the national average. Only two metro districts, City of Cape Town and City of Johannesburg achieved higher than the national average. The coverage in Ekurhuleni, Tshwane and especially eThekweni, with a 52% testing rate, is particularly concerning given the high numbers of women attending antenatal clinics in metro areas. These low rates result in many missed opportunities for women to access PMTCT services. It is a matter of urgency that testing rates in these metros are increased dramatically.



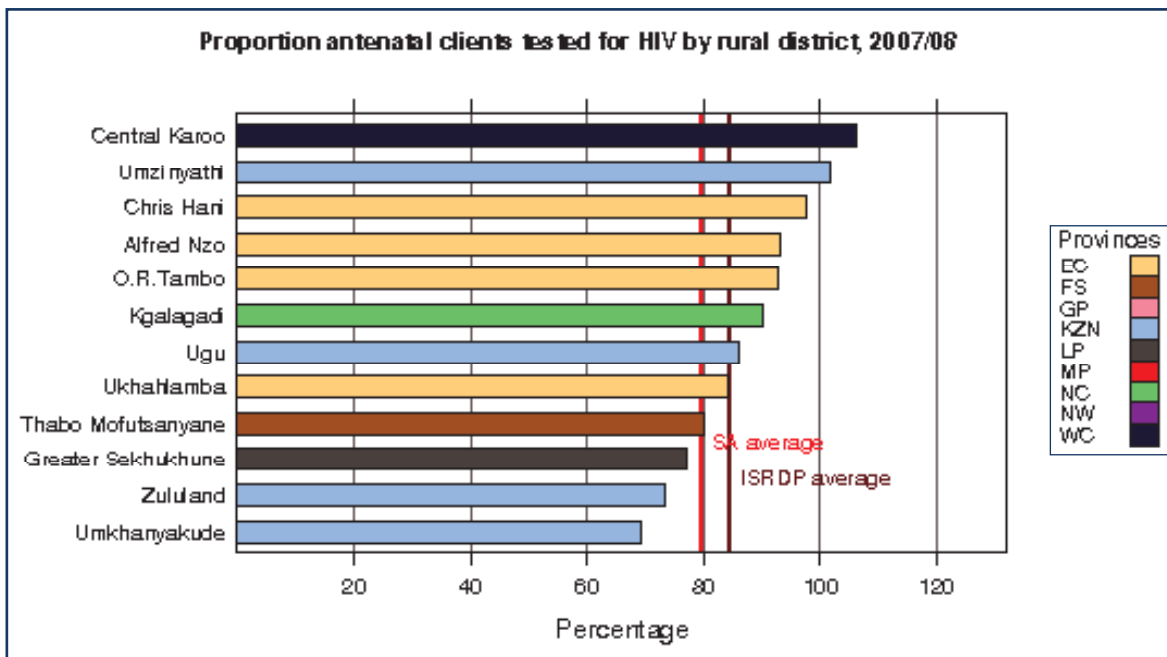
**Figure 62: Proportion of antenatal clients tested for HIV by metro district, 2007/08**



**Rural nodes**

The rural districts had better testing rates than the metropolitan areas and the national average. None of the rural node districts had coverage rates of below 60% and nine achieved coverage of 80% or more. This is a very encouraging finding which indicates that programme improvements can be achieved even in less well-resourced areas. All of the Eastern Cape rural nodes had coverage rates of above 80%, while in KZN there was large variability.

**Figure 63: Proportion of antenatal clients tested for HIV by rural district, 2007/08**



**Change and trends in proportion of clients tested for HIV**

Overall there have been impressive improvements in HIV testing rates across the country with the national average increasing from 69% to 80% in 2007/08. There were only seven districts whose testing uptake decreased from 2006/07, most of which were small decreases in already well performing districts. In Dr Kenneth Kaunda (NW) and Sisonke (KZN) districts, the decrease has brought the uptake to below 100%. This is indicative of an improvement in accuracy of the data. Metsweding district has, except for the unusually high value in 2006/07, had consistently low rates. A rigorous assessment of the programme is needed to determine the reasons for low uptake and attention needs to be paid to the data quality.

The metro districts also showed improvement especially in the City of Johannesburg (26 percentage points) and Ekurhuleni (15 percentage point increase). The improvements in the rural districts were marked with an overall improvement of 11 percentage points and the largest improvement occurring in Ugu (25 percentage points). Only one rural node district, Umkhanyakude, decreased its testing uptake from 77% to 69% which will need to be investigated by the district management team.

**Section A: Output Indicators**

The consistent improvement in HIV testing across the districts is a very positive finding which indicates that attempts have been made to prioritise this programme and to integrate HIV testing within antenatal care. It is also an indication that, should improvements continue at the same rate, the National Strategic Plan target for antenatal HIV testing will be a realisable goal. The upward trends in the HIV testing rates from 2003/04 to 2007/08 in most of the districts are clearly illustrated in the trend graphs in Figure 64.

**Figure 64: Trends in the proportion of antenatal clients tested for HIV by province and district, 2002/03 - 2007/08**

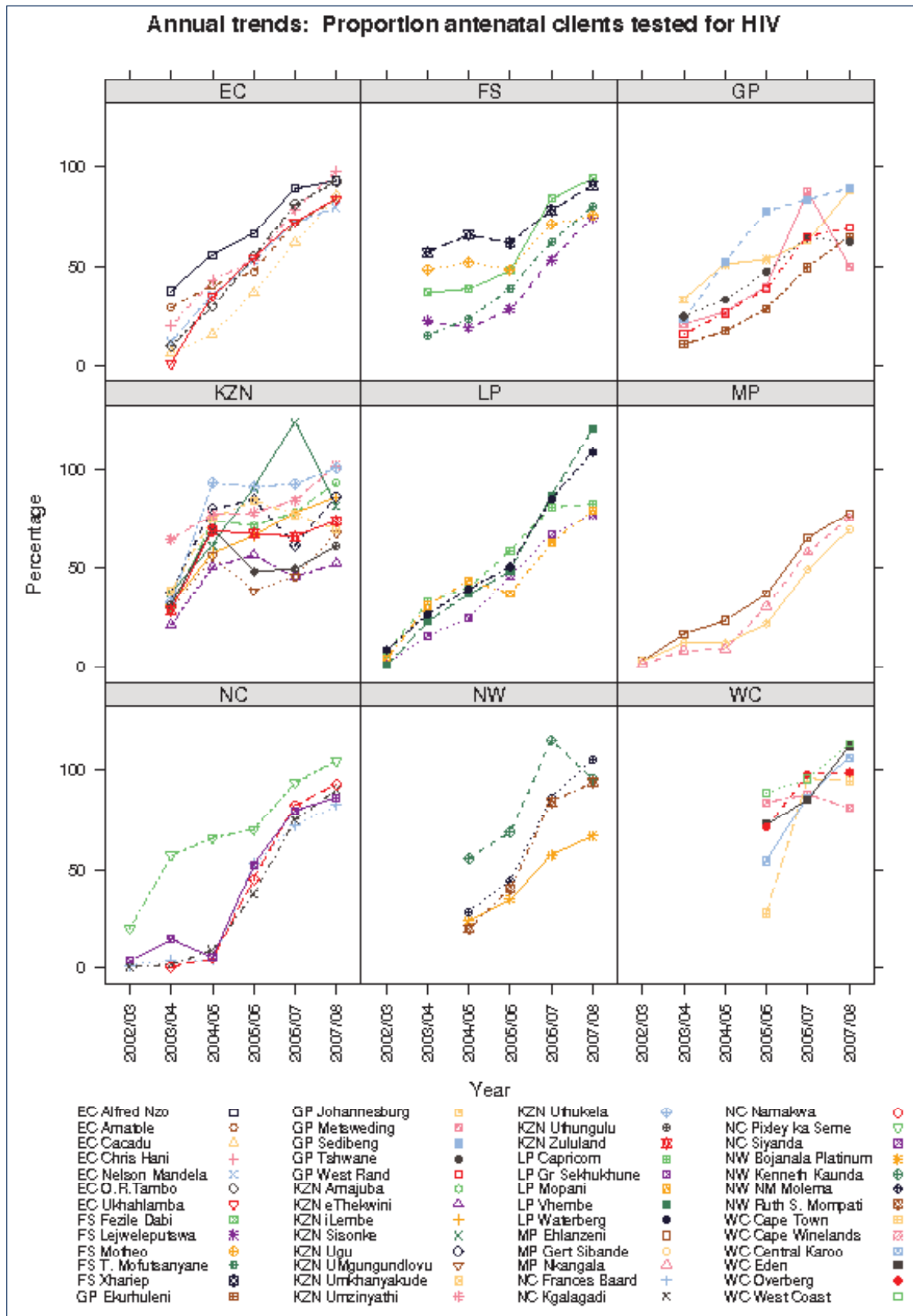
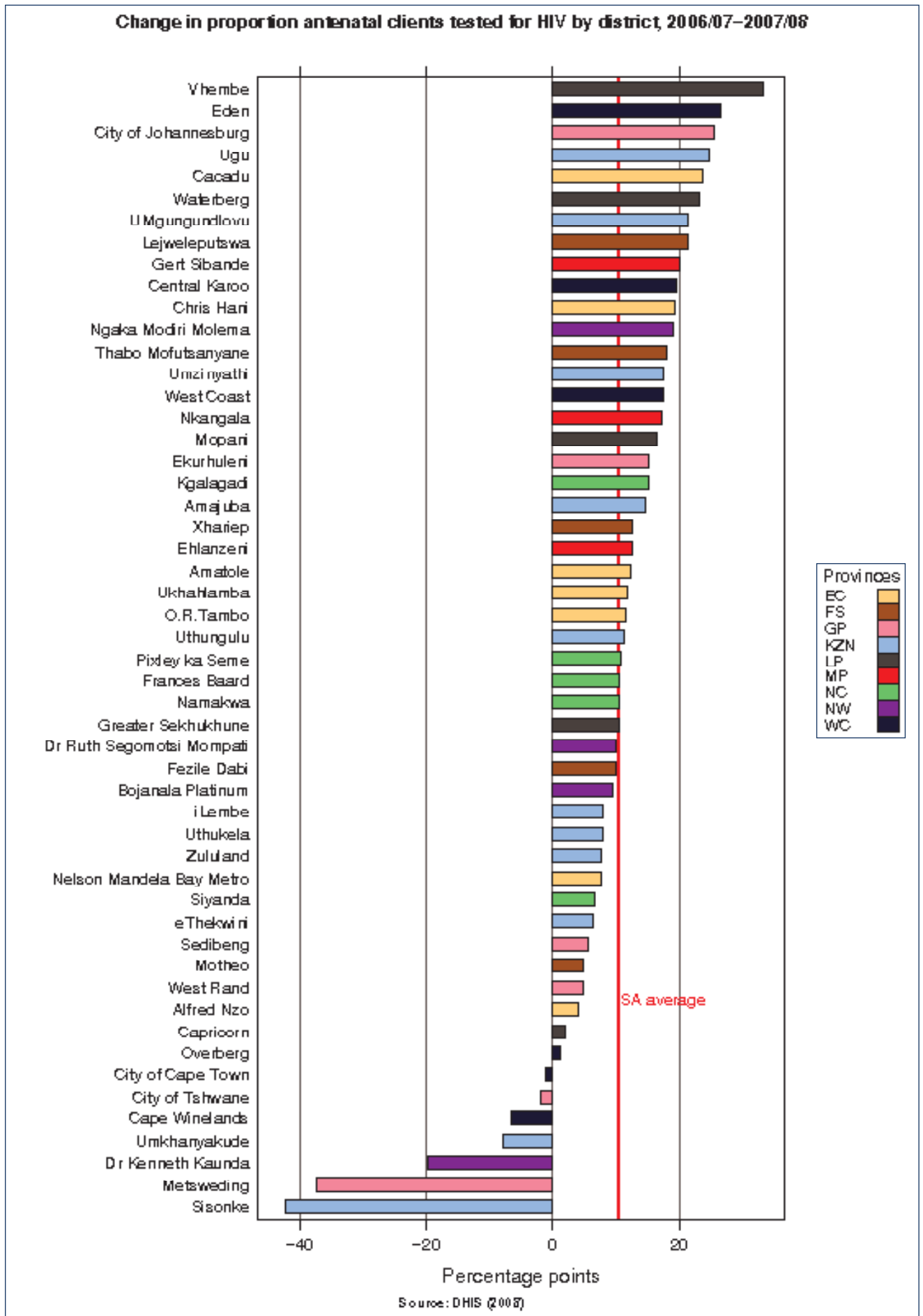


Figure 65: Change in the proportion of antenatal clients tested for HIV by district, 2006/07 - 2007/08



PROPORTION OF ANTENATAL CLIENTS TESTED FOR HIV

#### 4.4.2 HIV Prevalence amongst antenatal clients tested

The national antenatal sero-prevalence survey is a representative sample of antenatal clients tested in South Africa is run each year. The results show the proportion of pregnant women tested for HIV who have a positive result. The most recent estimate of national antenatal HIV prevalence from the national antenatal survey in 2007 was 28%<sup>22</sup> (with age weighting).

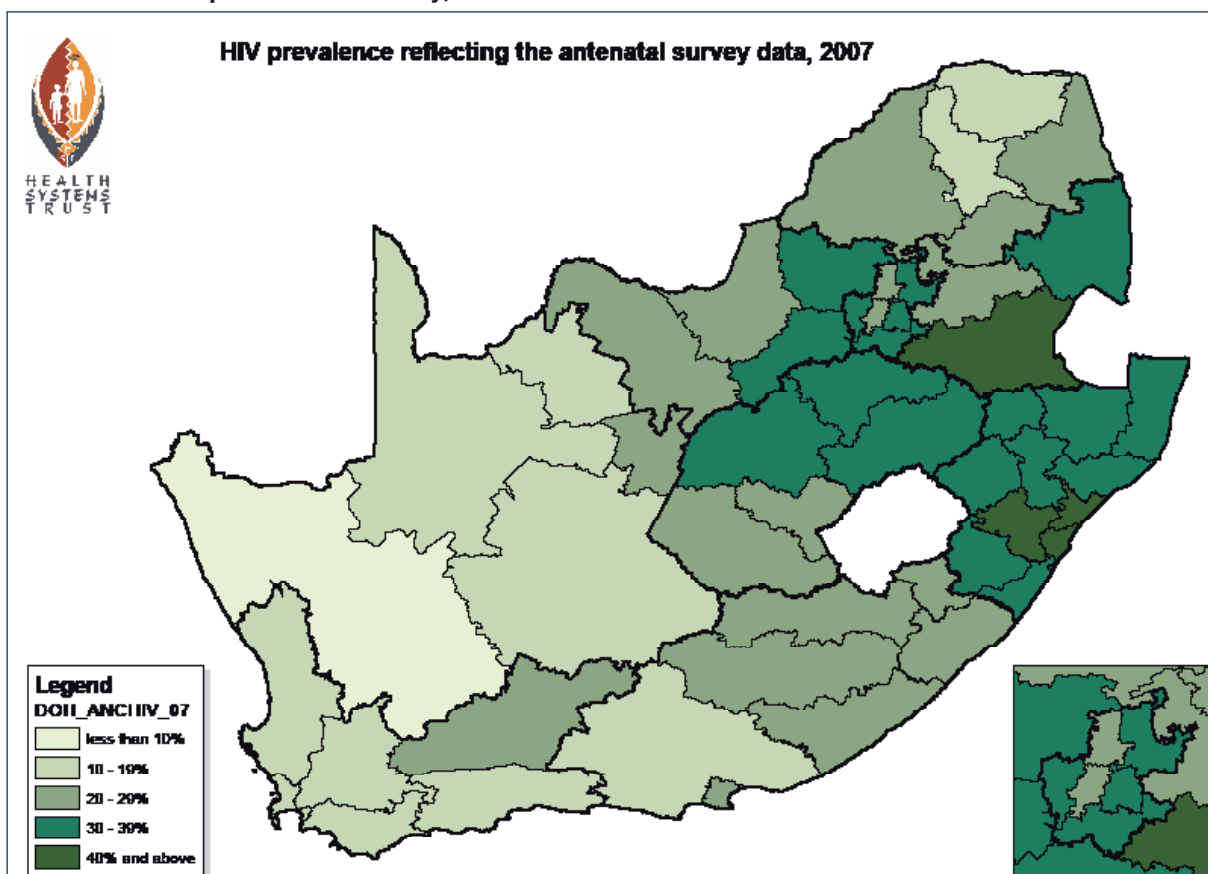
In 2006, the annual HIV sero-prevalence survey conducted by the national DoH was disaggregated to district level for the first time. It was able to be disaggregated because of an increased sample size. The results of the 2007 survey are included in this Barometer as part of an attempt to present the most reliable and up to date information that is available for individual districts. There have been questions about how the provincial survey estimates were calculated<sup>23</sup>. An addendum to the antenatal survey results was released on 12 May revising the methodology and values of the survey results with no age weighting. These new values have been included in the Excel data file that is included in the CD that comes with this publication, but it was too late to update all the graphs and figures in this publication.

##### District view

The prevalence rates from the national survey were generally higher than those recorded through the DHIS, except in the Western Cape where the national survey estimate of prevalence (13%) was very similar to the DHIS prevalence (14%). The largest difference between the DHIS (26%) and the national survey (34%) was found in the Free State.

In both the national survey and the DHIS data the Northern Cape, Limpopo and the Western Cape had antenatal HIV prevalence rates below 20%. Gauteng, KwaZulu-Natal and the Free State were all above 30% in the national survey. A few provinces had large variations between districts, most notably the Eastern Cape with a prevalence of 15% in Cacadu and 30% in Ukhahlamba. In Limpopo, Vhembe district had a prevalence of 15% whilst Waterberg was 25% and in the Western Cape the West Coast had a prevalence of 10% whilst the Central Karoo had a prevalence of 24%.

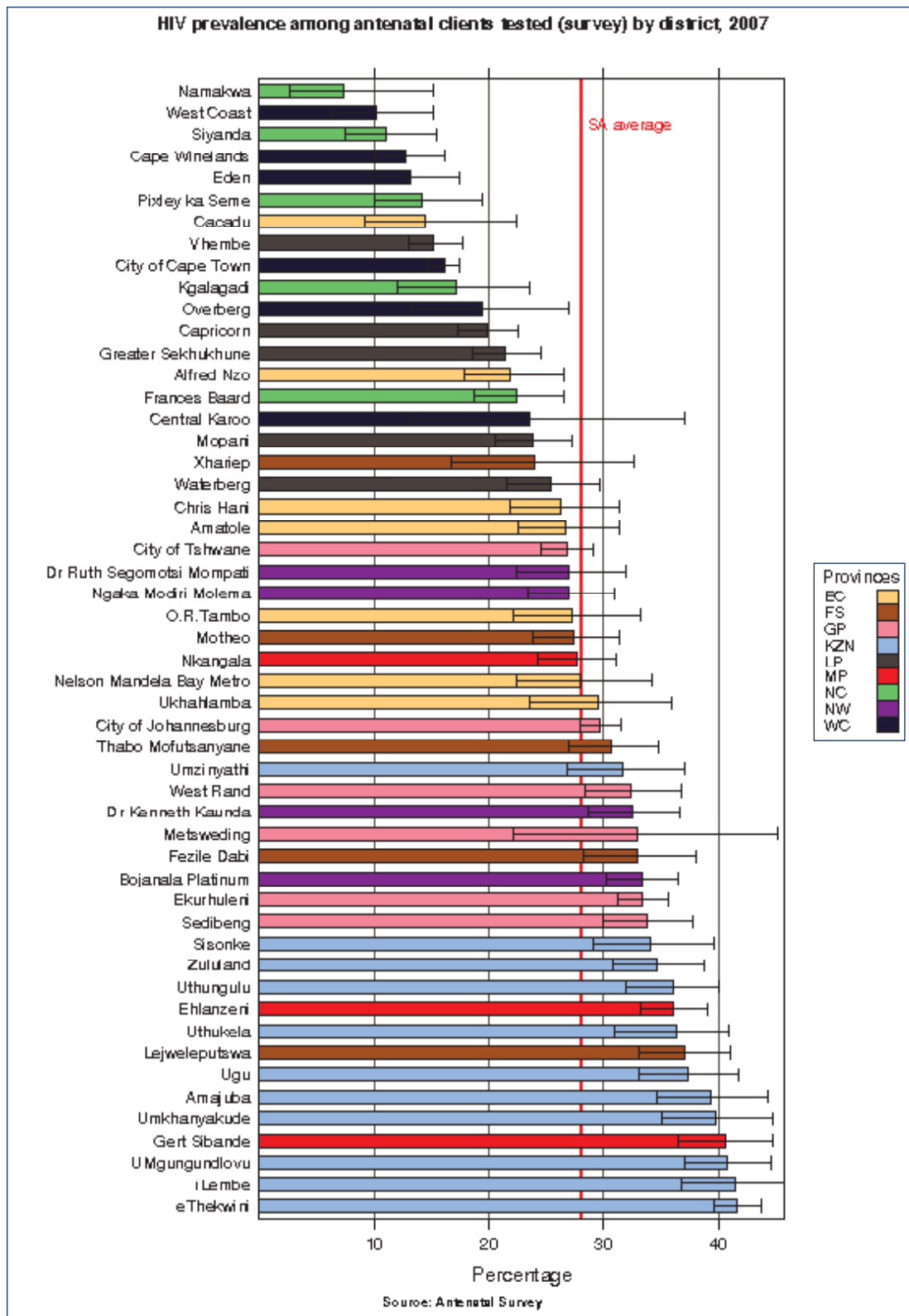
Map 14: HIV prevalence among antenatal clients tested in South Africa from the national antenatal sero-prevalence survey, 2007.



22 National Department of Health. The National HIV and Syphilis sero-prevalence survey 2007. Department of Health 2008.  
URL: <http://www.doh.gov.za/docs/misc-f.html>. Addendum of the published 2007 National HIV and Syphilis prevalence survey report is available at  
URL: <http://www.doh.gov.za/docs/adendum-tables-f.html>

23 Dorrington R, Bourne D. Has HIV prevalence peaked in South Africa? Can the report on the latest antenatal survey be trusted to answer this question? S Afr Med J. 2008; 98: 754-5. URL: <http://www.samj.org.za/>

**Figure 66: HIV prevalence amongst antenatal clients tested by district (national antenatal seroprevalence survey), 2007<sup>24</sup>**



HIV PREVALENCE AMONGST ANTENATAL CLIENTS TESTED

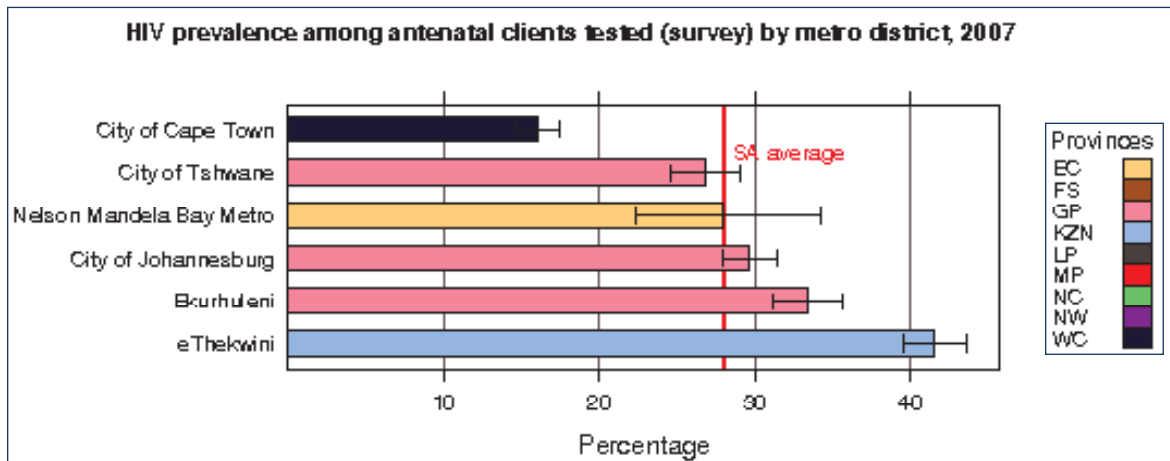
**Metro view**

Antenatal HIV prevalence rates in the metro districts range from 16% in the City of Cape Town<sup>25</sup> to 42% in eThekweni. All of the metro districts except the City of Cape Town had prevalence rates above 25%. The largest change in prevalence from 2006 in a metro district was in Nelson Mandela Bay Metro which dropped by four percentage points.

<sup>24</sup> As the survey conducted by the Department of Health is based on a sample of all women attending antenatal clinic there is some uncertainty about the exact results. The bar |————| indicates the range of the HIV prevalence in which the survey confidently expects the “real value” to be contained (95% confidence interval).

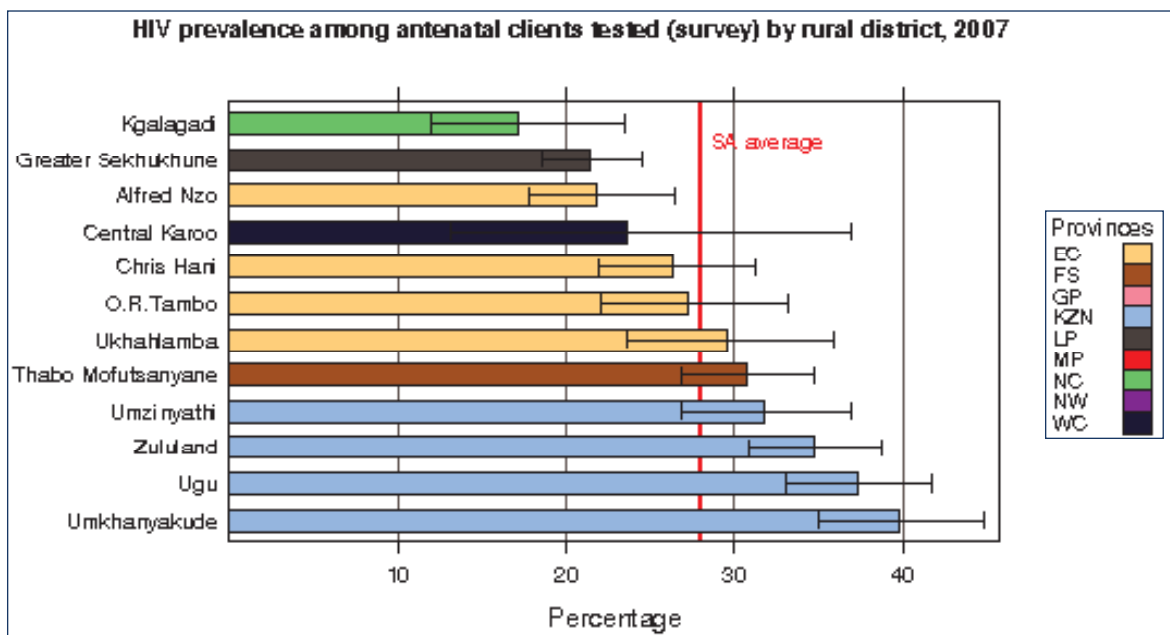
<sup>25</sup> Although the overall prevalence in the City of Cape Town is low, it has a wide variation of prevalence across the metro which is not reflected here, but can be accessed in the following presentation ‘Western Cape Burden of Disease: HIV and Tuberculosis’ at: URL: [http://www.capegateway.gov.za/other/2007/8/bod\\_hiv\\_and\\_tb\\_workgroup\\_2.ppt](http://www.capegateway.gov.za/other/2007/8/bod_hiv_and_tb_workgroup_2.ppt)

**Figure 67: HIV prevalence among antenatal clients tested by metro district, (national antenatal seroprevalence survey), 2007**



**Rural nodes** The antenatal HIV prevalence in the rural nodes ranges from 17% in Kgalagadi to 40% in Umkhanyakude. The largest change in prevalence in the rural districts occurred in the Central Karoo which increased by 15 percentage points<sup>26</sup>.

**Figure 68: HIV prevalence among antenatal clients tested by rural district, (national antenatal seroprevalence survey), 2007.**

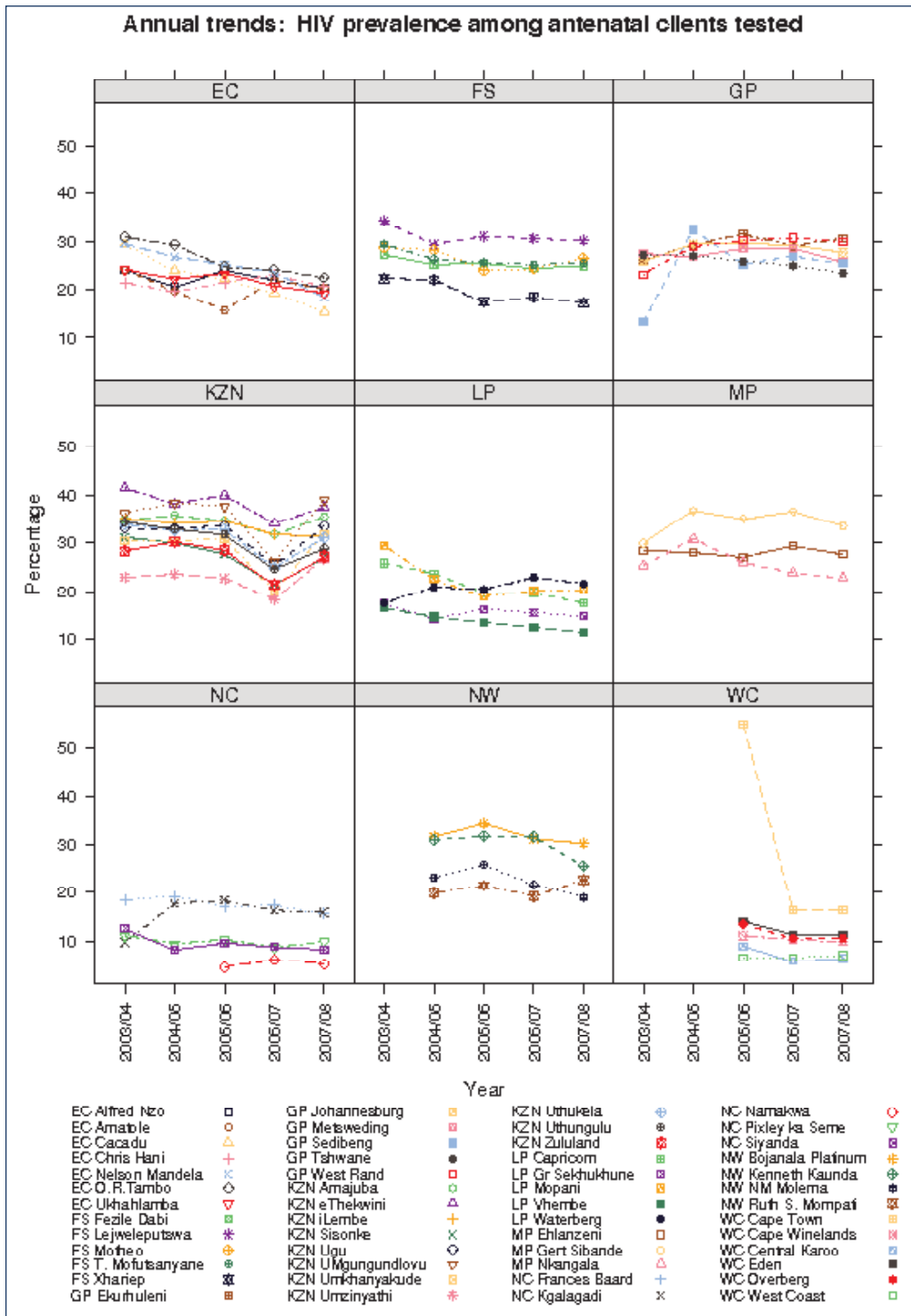


**Change and trends in HIV prevalence amongst antenatal clients tested**

HIV prevalence amongst antenatal clients tested (DHIS) increased marginally between 2006/07 and 2007/08 from 23.8% to 24.4%. Figure 69 shows the trends from 2003/04 to 2007/08 for districts by province.

<sup>26</sup> This should be taken with caution as it could be due to sampling differences between the two surveys in a very low population district; the 95% confidence intervals are wide, and do overlap slightly. The routine data do not suggest any dramatic increases in prevalence in this district.

**Figure 69: Trends in the HIV prevalence in ANC clients tested by province and district<sup>27</sup> (DHIS data), 2003/04 - 2007/08**



### 4.4.3 Nevirapine uptake rate among pregnant HIV positive women

This indicator measures the proportion of HIV positive pregnant woman who receive a nevirapine<sup>28</sup> dose during either antenatal care or in labour. This is an extremely important component of the PMTCT package since antiretroviral prophylaxis has a large impact on reducing early mother to child transmission of HIV.

There has been an overall increase in the coverage of nevirapine from a national coverage of 65% in 2006/07 to 76% in 2007/08. While this is encouraging, it however still falls short of the National Strategic Plan target for 2011 which is for 95% of known HIV positive women to receive nevirapine (+AZT).

<sup>27</sup> These trend graphs represent values from the DHIS which differ from the National Survey data but are useful to use to represent trends which are in essence the same in both. Note however that the 2007/08 values will not correspond to Figure 66: HIV prevalence among antenatal clients tested by district for the national antenatal sero-prevalence survey, 2007.

<sup>28</sup> Subsequent to the dates for the data in this barometer, viz April 07 to March 08, the policy for PMTCT was extended in March 2008 to dual therapy and to include AZT.

## Section A: Output Indicators

Collection of data on nevirapine coverage is particularly difficult due to the fact that the dose can be dispensed either in the antenatal clinic or the labour ward. Aggregation of data, which is not linked to individual patients, from these two settings has proven difficult. Furthermore, some HIV positive women may be reluctant to disclose their HIV status within labour ward settings and therefore may not be given a nevirapine dose or may take a dose without informing staff, hence the dose would not be recorded in the routine records. These challenges can result in both under and over (double counting) recording of nevirapine doses dispensed. It is expected that coverage of this component of the programme will improve with the introduction of dual therapy since it will no longer be an 'all or nothing' intervention.

### District view

There was a large variation in nevirapine coverage across the districts with the lowest rate of 12% in Lejweleputswa (FS) and the highest of 108% in Uthukela (KZN).

One of the major issues with this indicator is the lack of good quality information. Close scrutiny of the DHIS data from 2003/04 highlighted that generally the data for most of the country seems unreliable, with little internal consistency and there seem to be problems with both the numerators and denominators.

Specifically the Free State showed declining nevirapine coverage rates for the second consecutive year. All five districts were below 40%. However, many facilities did not have numerator data after January 2007, so this is mostly a data quality issue. In Mpumalanga most numerators were missing for the last few months. In some Northern Cape districts, such as Namakwa, small numbers resulted in large swings in the monthly indicator values, making the trends difficult to interpret.

The Eastern Cape had fairly large variations between districts with Alfred Nzo at 46% and Nelson Mandela Bay metro at 89%. A similar situation was found in Gauteng with Metsweding at 60% and Sedibeng at 96%.

Considering the wide fluctuations and poor quality of the data across the years and districts, it is not possible to draw any definite conclusions or make strategic decisions based on these data, other than that management from facility level upwards need to take responsibility for regular monitoring of the data to ensure continuous quality improvement.

Map 15: Nevirapine uptake rate among pregnant HIV positive women in South Africa, 2007/08

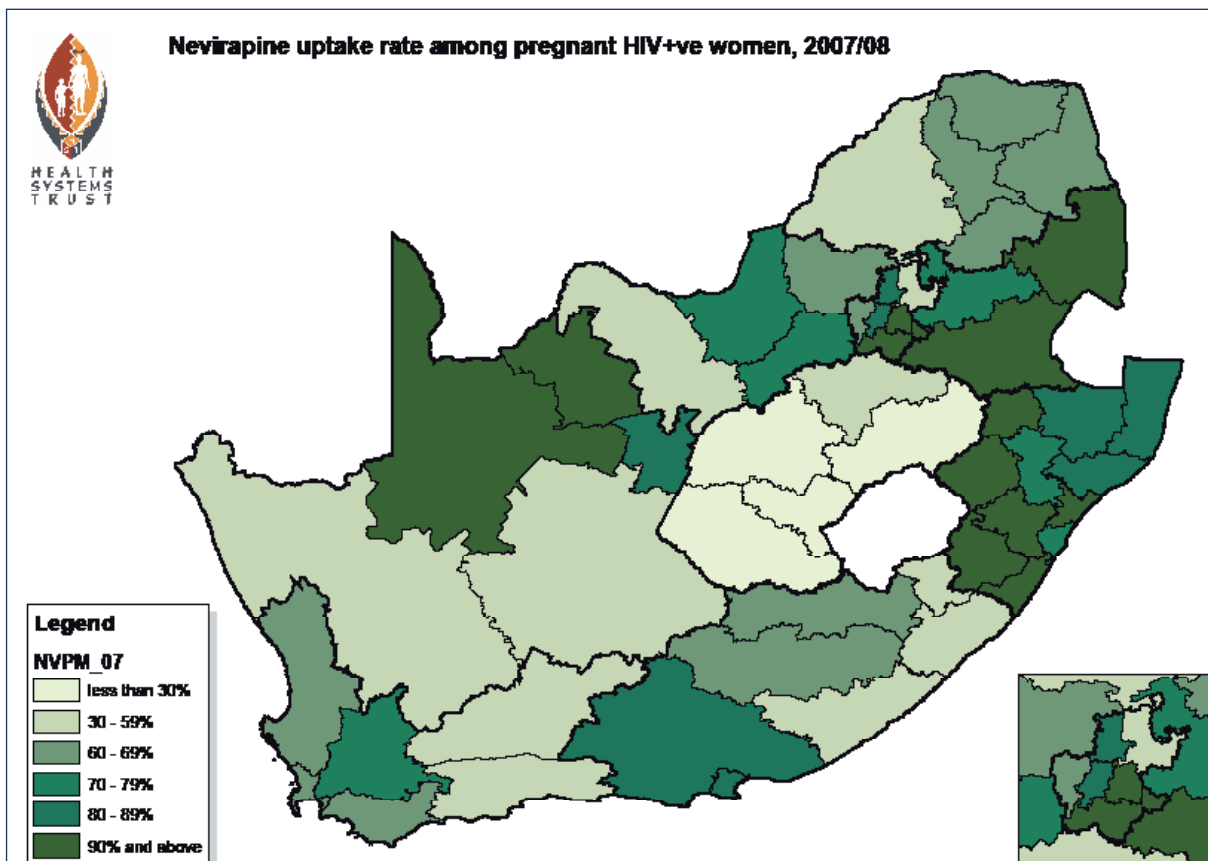
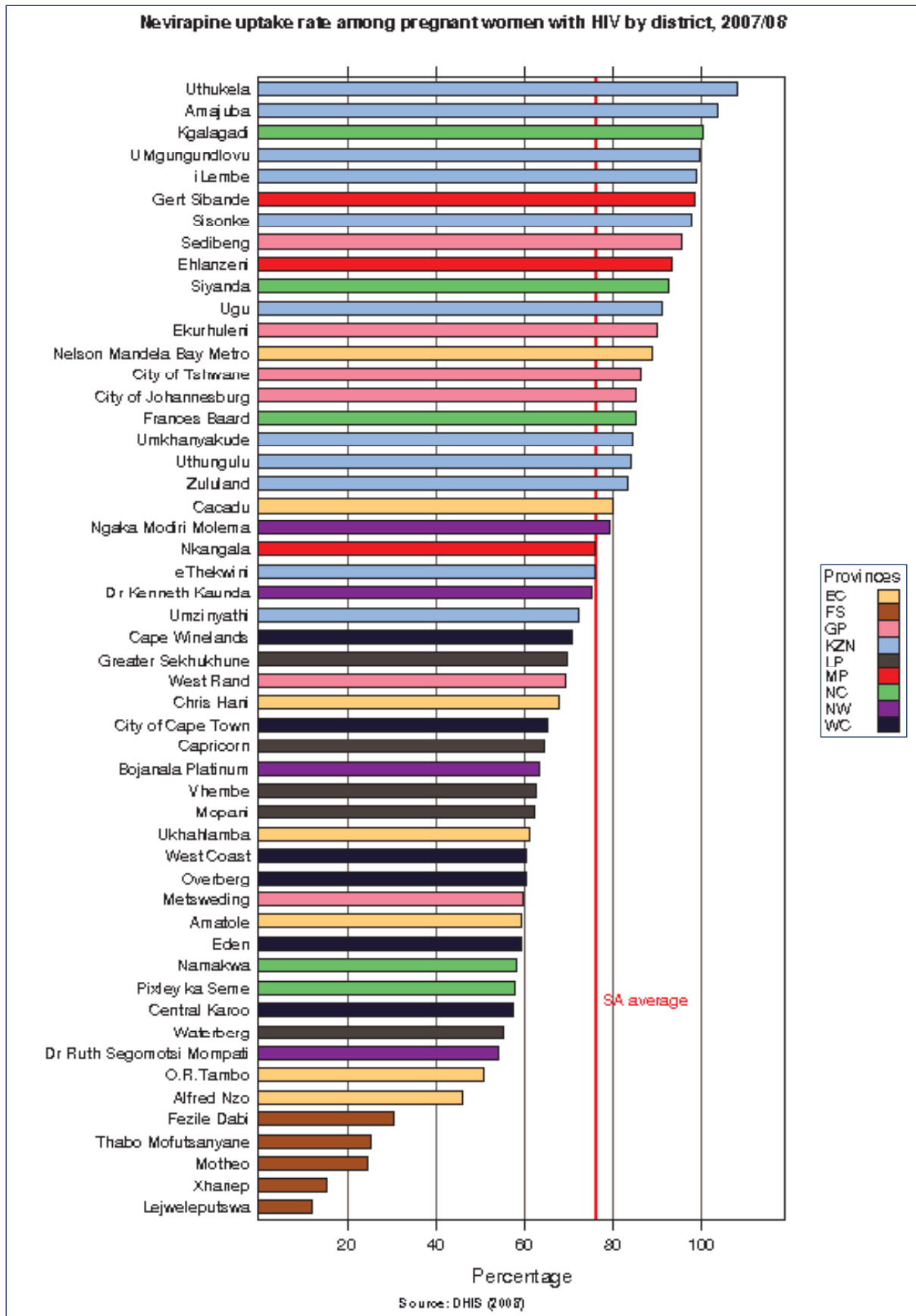




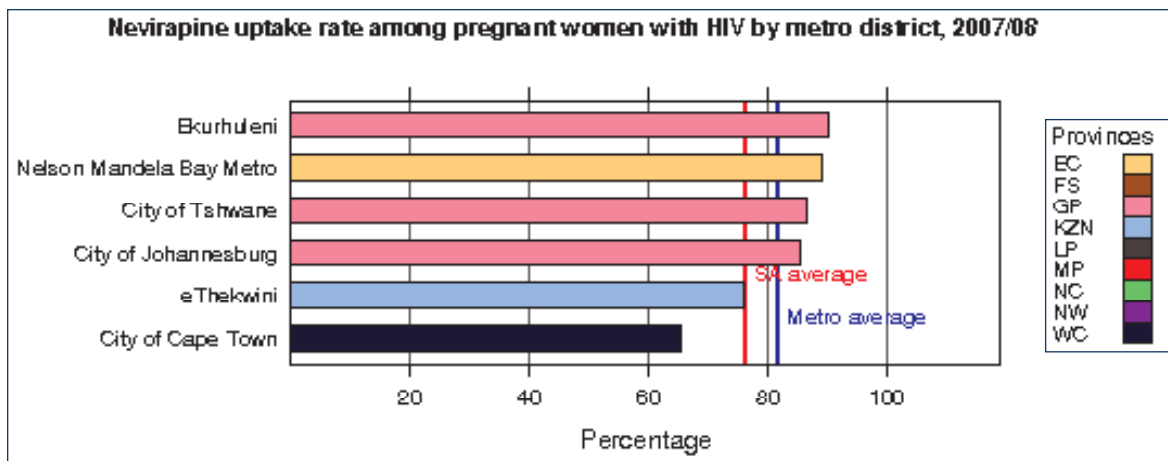
Figure 70: Nevirapine uptake rate among pregnant women with HIV by district, 2007/08



**Metro view**

The metro districts all achieved a nevirapine coverage above 60% with the highest being Ekurhuleni at 90%. The average for all six metro areas of 82% was higher than the national average of 76%. The City of Cape Town, which has reportedly one of the best PMTCT programmes in the country, with a nevirapine uptake rate of 65.3%, is unlikely to be accurate and is almost certainly due to poor data recording/capturing/reporting.

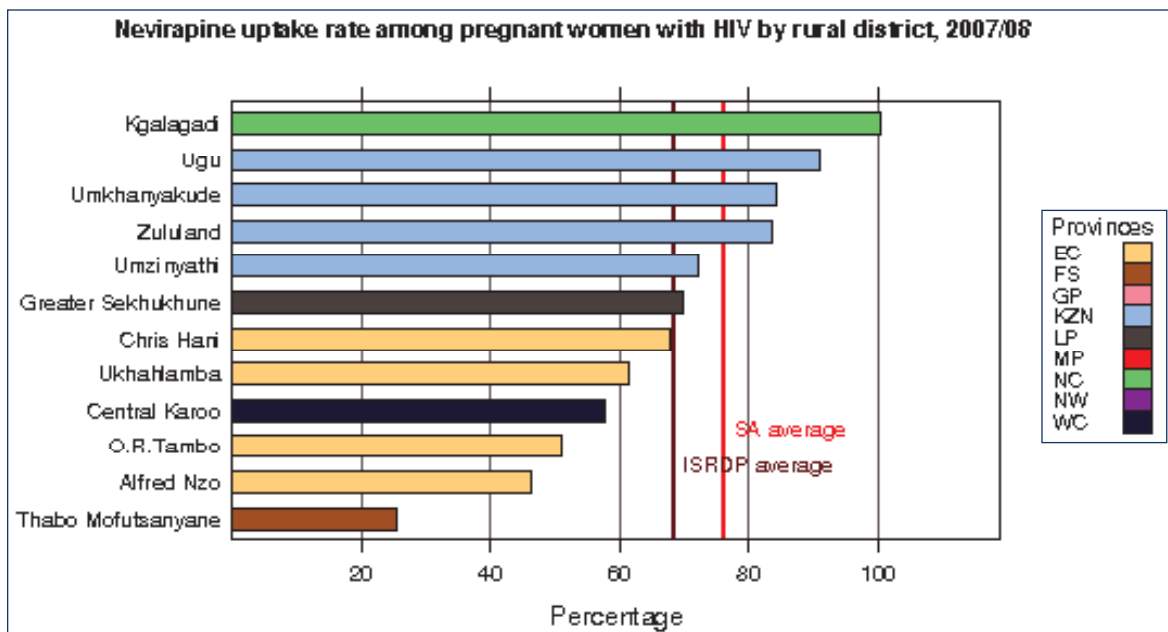
Figure 71: Nevirapine uptake rate among pregnant women with HIV by metro district, 2007/08



**Rural Nodes**

Nevirapine coverage in the rural districts varied widely from 25% in Thabo Mofutsanyane district of the Free State to 100% in Kgalagadi district of the Northern Cape. Coverage in the KZN rural districts had improved with all four being above 70%. However, these data need to be viewed with caution as there were several months where the monthly rates exceeded 100%. Overall the nevirapine coverage for the 12 rural districts was 68% which is lower than the national average of 76%. Coverage in these districts will need to be greatly improved in order to reach the target of the National Strategic Plan.

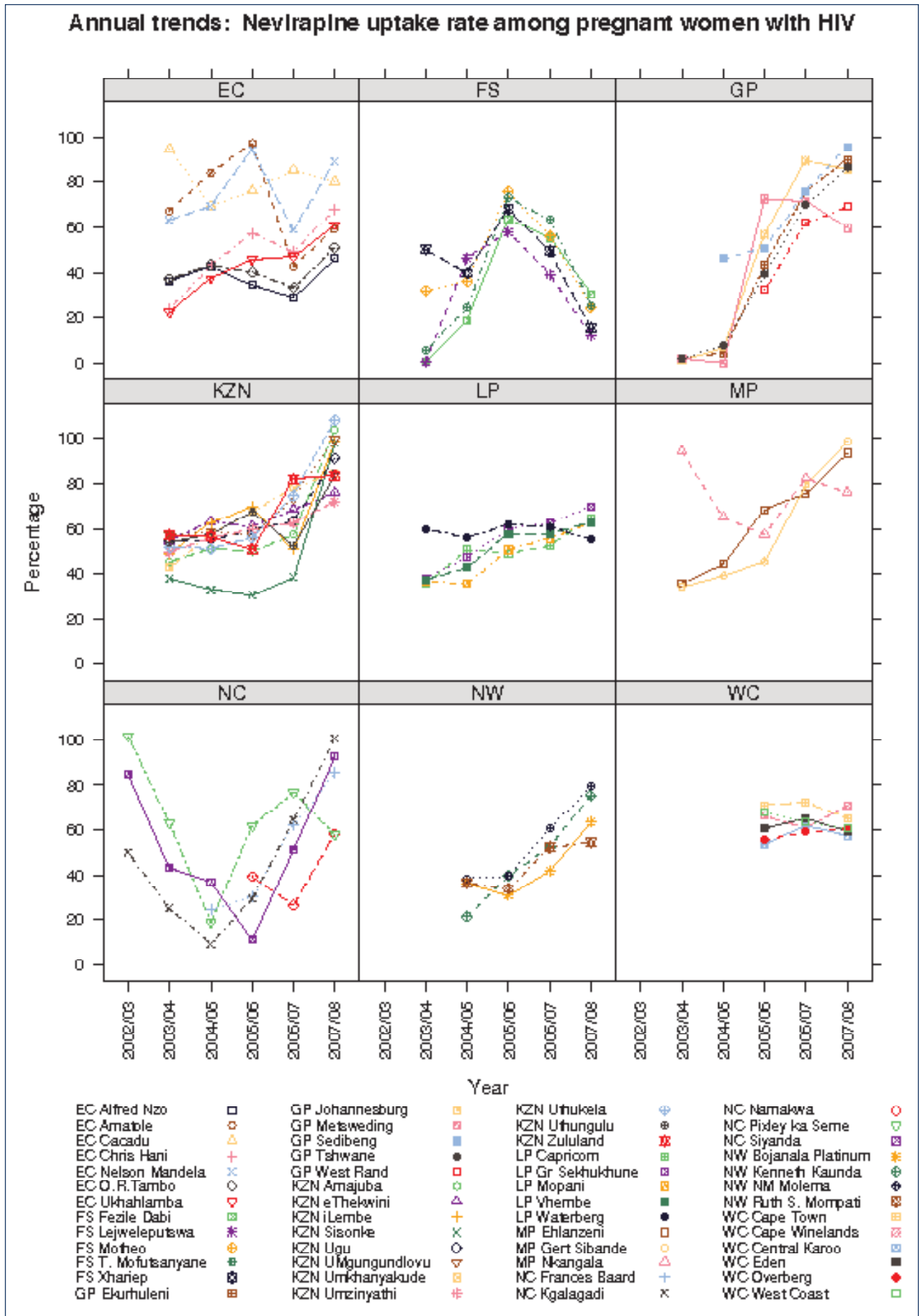
Figure 72: Nevirapine uptake rate among pregnant women with HIV by rural district, 2007/08



**Change and trends in nevirapine uptake rate of pregnant HIV positive women**

Nevirapine coverage has increased overall between 2006/07 and 2007/08 from 65% to 76%. The best improvements were seen in KwaZulu-Natal and the North West where all of the districts showed an increase from the last year. It is concerning that all of the districts in the Free State showed a substantial decrease in 2007/08 to extremely low levels of coverage which are caused by missing data. The province should investigate the data quality of this indicator carefully.

**Figure 73: Trend in nevirapine uptake rate among pregnant women with HIV by province and district, 2003/04 - 2007/08**



NEVIRAPINE UPTAKE RATE AMONG PREGNANT HIV POSITIVE WOMEN

#### 4.4.4 Nevirapine uptake rate among babies born to HIV positive pregnant women

The nevirapine uptake rate among babies measures the percentage of babies of HIV positive women who received nevirapine within 72 hours of birth, out of the number of live births in facilities to HIV positive women.

There were serious data quality problems with the nevirapine uptake rate for newborns and this is occurring systematically in almost all the districts. In most years the uptake rate has been around 100%. The denominator used to calculate this indicator (live births to HIV positive women) generally gives an inflated picture of nevirapine coverage to babies as far fewer deliveries to HIV positive women are recorded each month compared with the number of women testing HIV positive. There are also substantial differences in this discrepancy from year to year, so the effect of the bias is not consistent, with much higher denominators around 2006/07, resulting in a dip in the indicator values over the same period. The low recorded number of live births to HIV positive women suggests that either many HIV positive women are delivering at home and are therefore not recorded in facility delivery records, or that HIV positive women are not identified in labour and are therefore not recorded as such in delivery registers. The first explanation is unlikely given that in South Africa overall 91% of births are assisted by a trained health care provider (SADHS 2003). The only year when the denominator is thought to be realistic was in 2006/07 when 81% of HIV positive mothers were identified on delivery, and the nevirapine update rate among newborn babies was 57.3%.

The following table shows the national values for the data elements used in the PMTCT indicators, illustrating the problem of the very low denominators (live births) for this indicator. Major outliers and sections of data with completely missing denominators have been excluded from the original data.

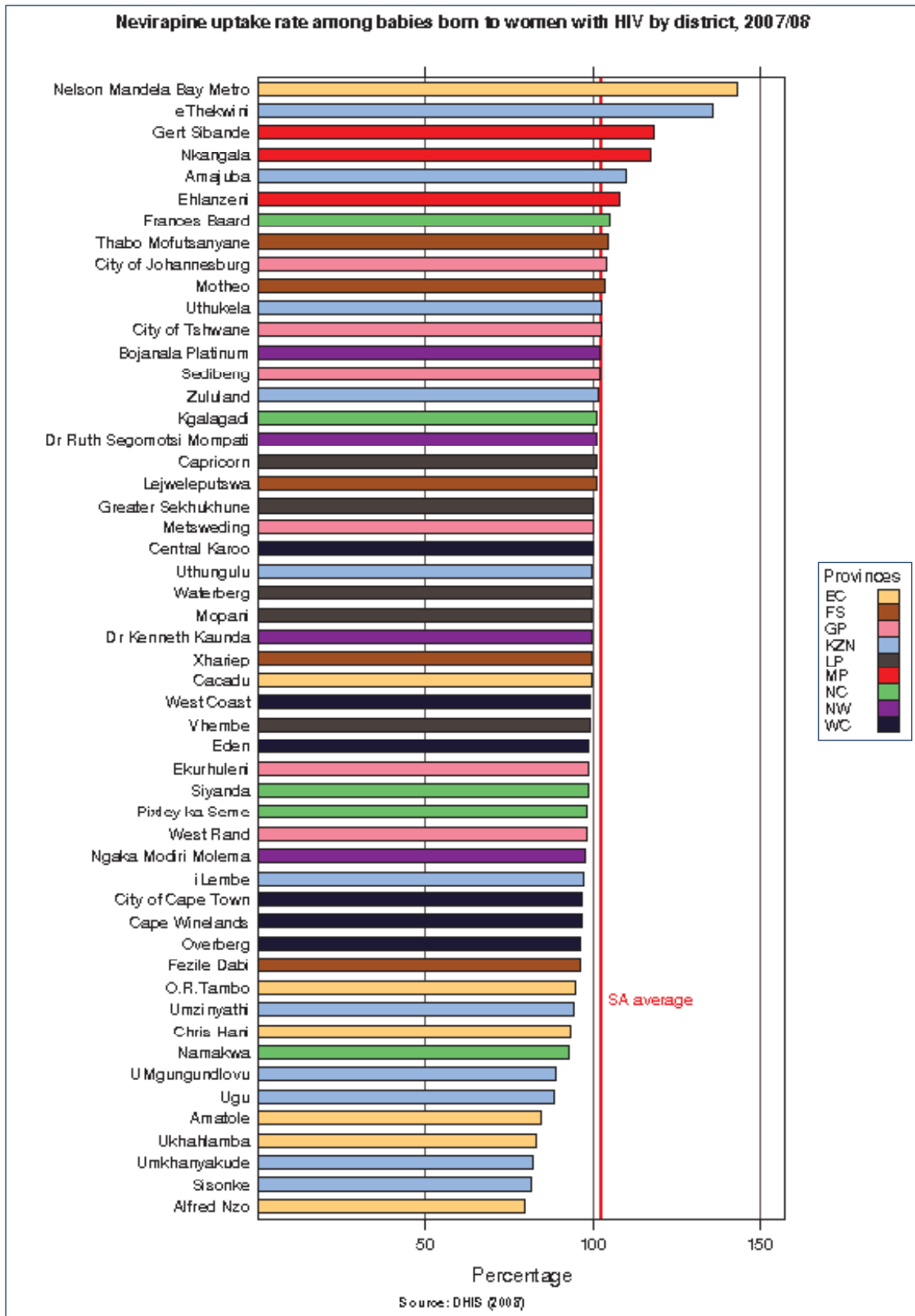
	2003/04	2004/05	2005/06	2006/07	2007/08
ANC 1st visits	900 130	1 095 064	1 229 251	1 144 002	1 170 998
ANC clients tested	198 508	451 829	613 255	791 396	931 789
<b>HIV test ANC rate</b>	<b>22.1</b>	<b>41.3</b>	<b>49.9</b>	<b>69.2</b>	<b>79.6</b>
ANC clients HIV+	59 525	131 512	170 816	201 015	229 642
<b>HIV prevalence</b>	<b>29.8</b>	<b>29.0</b>	<b>27.7</b>	<b>23.8</b>	<b>24.4</b>
NVP dose to woman	21 422	58 132	96 271	129 672	172 066
<b>NVP uptake mothers</b>	<b>40.5</b>	<b>44.2</b>	<b>56.4</b>	<b>64.5</b>	<b>76.1</b>
Live births to HIV+ women	4 127	16 854	41 391	163 601	105 280
NVP dose to baby	4 283	16 345	40 379	93 794	107 673
<b>NVP newborns</b>	<b>103.8</b>	<b>97.0</b>	<b>97.6</b>	<b>57.3</b>	<b>102.3</b>
<b>Proportion of HIV positive mothers identified on delivery</b>	<b>6.9</b>	<b>12.8</b>	<b>24.2</b>	<b>81.4</b>	<b>45.8</b>

In March 2008, the infant component of the antiretroviral regimen was changed so that it now includes one week of AZT to infants in addition to the single dose of nevirapine. This change in the protocol did not affect the indicator in this Barometer.

#### District view

The nevirapine uptake of babies was generally high with a national average of 102.3% with none of the districts being below 80%. More than half (28) of the districts had coverage levels of 100% or more including all of the districts in Mpumalanga. This finding indicates that there is most likely under recording of live births which has led to an inflated indicator (i.e. more nevirapine doses dispensed than live births recorded).

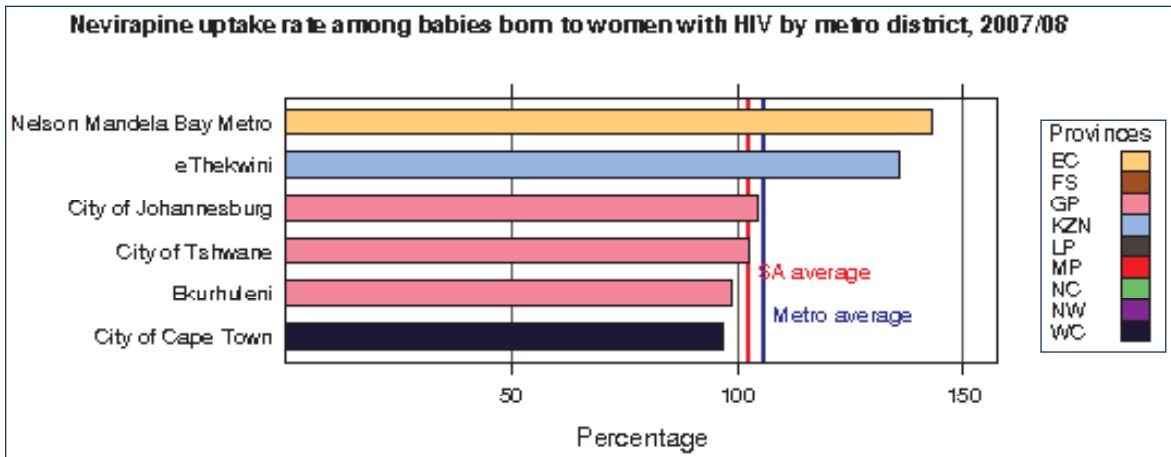
Figure 74: Nevirapine uptake rate among babies born to women with HIV by district, 2007/08



**Metro view**

All of the metro districts except for two, reported nevirapine coverage to babies of above 100%. Nelson Mandela Bay and eThekweni had rates of 143% and 136% respectively. These are extreme over-estimates of the true coverage and these districts should examine the data closely to determine where the errors have occurred. Scrutiny of the detailed underlying data for KZN in general revealed huge outliers, variations and missing denominators.

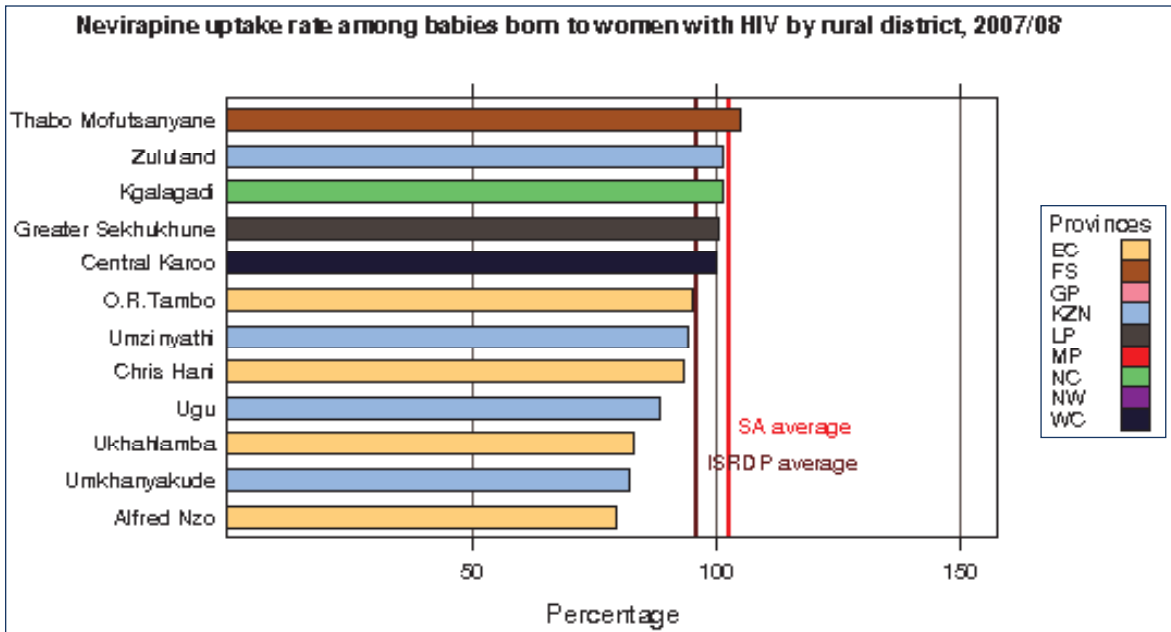
Figure 75: Nevirapine uptake rate among babies born to women with HIV by metro district, 2007/08



**Rural Nodes**

Nevirapine coverage to infants in the rural node districts ranged from 80% in Alfred Nzo to 105% in Thabo Mofutsanyane. Five of these districts reported coverage rates of 100% or more.

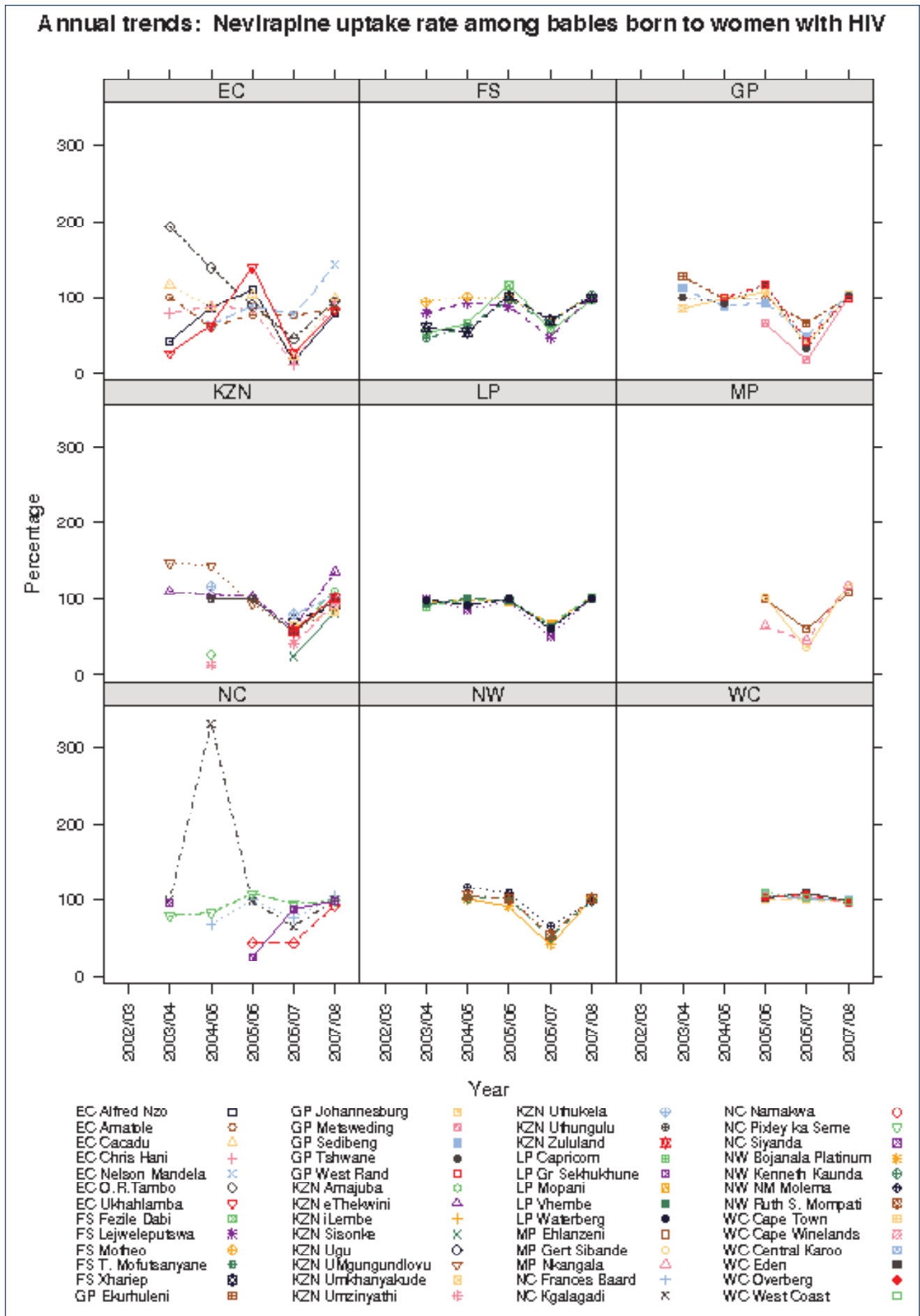
Figure 76: Nevirapine uptake rate among babies born to women with HIV by rural district, 2007/08



**Change and trends in nevirapine uptake rate among babies born to women with HIV**

Although at face value there was overall improvement in this indicator from 2006/07 with all districts except those in the Western Cape showing increases in coverage, in reality the improvement is much smaller because of the data quality problems discussed in the beginning of this section. In the Western Cape the decreases most likely reflect improvements in data quality since all of the districts reported coverage rates of 100% or more in the previous period. There has been an overall increase in the number of nevirapine doses given, however until the data quality is addressed it will be difficult to determine the actual coverage levels. It will be important to monitor this indicator with the implementation of the new protocol to determine if this leads to improvements in both the quality of data and coverage.

Figure 77: Trends in nevirapine uptake rate among babies born to women with HIV by province and district, 2003/04 - 2007/08



## 4.5 Primary Health Care Utilisation Rate

Fiorenza Monticelli

The primary health care utilisation rate indicator measures the average number of visits per person per year to a public PHC facility. The average utilisation of primary health care services in SA in 2007/08 was 2.2 visits per person which is a decrease of 0.1 visits per person over the last year, despite an average increased spending (PCE) of R27 in real terms per person on non-hospital PHC. This decrease is quite likely due to the effect of the public sector strike in June 2007, as the average utilisation is 2.3 when data for this month are excluded. The national target of 3.5 was reached by only a handful of districts in 2007/08, of which three were in the Western Cape province.

### District view

Figure 78 shows the range of utilisation rates among the districts from a low of 1.1 visits per person in Metsweding (GP) to a high of 4.3 in the Central Karoo (WC), a rural district of SA. Four of the six districts in Gauteng ranked within the ten lowest utilisation rates in the country and four of the six districts in the Western Cape among the ten highest. Five districts, West Coast, Eden and Central Karoo (WC), Vhembe (LP) and Pixley ka Seme (NC) achieved utilisation rates higher than the national target. Most of the districts in the Northern Cape, fell within the top third of utilisation rates in the country and the very low value for Kgalagadi is clearly a data error caused by missing data for many of the facilities in that district between January to March 2008. There was also a wide intra-provincial variation between districts in the Eastern Cape with a high of 3.4 visits per year for Cacadu and a low of 1.9 for O.R. Tambo. Similarly in the Western Cape and Limpopo provinces there was an almost two-fold difference between the highest and lowest utilisation rates, whilst in KwaZulu-Natal, Mpumalanga and Gauteng, the utilisation rates across the districts did not vary greatly.

Map 16: Primary health care utilisation rate in South Africa, 2007/08

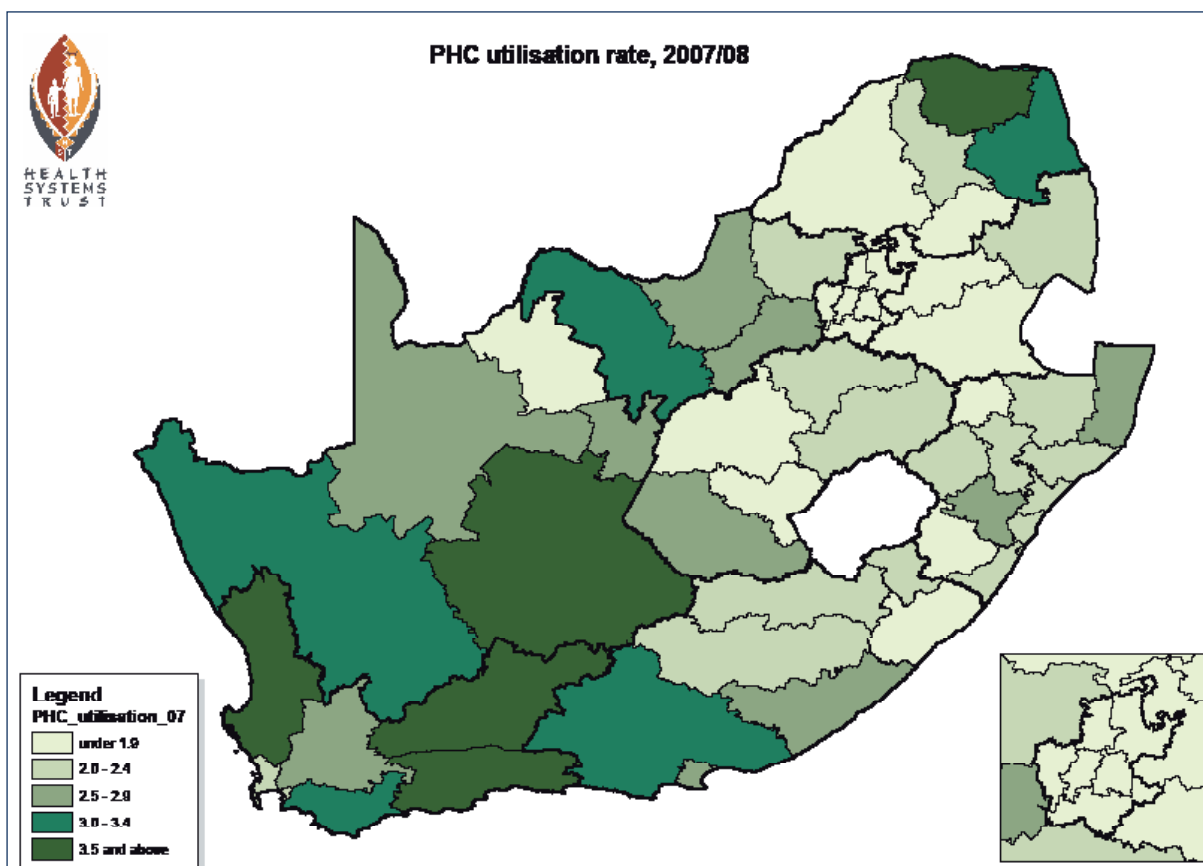
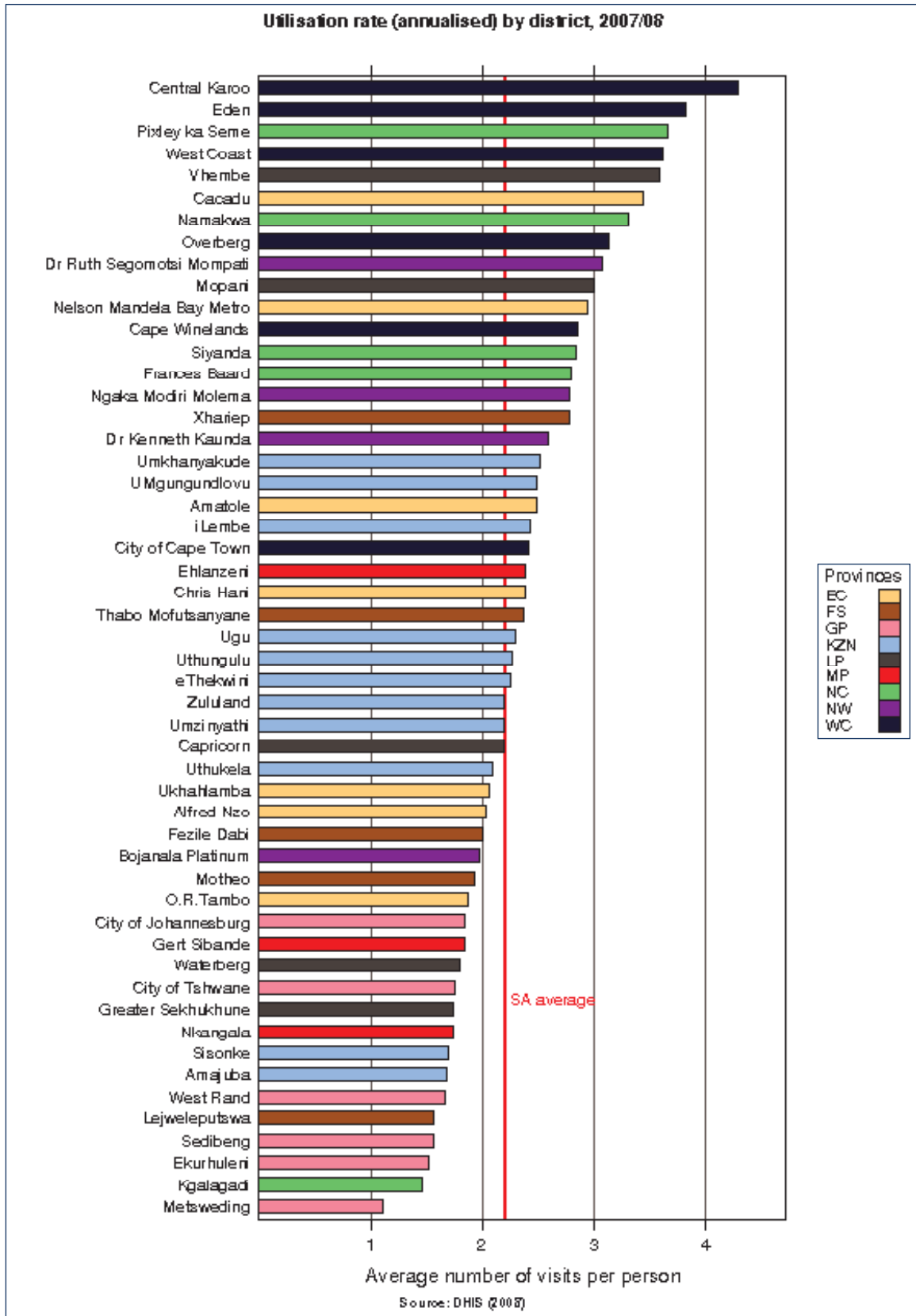




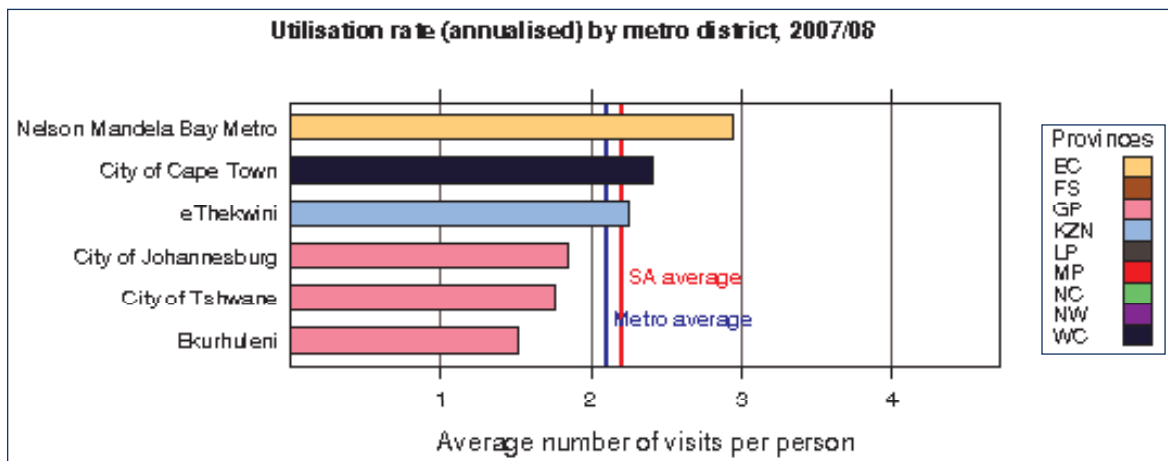
Figure 78: Primary health care utilisation rate by district, 2007/08



**Metro View**

The average utilisation rate for the metro districts was 2.1 visits per year. Three of the six metros, all in Gauteng (City of Johannesburg, Ekurhuleni and Tshwane) had the lowest utilisation rates, which are lower than both the metro and the South African average utilisation rates for 2007/08.

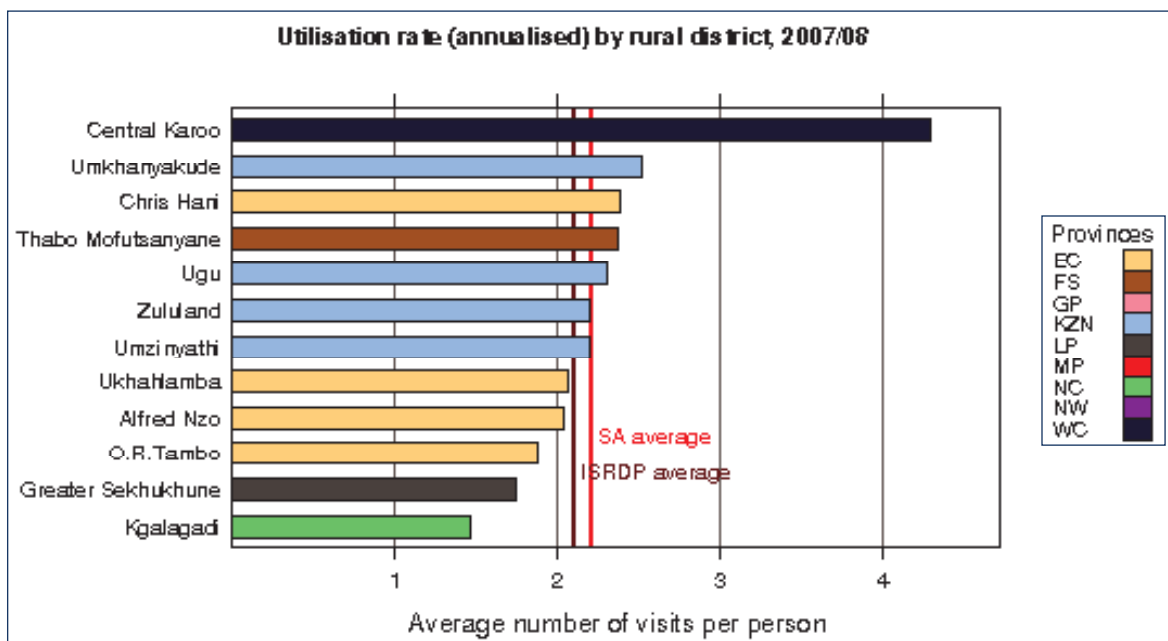
Figure 79: Primary health care utilisation rate by metro district, 2007/08



**Rural Nodes**

The average utilisation rate in the rural districts in 2007/08 was 2.1 visits per person per year, the same as in 2006/07 and lower than the SA average utilisation of 2.2. Seven of the 12 rural districts were above the national average with one district, Central Karoo (WC) with a utilisation rate far exceeding the average and above the national target of 3.5.

Figure 80: Primary health care utilisation rate by rural district, 2007/08



**Change and trends in primary health care utilisation rate**

Because the utilisation rate is based on the total number of visits of patients for all possible health reasons, it represents the full spectrum of all facility PHC activity and is therefore slow to change. Community based PHC activity is still not integrated into the information system and these activities, if incorporated into the calculations, could have significant influence on the total figures. The data show that less than half (22 of the 52 districts) had decreased utilisation rates since 2006/07, whilst 15 had increased and 15 had registered no change. Xhariep (FS) demonstrated the highest average increase in the number of people visiting a PHC facility (0.3) while Kgalagadi (NC) had the largest decline of 1.3 visits per person. This decline for a second year in a row is most probably due to missing data. Tshwane metro had the second largest decline of all the districts and the largest decline in PHC visits amongst the metros (0.6 visits per year less). Besides Ekurhuleni, which registered no change, five of the six metros showed decreased utilisation rates as compared to 2006/07. Four of the rural districts however, had increased their utilisation rates during the year.

**Figure 81: Change in primary health care utilisation rate by district, 2006/07 - 2007/08**

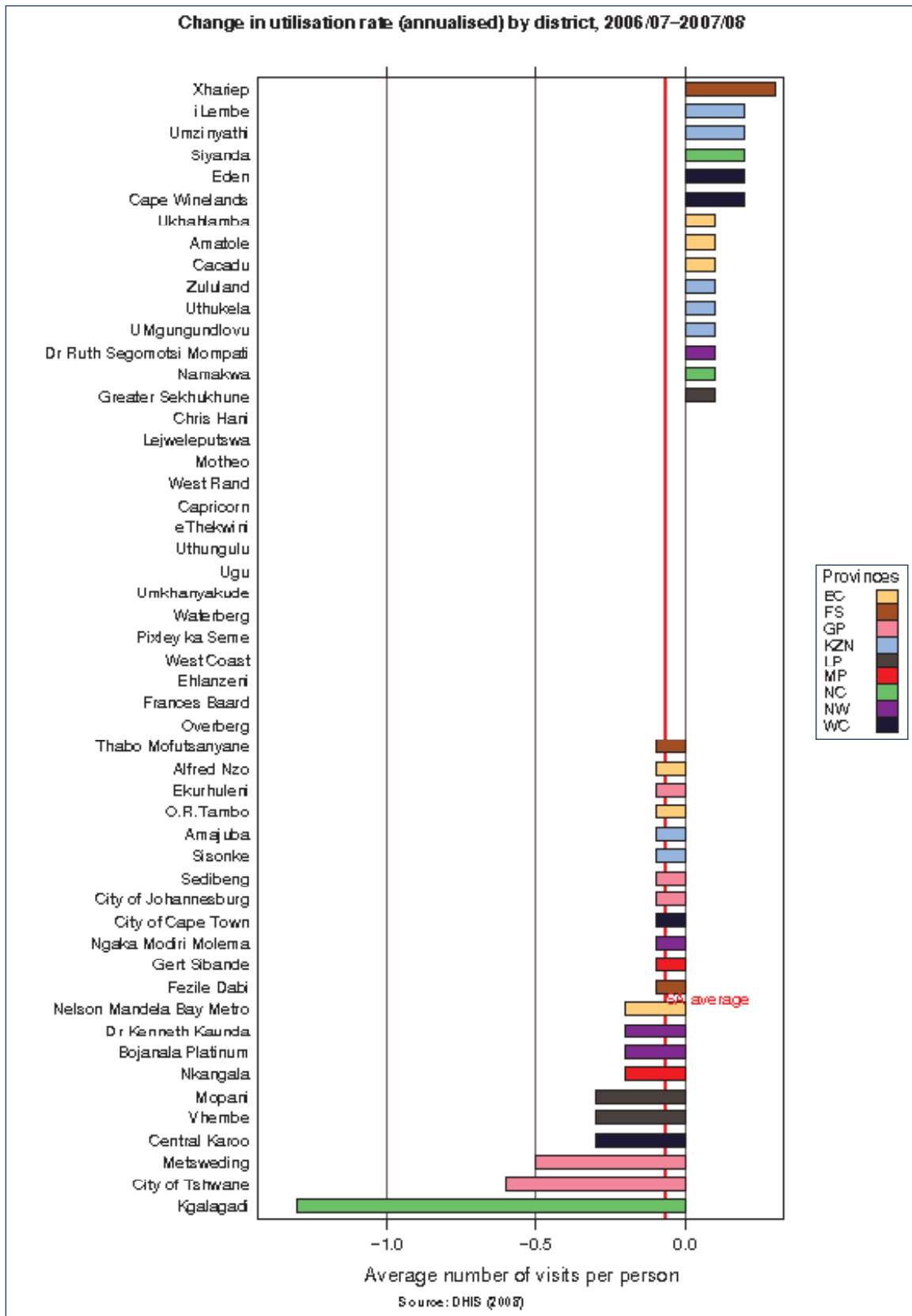


Figure 82 shows each province individually, illustrating the trend over the last few years in the average PHC utilisation rate for each of the districts within that province. It illustrates amongst other things the wide variation in the utilisation rates among districts in the Eastern Cape and Limpopo provinces and the low utilisation of Gauteng's districts as well as the relatively higher utilisation rates of districts in the Western Cape.

Figure 82: Trends in primary health care utilisation rate by province and district, 2000/01 - 2007/08

