

### 3 Hospital services

Selected indicators related to district hospital activity, namely the usable bed utilisation rate, the average length of stay, usable beds per 1 000 uninsured population and expenditure per patient day equivalent, are described and discussed in this chapter. Together these indicators depict how well a hospital is being run, by reflecting the allocation and use of resources, management proficiency and efficiency over time.<sup>1</sup>

#### 3.1 Usable bed utilisation rate

The usable bed utilisation rate (BUR) is a process indicator (identifies activities related to the functioning of the health system) that is also a measure of efficiency.<sup>1</sup> The BUR reflects how many of the usable beds in a hospital were occupied over a given time period, usually a year. Beds are considered usable if the necessary resources, such as staff and budget, have been allocated to enable their daily operation. The numerator for calculating this indicator is the number of inpatient days<sup>a</sup> per given time period divided by the denominator of usable bed days in that given time period, expressed as a percentage. 'Usable bed days' is calculated by multiplying the number of usable beds (which may include a variety of types, including beds for acute care, chronic care, cots and neonatal incubators) by the number of days that they are in use. An example of a BUR calculation is included below.

A low BUR value for a given hospital may indicate that there is little or no need for the hospital in the particular community or area. Another explanation could be that the community chooses not to use the hospital for any number of reasons. In contrast, a high BUR could indicate that patients are spending too long in the hospital and not being discharged appropriately or it could mean that there are insufficient beds to cater for the needs of the population.

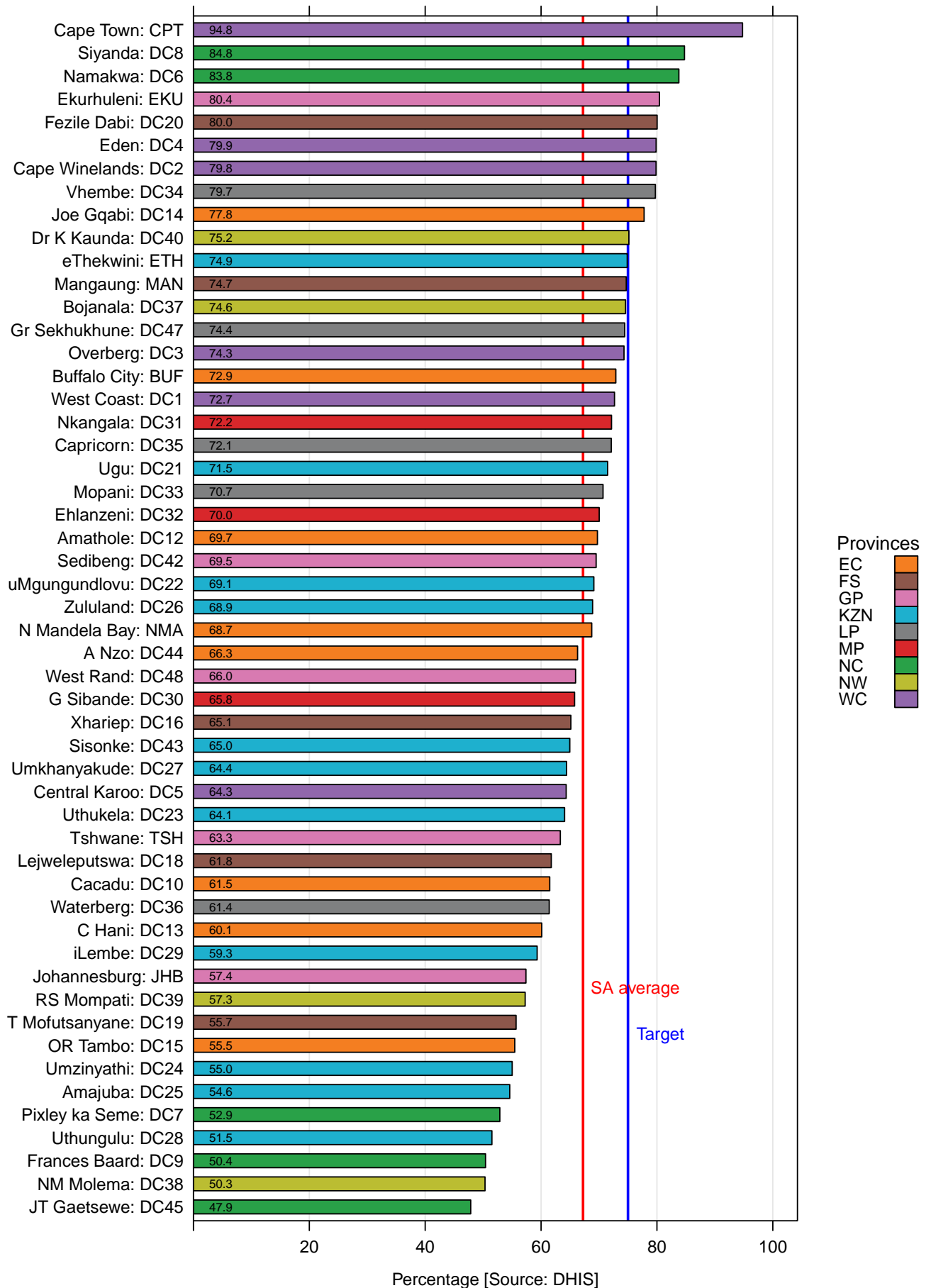
In 2007/08 the national Department of Health (DoH) recommended a BUR target of 75% for district hospitals and this figure is still in use.

The national BUR was 67.2% in 2011/12 (see Figure 1) – a slight increase from 2010/11 (64.7%) although this indicator has remained relatively stable since 2000 (62.1%). The national rate is still below the national target and ranged from a high of 94.8% for the City of Cape Town (WC) to 47.9% for John Taolo Gaetsewe (NC) district, an almost two-fold difference. The majority of Western Cape (WC) and Limpopo (LP) districts exceeded the national rate and the national target.

Figure 2 and Map 1 reflect wide intra-provincial variations. In the Northern Cape (NC) Siyanda district had a BUR of 84.8%, which is 1.8 times greater than that of John Taolo Gaetsewe district. In Free State (FS) province Fezile Dabi's BUR of 80.0% was 1.4 times greater than that of Thabo Mofutsanyane (55.7%). Gauteng province (GP) had a similar difference with Ekurhuleni – the highest – at 80.4% and City of Johannesburg – the lowest – at 57.4%. The annual BUR trends depicted in Figure 2 demonstrate wide inter-provincial variations within and between provinces, although the intra-district variation has remained relatively stable over the years. Further examination of the data reveals even greater variation between individual hospitals.

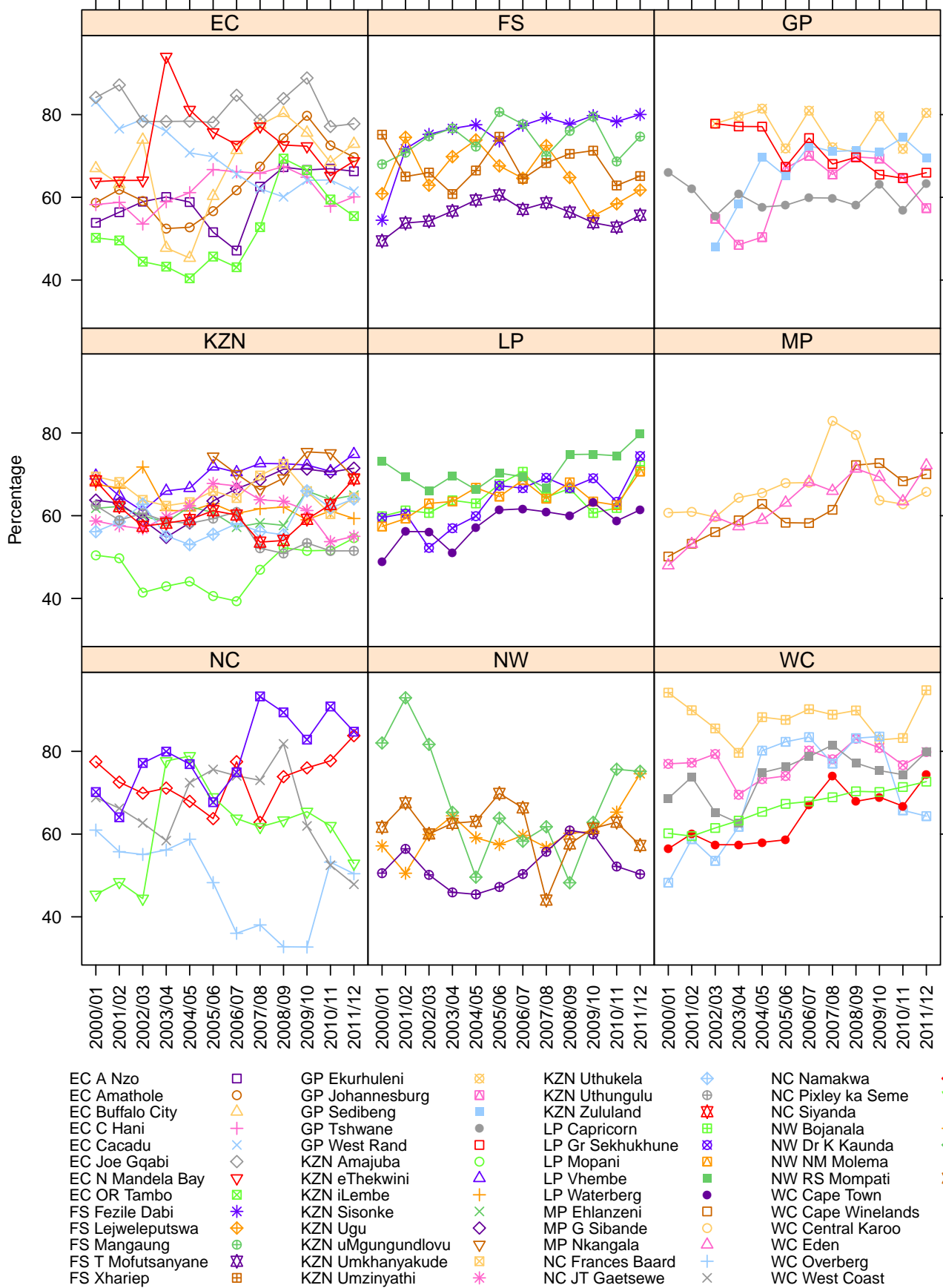
a Inpatient days = no. of inpatient days + ½ day patients.

Figure 1: Usable bed utilisation (District Hospitals) by district, 2011/12

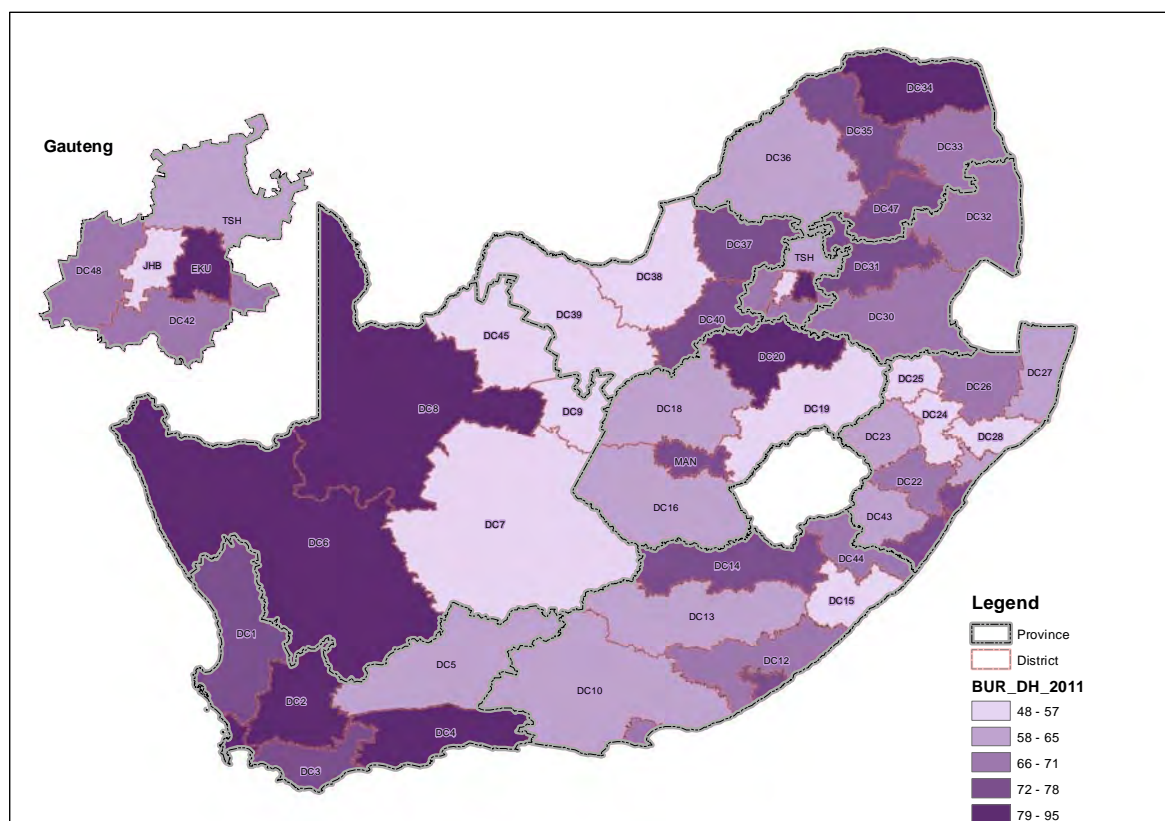


Section A: Indicator Comparisons per programme by District

Figure 2: Annual trends: Usable bed utilisation (District Hospitals)



Map 1: Usable bed utilisation rate by district, 2011/12



### 3.2 Average length of stay

The average length of stay (ALOS) indicator measures how long on average each patient spends in a hospital, expressed as a number of days. The formula's numerator is patient days (number of inpatient days plus half of the total number of day patients seen) divided by the denominator of the number of separations (discharges added together with transfers, deaths and day patients).

This indicator provides managers and other decision-makers with a measurement of quality. A high ALOS suggests that patients are spending too much time in the hospital, which is neither good for the quality of care nor for the efficiency of the hospital. There are various reasons for a high ALOS including delays in diagnosis, treatment and discharge. Other reasons include the patient's socio-economic status with problems in housing, transportation or care from relatives, along with patients not being referred to alternate facilities (such as hospices) to provide the required care and thus being treated at an incorrect level. When ALOS is persistently high it is recommended that policies for admitting and discharging patients be reviewed. In contrast, a low ALOS may indicate poor quality of care as it could mean that patients are not spending long enough in hospital or they are being referred to other facilities too quickly.

Figure 3 reflects a 2011/12 national ALOS in district hospitals of 4.3 days, which is higher than the national target of 3.5 days. There is an almost eight-fold difference between the districts with the longest and shortest ALOS values, namely Buffalo City in the Eastern Cape (EC) at 7.8 days and Frances Baard (NC) at 1.0 day.

Similar to the 2010/11 results, all five NC districts reported an ALOS below the national average, ranging from 1.0 day in Frances Baard to 3.6 days in John Taolo Gaetsewe districts. The latter was the only district in NC to exceed the national target of 3.5 days. In contrast, 10 of the 11 KwaZulu-Natal (KZN) districts reported an ALOS higher than the national average. The WC reported a narrow range for all six districts from 2.5 to 3.4 days – all below the national target. Similar to previous years, the 10 districts with the highest ALOS were in KZN and EC.

Figure 4 and Map 2 demonstrate intra-provincial variations between districts, most notably in KZN and EC. Since 2000/01 the average ALOS for Mangaung district (FS) has been consistently higher than other FS districts and is currently 4.4 days. In the North West (NW) province Bojanala district fell by a ratio of 1.6 from 4.5 days in 2010/11 to 2.8 days in 2011/12. All LP districts increased in the ALOS values between 2010/11 and 2011/12; the highest increase noted in Mopani district (3.7 in 2010/11 to 4.2 in 2011/12). After decreasing steadily for the past three to four years, the ALOS for three of the five GP districts increased in 2011/12.

Figure 3: Average length of stay (District Hospitals) by district, 2011/12

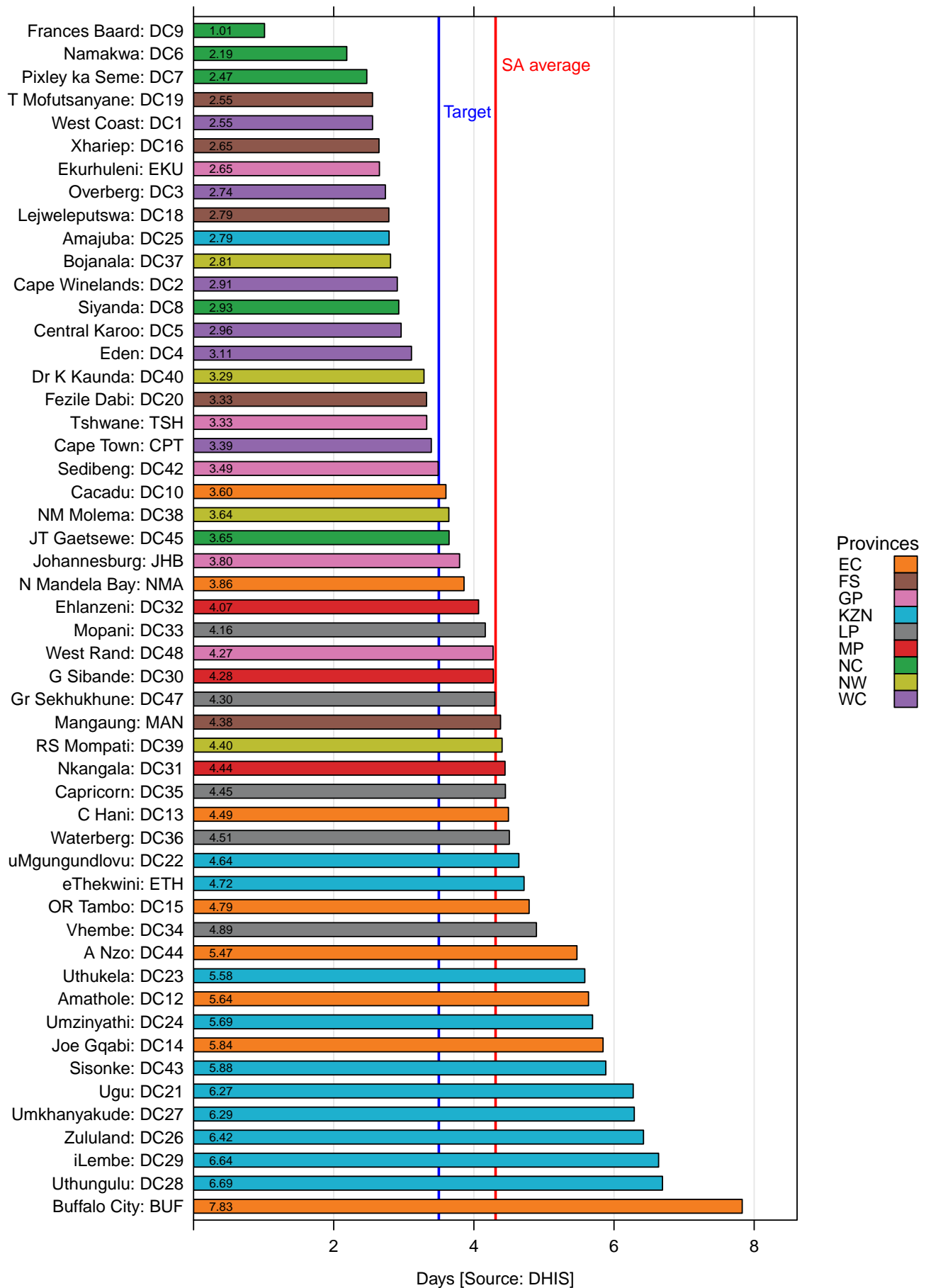
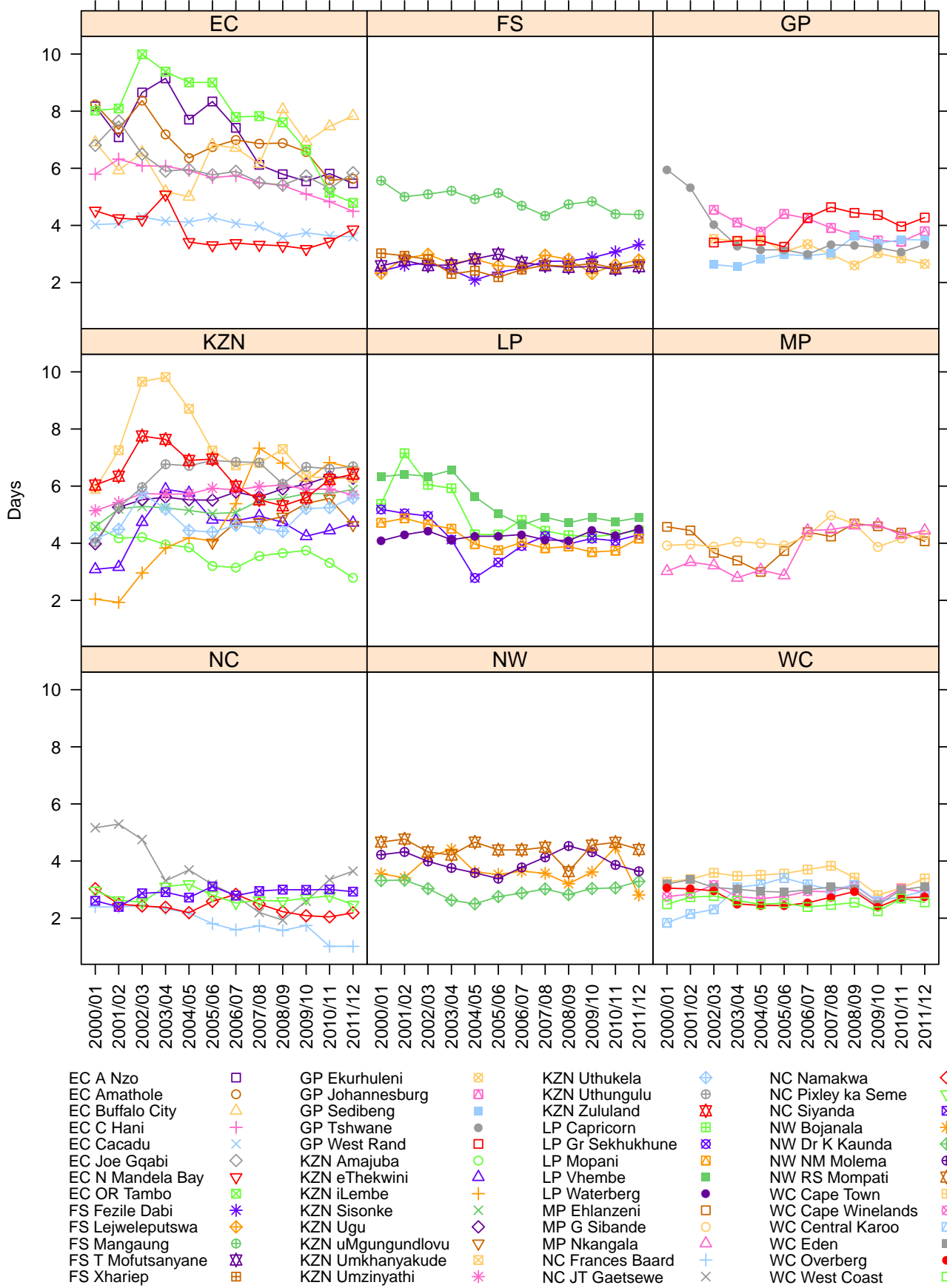
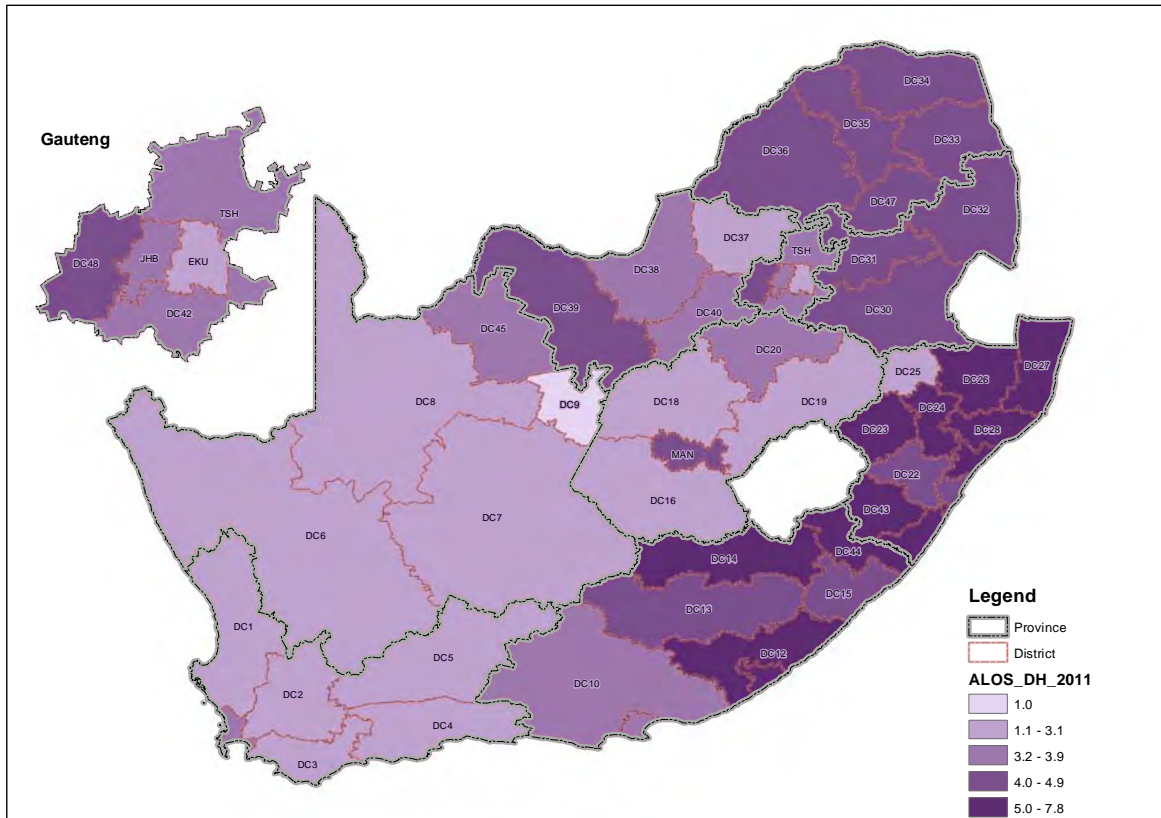


Figure 4: Annual trends: average length of stay (District Hospitals)



Map 2: Average length of stay by district, 2011/12



### 3.3 Usable beds per 1 000 uninsured population

The usable beds per 1 000 uninsured population is an input indicator<sup>1</sup> that measures how many usable beds there are in a particular district for every 1 000 uninsured population. Only the uninsured population is used in the calculation because the indicator is calculated for public health sector beds. The calculation involves dividing the number of usable beds by the uninsured population, multiplied by 1 000. The indicator is expressed as a ratio. The DoH has not yet provided an optimal level of usable beds per 1 000 uninsured population to use as a national target.

Figure 5 illustrates that the indicator values varied substantially between districts, with a national average of 0.7 beds per 1 000 uninsured population. Umzinyathi (KZN) had the highest ratio of usable beds (2.5 per 1 000) whereas Ekurhuleni (GP) had the lowest (0.07) – a 35-fold difference. The 10 districts with the highest usable beds per 1 000 uninsured population were concentrated in two provinces, KZN and EC. The 10 districts with the lowest ratio of usable beds, however, were spread over six provinces. The range was the highest in KZN with a more than 22-fold difference between its highest (Umzinyathi at 2.5 per 1 000) and lowest (Amajuba at 0.1) districts. The ratio of usable beds for all the GP districts is below the national average. In contrast, all but two WC districts had usable beds ratios above the national average.

Figure 6 depicts annual variations within and between provinces for usable beds ratios. The graphs show strikingly that the majority of districts within the country have had relatively stable numbers of usable beds ratios from 2005/06 to 2011/12, with very little change in the intra-provincial variation between districts. However, the number of usable beds in the John Taolo Gaetsewe district (NC) has declined steadily from 1.4 in 2007/08 to 1.1 in 2011/12. Eastern Cape province had the highest number of beds per 1 000 uninsured population for the period 2005/06 to 2011/12 at 1.1, while GP was the lowest at 0.6/1 000.

Figure 5: Usable beds per 1 000 uninsured population by district, 2011/12

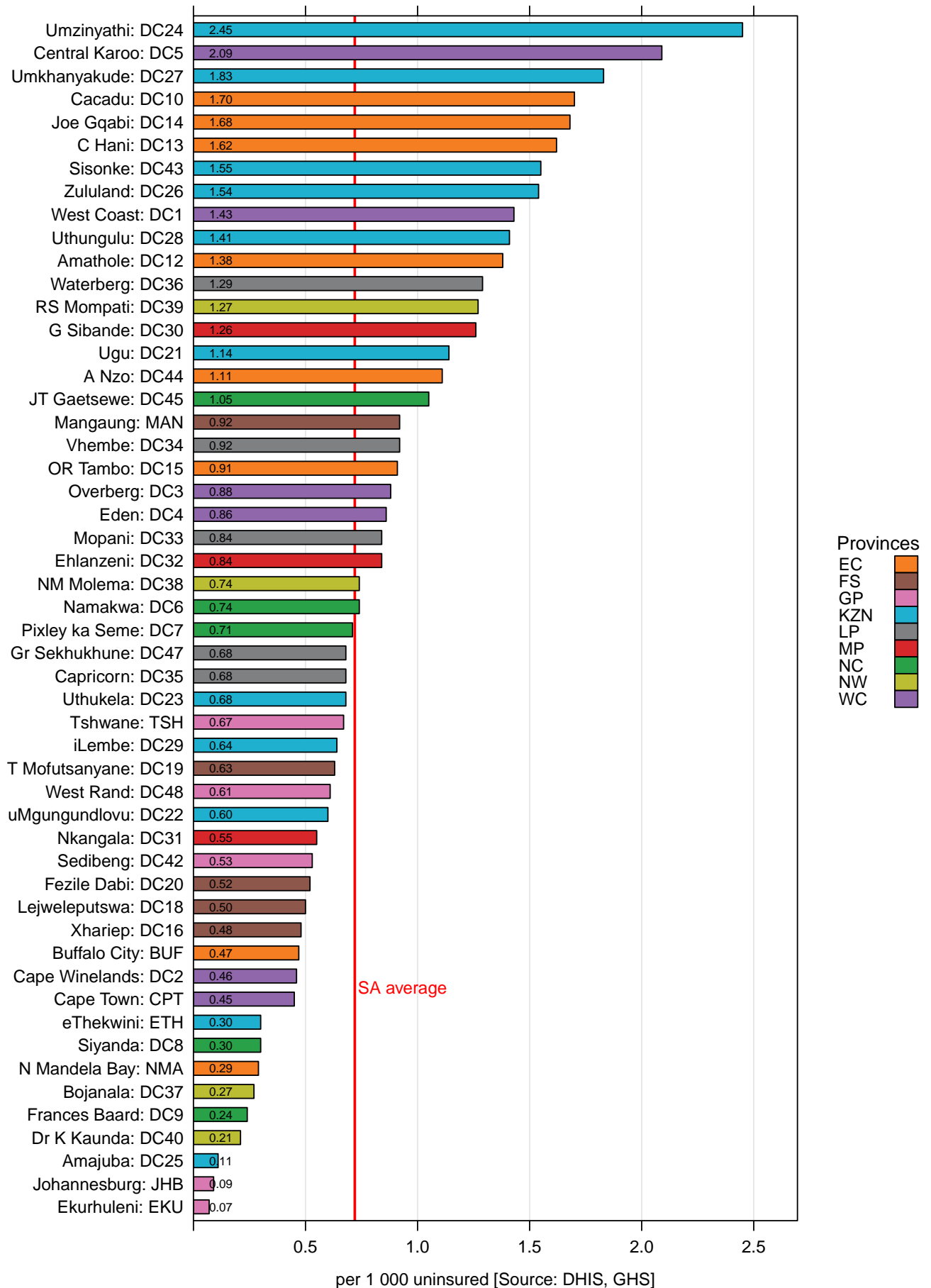
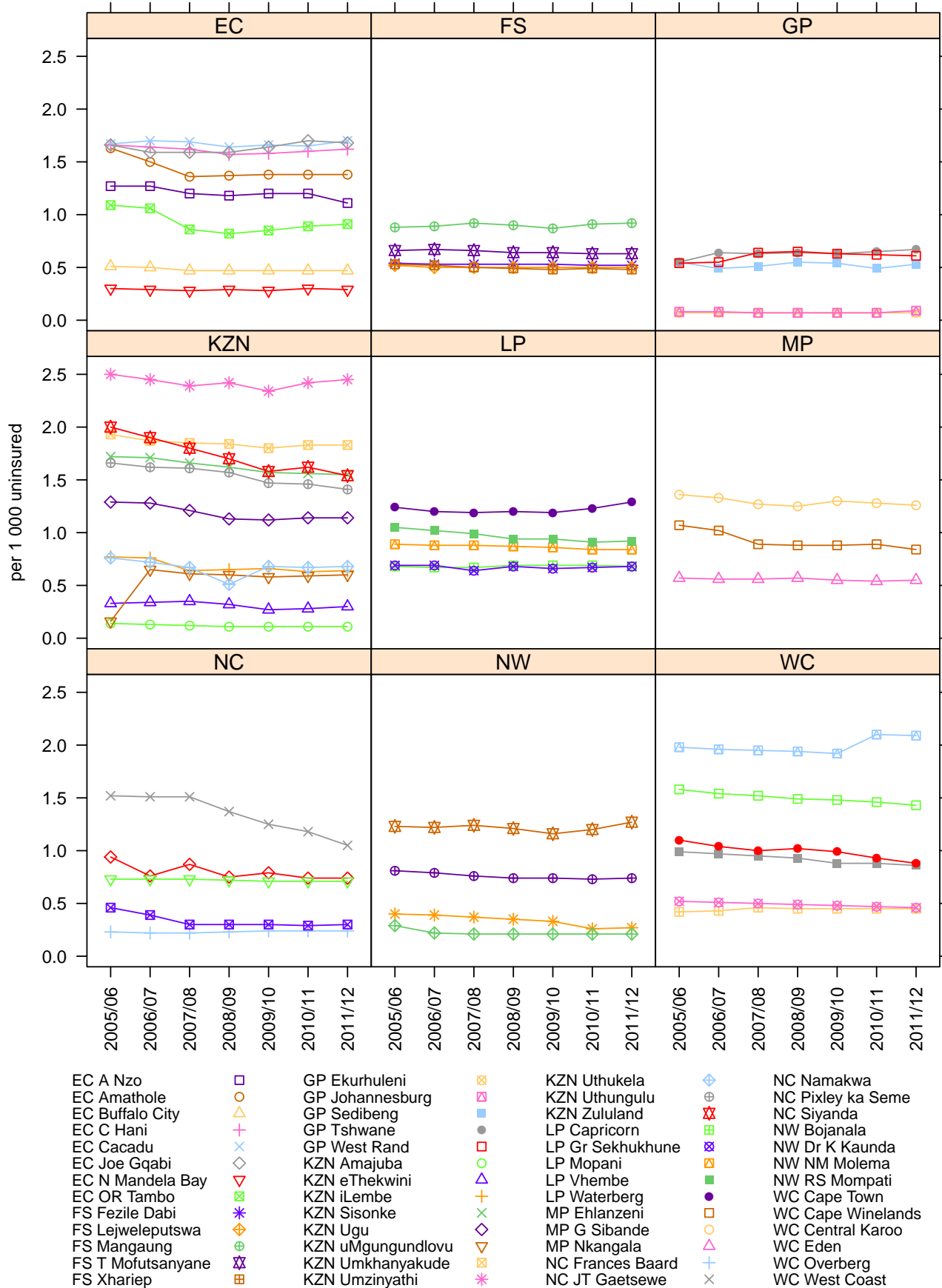




Figure 6: Annual trends: Usable beds per 1 000 uninsured population



### 3.4 Expenditure per patient day equivalent

The expenditure per patient day equivalent (PDE) is an input indicator that measures resources that are put into the health system.<sup>1</sup> This indicator, expressed in Rands, is calculated by dividing the hospital's total expenditure by the PDE, which is calculated by adding the inpatient days plus half the number of day patients seen plus one third of outpatient and emergency room visits.<sup>1</sup>

The indicator measures efficiency by comparing financial inputs (total expenditure of the hospital) with output service information (inpatient days, day patients, outpatients and emergency room visits). Expenditure per PDE provides insight into the management of a hospital and its efficiency as a whole.

Possible causes of a high expenditure per PDE are an underutilised hospital with a low bed occupancy rate or a hospital with excessive costs. Causes of the latter can be relative overstaffing, wastage and inefficient control over resources (food, equipment, drugs and consumables). Incorrect accounting practices such as the inclusion of non-hospital costs (for example human resources being used in clinics) in the total hospital costs would also increase the expenditure per PDE.

The 2011/12 national expenditure per PDE was R1 653 – representing a small 1.6% increase on the 2010/11 figure. Figure 7 shows the variance between districts with a high expenditure per PDE of R2 546 for Nelson Mandela Bay metro (EC) to a low of R1 016 for Siyanda (NC) – a 2.5-fold difference. This is, however, much smaller than the 2010/11 variance of 5.4 between the highest and lowest districts. All of the GP, LP and NW districts were above the national expenditure per PDE, while KZN and WC each had one district above the national average.

Twenty-two districts reported a decrease in expenditure per PDE from 2010/11 to 2011/12 with Cape Winelands (WC) having the largest drop of R414. The highest increase in expenditure was for Frances Baard (NC) with an increase of R1 269 (or almost 300%) from the 2010/11 spend of R431 (a figure that does suggest an accounting error and raises questions of data quality management). Figure 8 shows the trends in expenditure per PDE by district. Strikingly, five of the six WC districts showed a downturn in the trend in 2011/12. Since 2004 Nelson Mandela Bay district has been consistently higher in PDE expenditure than the other EC districts. Although showing a slight decrease on the 2010/11 figure, expenditure in Waterberg is highest of the LP districts.

Map 4 clearly shows the relatively high PDE expenditure in NW and GP and the low expenditure per PDE in WC.

Figure 7: Expenditure per patient day equivalent by district, 2011/12

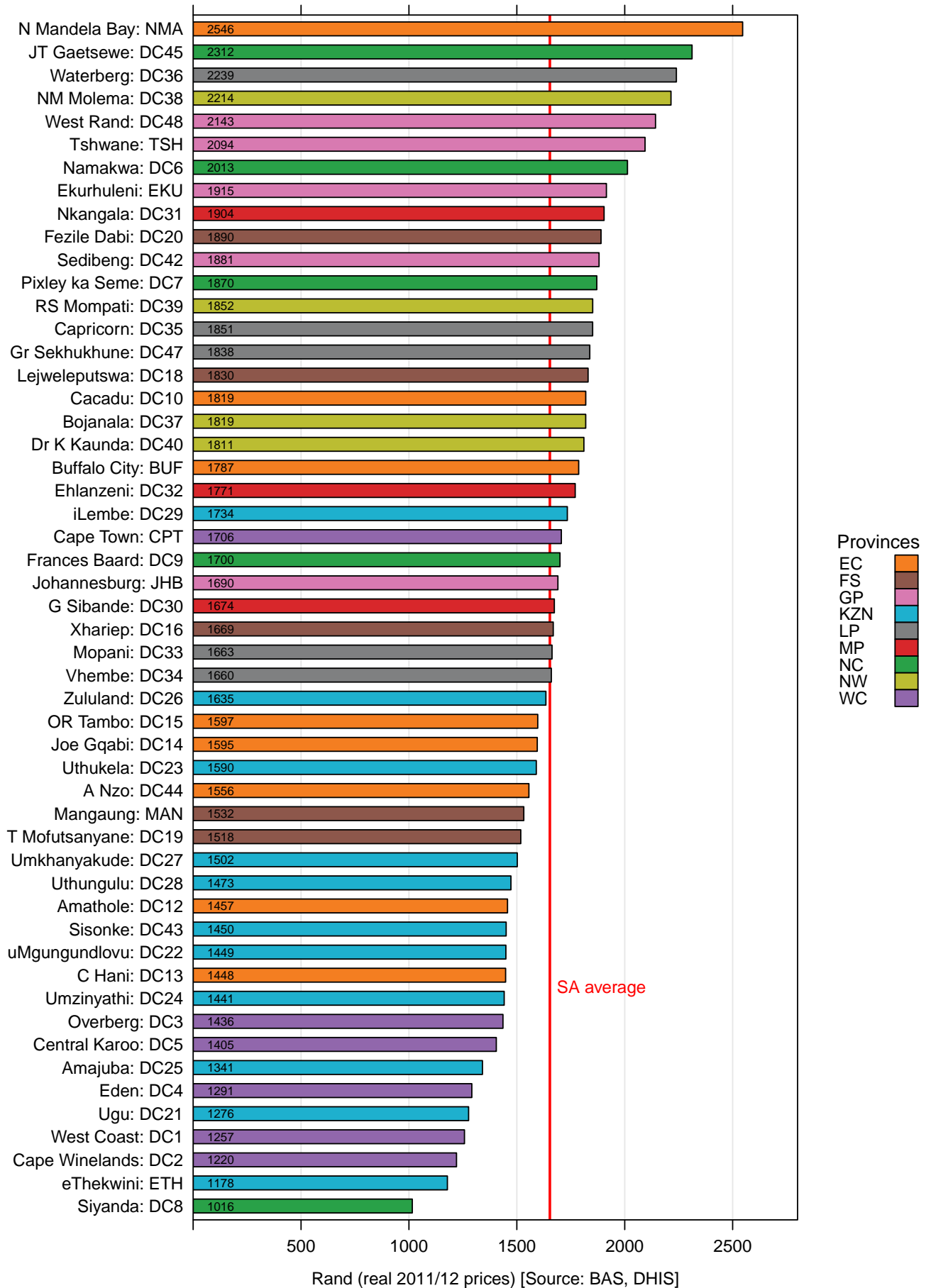
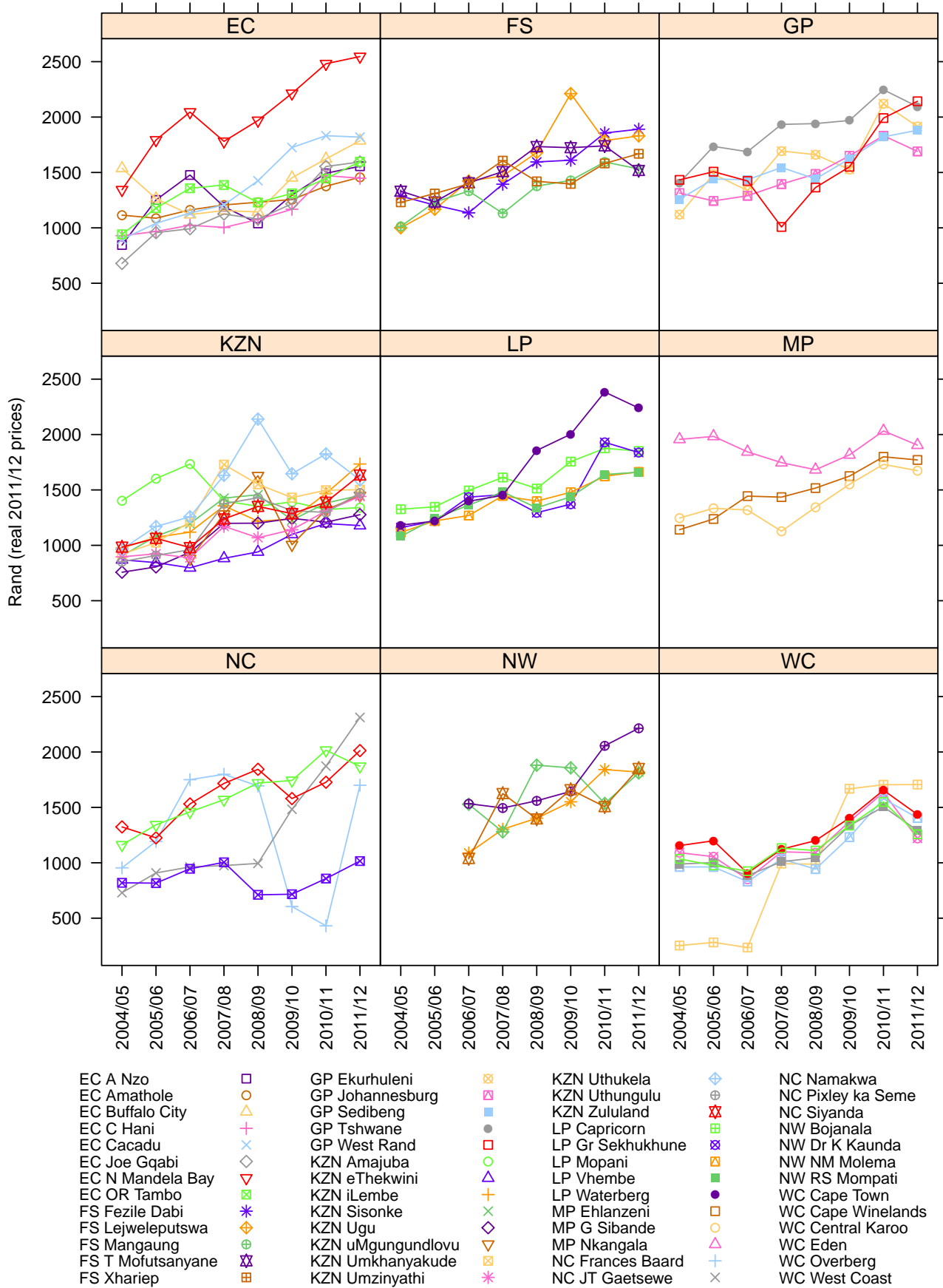
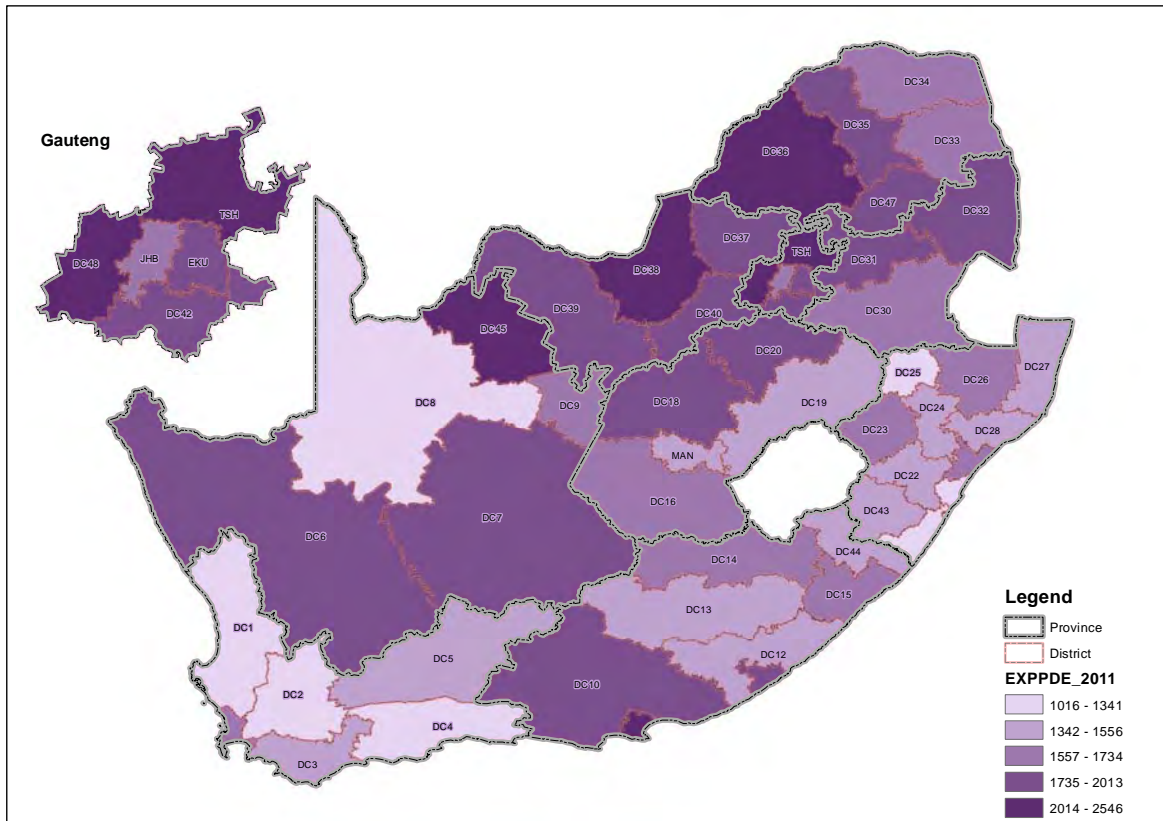


Figure 8: Annual trends: Expenditure per patient day equivalent



Map 4: Expenditure per patient day equivalent by district, 2011/2012



**References**

- 1 Barron P, Monticelli F. Key district health indicators. Volume 1. Durban: Health System Trust; 2007.
- 2 Day C, Barron P, Massyn N, Padarath A, English R. District Health Barometer 2010/11. Durban: Health Systems Trust; 2012.