

Introduction and Overview

Background

The District Health Barometer (DHB), now in its third year, is a tool to monitor and support improvement of equitable and efficient provision of primary health care in South Africa by the monitoring of a selected set of socio-economic and health care indicators. The report, which is available on an annual basis and which draws upon data from the District Health Information System (DHIS), StatsSA, the National Treasury (BAS data) and the national TB register, seeks to highlight inequities in health resource allocation, inputs, outputs and outcomes as well as the efficiency of health processes between provinces and between all districts in the country, with particular emphasis on rural and urban (metropolitan) districts.

The DHB is guided by an advisory committee made up of managers from the Departments of Health at national, provincial and district level, and also includes experts and stakeholders from the academic and research arenas. The committee meets twice a year, once to review the final draft and once to plan the next report.

The principle on which the DHB is based is that there should not be any primary data collection in order to construct the indicators. The indicators chosen are all based on secondary data that are either readily available, or on available data that needed manipulation. Averages have been calculated, i.e. for the metro and ISRDP districts and primary health care expenditure values are calculated from the data received from Treasury. Where the data are not publicly available, such as with the DHIS and Treasury data, HST have asked for and received written permission to use the data.

Indicators^b used in this DHB

The DHIS indicators chosen, although relevant and locally appropriate, have to a large degree been determined by the range and quality of data available. Out of those available the indicators chosen generally have been the ones that are linked to measuring the Millennium Development Goals, or those which measure some important aspect of health policy such as access to health services, equity in provision, or efficiency of provision of health services.

Methodology and Data Sources

Population data

Indicators that require population denominators use the population mid-year estimates for the relevant year that were available at the time of calculation. Since Statistics South Africa has not released updated estimates by age group to sub-district level, these estimates have been developed by the Department of Health.

It should be noted that in some areas there have been substantial changes to these estimates from one year to another, particularly for the under 1 year and under 5 year estimates. These changes have resulted in artificial changes in the population-based indicators of immunisation coverage and delivery in facility.

The very high values demonstrated in the DHB 2005/06 for immunisation coverage especially in the Eastern Cape districts were as a result of being based on largely incorrect population figures. These have now been adjusted, which has resulted in lower rates both for 2005/06 and 2006/07.

Deprivation indices

The deprivation index is a measure of relative deprivation across districts within South Africa. Just as any index, the deprivation index is a composite measure derived from a set of variables.^c

^b A table with definitions, references and terms for each indicator used in this report is available in appendix 4.

^c The deprivation index used in this report was generated using principal components analysis (PCA). PCA identifies the underlying process that has the most influence in determining the outcome of each variable included in the analysis. Each variable is weighted based on its linear association with the underlying process. The weighted variables are then used to construct the deprivation index.

Variables included in the analysis are variables considered to be indicators of material and social deprivation. The deprivation index for 2001 was generated using variables from Census 2001. The updated index used in this report was generated using data from the General Household Survey 2005 published by Statistics South Africa.

To simplify interpretation, the deprivation index was normalised, such that the district that is least deprived has a deprivation index of 1. **Districts with higher values are relatively more deprived than sub-places with lower values.** The score itself does not have any intrinsic meaning, but the relative scores show which districts are more deprived than others and can be used to rank districts. Each district was thus ranked according to levels of deprivation and categorised into quintiles. Districts that fall under quintile 1 (lowest quintile) are the most deprived districts. Those that fall under quintile 5 are the least deprived (best off).

Further details on the Deprivation index and its calculation can be seen in the appendices.

Other measures of socio-economic status

Since there is not official consensus on a single measure of poverty or deprivation, two additional indicators have been included with the deprivation index, the percentage of households with access to piped water and the poverty rate (based on the percentage of households with monthly expenditure less than R800 per month). These indicators were extracted from the Statistics South Africa online database.

District health financing indicators

This year the district level estimates of expenditure per capita on non-hospital PHC have been updated. Updated data were extracted from the Basic Accounting System (BAS) for 2005/6 and the calculations redone for this year (using district-level medical aid estimates not available previously), therefore there are small differences between the values shown here and those published previously.

Data from the BAS financial database for all provinces except North West were obtained in June 2007 from Vulindlela for the 2005/06 and 2006/07 financial years. Summarised data from North West were obtained from the chief financial officer of the province. Provincial expenditure is coded according to the programmes and sub-programmes published by National Treasury. Expenditure from sub-programmes 2.1-2.5 (District management, Community health clinics, Community health centres, Community-based services and Other community services) constitute the non-hospital PHC expenditure under District Health Services.

Additional data sources included:

- ◆ Data on local government expenditure on primary health care from National Treasury. Net expenditure was used, i.e. expenditure less income (which includes transfers from provinces to LG).
- ◆ Factors for inflation adjustments based on CPIX were obtained from National Treasury to convert all values to real 2006/07 prices.
- ◆ Population data from the DHIS, based on extension of StatsSA figures to sub-district level.
- ◆ Medical aid coverage from the StatsSA General Household Surveys 2005 and 2006 to calculate the uninsured population. It is noted that the GHS and other sources indicate that there is significant use of the private sector by the uninsured population and also some use of the public sector by the insured population, however for the purposes of these calculations we have divided public sector expenditure by the uninsured population in order to estimate per capita expenditure.
- ◆ Geographic information determining district boundaries from the Municipal Demarcation Board.
- ◆ Data on health facilities from the DHIS.

All expenditure was then allocated to districts using information from various fields in the financial database. The DHIS facilities file was used to code all entries linked to individual health facilities. Expenditure which could not be allocated to a specific district was subsequently allocated to all of the districts within the relevant province in proportion to the total population share of each district. Expenditure that was allocated to a region including 2 districts was similarly allocated to each district within that region according to population share. Finally, expenditure for cross-boundary districts was combined and included as one item in the province that the district is located in according to the new

demarcation boundaries. This means that for the purposes of analysis of per capita expenditure at district level, some expenditure which is originally recorded in one province may be shown under a different province.

Net local government expenditure on health services was added to provincial expenditure on non-hospital PHC, and this total was divided by the uninsured population to obtain expenditure on non-hospital PHC per capita.

The figures have all been adjusted to take the effect of inflation into account and are presented in **REAL** 2006/7 prices. This means that increases in expenditure over time reflect greater availability of resources rather than just increases to cover the increasing cost of health care due to inflation. The values for per capita expenditure are also included in **NOMINAL** terms (not adjusted for inflation) in the electronic version (CD).

A matter of concern is that for some provinces, expenditure is still not clearly allocated to districts. This suggests that financial management of health is still not taking place with a focus at district level, and it is suggested that district coding become a part of the required coding of financial information. Another area that is difficult to separate clearly and verify is that of transfers to local government.

The indicator "Cost per patient day equivalent" was calculated for all district hospitals, by dividing the total expenditure attributable to each facility (from the BAS and NW expenditure data) by the number of patient day equivalents^d for each facility (from DHIS). The analysis was done according to the bed size category of hospitals (less than 50 beds, 50-99 beds, 100-199 beds and 200 or more beds). This grouping was determined by a roughly equal division of hospitals in each category. This indicator was then aggregated to district, provincial and national level by weighted averages. The cost per patient day equivalent data are presented in nominal terms.

Health facilities and beds

The information on private hospitals has been obtained from the Wilbury and Claymore 2007 database, and does not include state-aided private hospitals or private public partnerships (PPPs).

Data on public sector health facilities were extracted from the DHIS 2007 data file. It should be noted that the process of updating the categorisation of facilities to the new definitions (e.g. from District Hospital to Level 1 Hospital) is still in process and this may result in some incorrect allocations of facilities. There may also be some duplication where private units or other operational units within public facilities are not coded at the correct level and are counted as facilities.

Indicators from the District Health Information System (DHIS)

The DHB has increased the focus and attention on DHIS data quality, analysis, feedback and use. Apart from combining data for cross-boundary districts, a principle followed for the DHB was not to change the data from the DHIS, even if it was obviously incorrect, as that creates the additional problem of multiple "versions" of the same data source. If data were incorrect we tried to highlight this in the accompanying text with the view to explaining this and improving the quality in subsequent years. This should assist districts and provinces to focus their attention with respect to improving their health management information capacity and systems. Unfortunately these incorrect data do influence the averages for the various categories in which they fall.

Most of the indicators in this report have been obtained from the DHIS, extracted from the NDoH4 (sub-district level) and NDoH5 (facility level – for indicators reported for district hospitals only) files for the financial years ending March, for 2003/4, 2004/5,^e 2005/6 and 2006/7. Data for 2003/4 - 2005/6 were extracted in June 2006 (NDoH4) and December 2006 (NDoH5), and data for 2006/7 were extracted in July 2007. For selected indicators such as immunisation coverage and delivery coverage where there were substantial corrections in the data or denominators, data for 2005/6 were updated from the most recent data file to facilitate more accurate trend analysis.

Gaps in the completeness of the DHIS data affect the general completeness of this report, national averages, interpretation, analysis and trends. Some indicators were not obtained from the DHIS and were obtained directly from provinces (eg. WC PMTCT indicators).

d Patient day equivalents (Inpatient days + 1/2 Day patients + 1/3 outpatient and emergency room visits)

e For the DHB year 1, data were extracted mainly for the calendar year 2004.

Data quality varies for a number of reasons. Data are not uniformly collected for all indicators because some provinces have not yet fully implemented the National Indicator Data Set (NIDS), resulting in a mix of data elements that make up the indicator. For some indicators data are not being collected at facility level at all.

There is inadequate monitoring of indicators throughout the system, from facility to national levels. This has resulted in some districts having indicator values that are clearly implausible.

Averages: It is important to note that all averages (provincial, national, metro and ISRDP) are WEIGHTED AVERAGES, based on the total numerator and denominator for all the sub-areas included, and are thus not averages of the district indicator values. Therefore, these averages may appear "skewed" for any indicator in any province where there are districts of very different sizes or workloads and where a bigger district has a very different value from the other smaller districts in a province.

Clinic supervision rate

This indicator measures the percentage of primary level facilities (clinics and community health centres) which are visited by a supervisor at least once a month. It is defined as the total number of clinics and CHCs visited at least once in a month / total number of clinics and CHCs.

The data elements for this indicator are collected by the DHIS, but the calculated indicator was not available from the system and was calculated manually:

- ◆ The number of supervisor visits per facility per month were extracted from NDoH5 (July 2007).
- ◆ Since some facilities recorded more than one visit per month the data were recoded so that all entries ≥ 1 were set to 1.
- ◆ These data were then summarised by district to give the total number of supervisor visits for facilities in that district for the year (2006/7).
- ◆ The total number of visits was divided by 12 to get the average number of visits per month. In some cases such as the WC where data were only collected for 9 months, the average was obtained by dividing by 9 (or the number of months for which data were collected).
- ◆ The number of clinics and CHCs were extracted from the DHIS facilities file for facilities open during 2007 (denominator).
- ◆ The average visits per month (x100) were then divided by the number of facilities to obtain the supervision rate.

Antenatal HIV and syphilis sero-prevalence survey

For the first time the results of this survey have been released at district level, which has enabled validation of the DHIS routine data for the HIV prevalence indicator. Both sets of data are displayed in the district profiles. The correlation of the national antenatal sero-prevalence survey with the DHIS data can be seen in Appendix 1.

Data Display

Financial year and calendar year

Each of the indicators from the DHIS cover the 12 months April to March, which is the financial year of the Department of Health. Only the TB data (TB cure rate and smear conversion rate) cover a calendar year. Indicators from StatsSA and the antenatal sero-prevalence data are for the period of the Census or survey.

Indicator ranking – is first always best?

The districts are ranked from 1 to 52 (or 53, as in the case of TB cure rate) for the various indicators in the league table graphs with number 1 representing the best performance and number 52/53 the worst performance. However with some indicators such as nurse clinical workload and caesarean section rate being in the number 1 position does not mean best performance; best is usually in the middle range close to the South African average.

In the district profiles and the data file, a simple colour coding and a rank number has been added to facilitate understanding:

- ◆ green – 1 - 17 (best)
- ◆ yellow – 18 - 35 (middle)
- ◆ orange – 36 - 52 or 53 (worst).

CHANGE graphs and values

The change values as shown in the DHB are percentage point differences, which are the arithmetic difference of two percentages. So for example if a district in 2005/06 had a TB smear conversion rate of 50% and in 2006/07 the TB smear conversion rate was 75% then the improvement was represented as a 25 percentage point increase i.e. the 2005/06 value of 50 subtracted from the 2006/07 value of 75.

Cross-boundary districts

The existence of cross-boundary sites continues to complicate analysis at the district level. Currently indicators in a number of health districts that cross provincial boundaries are affected because the data on which these indicators are based are collected by two provinces with differing information systems. This is a fluid situation, which is also going to be affected by proposed changes to provincial boundaries. The department of provincial and local government has gazetted the Cross-Boundary Municipalities Laws Repeal Bill for public comment. For the current DHB data for cross boundaries have been allocated as follows:

Cross-boundary district	Data from:	Data incorporated into:
Tshwane metropolitan municipality	Gauteng/North West	Gauteng
Frances Baard district municipality	Northern Cape/North West	Northern Cape
Kgalagadi district municipality	Northern Cape/North West	Northern Cape
West Rand district municipality	Gauteng/North West	Gauteng

As detailed in the government Gazette Nr 28363 of 23 December 2005,^f the cross-boundary municipality of Bohlabela, has been divided between Limpopo and Mpumalanga provinces and thus no longer exists.^g However some sources still provide data according to the old demarcation, and where no detailed underlying data are provided it is not possible to reallocate the indicators according to the new demarcation. For example, in the case of the TB indicators, the TB cure rates are evaluated a year after the commencement of treatment, and Bohlabela district's results are still being evaluated for the TB cure rate 2005 and the TB smear conversion rate 2006.

Data from the DHIS for cross-boundary districts have been aggregated for the purposes of displaying a single district value in the Barometer. However the provincial values have been left as those recorded in DHIS at provincial level according to the parts of the cross-boundary sites which are under the control of the respective provinces. Figure A illustrates this in detail.

^f Available from http://www.demarcation.org.za/documents/Legislation/2006Jan17_1/Cross_Boundaries_Repeal_Act.pdf

^g Bushbuckridge sub-district has become part of DC32 Ehlanzeni district in MP and Maruleng has become part of DC33 Mopani district in LP.

Figure A: Provincial values affected by cross-boundaries

Sum of CalcOU4			IndName		Sum of CalcOU4			IndName	
OU2Short	OU3Short	Immunsisation drop out rate (DTP1-3)			OU2Short	OU3Short	Immunsisation drop out rate (DTP1-3)		
Gauteng	Ekurhuleni MM	1.9			Gauteng	Ekurhuleni MM	1.9		
	Johannesburg MM	2.5				Johannesburg MM	2.5		
	Metsweding DM	3.9				Metsweding DM	3.9		
	Sedibeng DM	1.7				Sedibeng DM	1.7		
	Tshwane MM	-1.5	→	↗		Tshwane MM	-1.6	Cross-boundary district values combined	
	West Rand DM	1.3	→	↘		West Rand DM	2.5	Cross-boundary district values combined	
Gauteng Total			1.3	→	Gauteng Total			1.3	Provincial average not changed
North West	Bojanala Platinum DM	-0.6			North West	Bojanala Platinum DM	-0.6		
	Bophirima DM	-1.2				Bophirima DM	-1.2		
	Central DM	6.1				Central DM	6.1		
	Frances Baard DM nw	10.2	↘	↘		Southern DM	0.0		
	Kgalagadi	5.0	↘	↘	North West Total			1.3	Provincial average not changed
	Southern DM	0.0							
	Tshwane MM (nw)	-1.7	↘	↘					
	West Rand DM (nw)	14.2	↘	↘					
North West Total			1.3	↘	Combined and shown with Northern Cape districts				