Understanding Public Health: Exploratory Notes

Note 1: Public Health Budget and Expenditure Trends

1 Introduction [1]

Public health in South Africa has undergone enormous transformation. Since the onset of democracy, the South African Government (SAG) has had to completely overhaul the sector to integrate health facilities and establish new facilities in areas that had been previously under-served. The expenditure on public health care since 1994/95 has grown 10-fold in nominal terms. In this time, the SAG has introduced free Primary Health Care (PHC) for all those within South Africa's borders, free emergency care and free hospital care for those who fall below a certain income bracket. This rapid scale up of available services has increased the total health spend (public and private) as a proportion of GDP, from 8.3% in 1995 to 8.8% in 2014[2]. This short piece aims to look at the changes in public health expenditure over the past two decades.

2 Funding Flows in South Africa's Public Health System

The National Revenue Fund (NRF) is made up of revenues from the three spheres of government (National, Provincial and Local). The National Government generates the most revenue of the three spheres, mainly through income tax, VAT and customs duties. The provincial government generates a small amount of revenue mainly through vehicle licencing, hospital fees and gambling taxes. The local government generates revenue from property rates and surcharges on service fees. Before the NRF funding is shared, government debts and obligations are accounted for and that money is removed from the NRF. Thereafter, the SAG must decide on the division of the NRF. The two key pieces of legislation that form part of the national budget are the Division of Revenue Bill, which is tabled before Parliament every year and the Appropriation Bill. The Division of Revenue Bill explains the vertical and horizontal division of revenue between the three spheres of the government and between the provinces. The enactment of the Appropriation Bill empowers national departments to spend the money allocated to them. These Bills are developed using existing policies, thereby ensuring that funding is aligned to policy. The National Development Plan (2030) and the Medium Term Strategic Framework (MTSF) 2014-2019 are two key policy documents used in South Africa. The NDP outlines the South African Government's (SAG) priorities and targets to 2030. The MTSF breaks down the NDP goals over shorter time frames, for monitoring.

Once the Division of Revenue Bill and the Appropriations Bill are debated, agreed upon and enacted by Parliament, they are referred to as the Division of Revenue Act (DORA) and the Appropriations Act, and this process takes place every year.

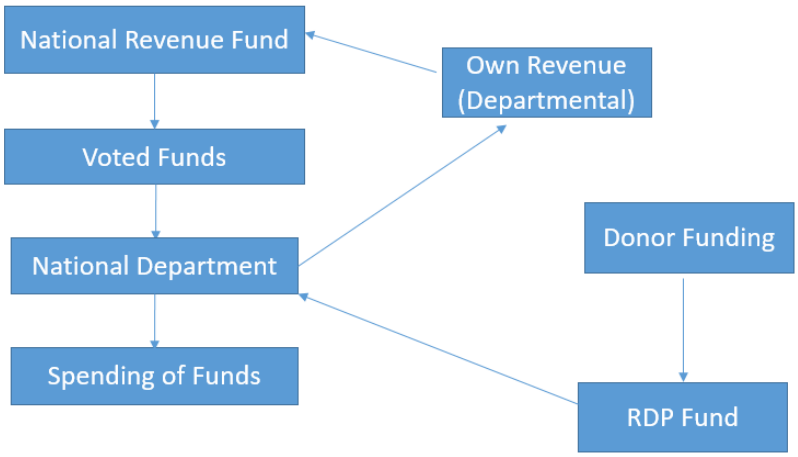
[1] The data from this analysis was taken from the Medium-Term Budget Policy Statements, Estimates of National Expenditure (both available from the National Treasury) and the District Health Barometer by the Health Systems Trust.
[2] http://data.worldbank.org/indicator/SH.XPD.TOTL.ZS

The DORA first divides the NRF vertically, where all nationally raised revenue is apportioned across national, provincial and local governments. These take the form of conditional allocations to provincial and local governments and the aim is to ensure that nationally raised revenue is equitably distributed irrespective of provincial and local government's' ability to raise funds. The NRF is then divided horizontally, and this is where the provincial equitable share formula is used to ensure equity. Lastly, the NRF is divided using conditional grants. These can go to provinces or local government/municipalities and the funds come with specific parameters on how they should be spent.

The allocation of funds are voted on by the National Assembly and therefore funds are called 'Voted Funds'. For example, the National Department of Health (NDoH) is Vote 16. Any Voted Funds that are not spent within the financial year must be returned to National/Provincial Treasury, unless a specific roll-over request has been granted by Parliament.

Donor funding to health in South Africa makes up a very small percentage of total health expenditure (less than 3%), which is unusual for the continent. Donor funding goes through the National Treasury's Reconstruction and Development Programme (RDP) fund. This funding is then disbursed to Departments and is returned to the RDP fund if unspent in the given timeframe. Figure 1 shows the flow of funding for the National Department of Health.

Figure 1: National Department of Health Funding Flow



Source: Guide for the Preparation of the Revenue Fund Template. National Treasury. 2016

For the Provincial Departments of Health (PDoHs), the process is slightly different. Money is still given through the NRF, however this time it is distributed across the provinces using the Provincial Equitable Share (PES) formula. Donor funding can also be given to a province, through the same RDP Fund mentioned above.

The Constitution provides that each sphere of government is entitled to an equitable share of revenue raised nationally to enable it to provide basic services and perform the functions allocated to it. The equitable division of revenue considers the functions assigned to each sphere under the Constitution and the capacity of each government to pay for these functions through own receipts and revenues. The PES Formula is used to

determine how much each province will receive. The Equitable Share is determined based on six weighted components[3]:

1. Education component (48%) – determined based on size of school age population and number of learners in public schools;
2. Health component (27%)- based on provincial risk profile and the utilisation of public sector health facilities;
3. Population component (16%)- as a proportion of total population;
4. Institutional component (5%) – given equally across provinces;
5. Poverty component (3%)- based on income data; and
6. Economic output component (1%) - based on Regional Gross Domestic Product.

The share of each component can change slightly from year to year depending on SAG priorities. Table 1 below shows how the components were proportionally shared amongst the provinces in 2015.

Table 1: Provincial Equitable Share formula applied across provinces in 2015/16

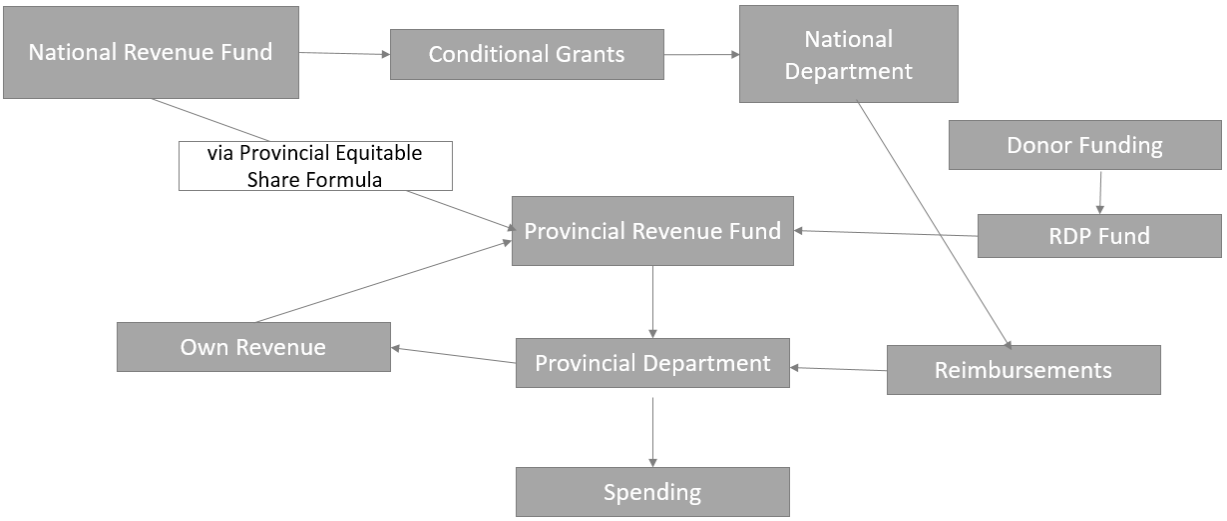
	Education	Health	Basic Share	Poverty	Economic Activity	Institutional	Weighted Average
Relative %	**48%**	**27%**	**16%**	**3%**	**1%**	**5%**	**100%**
EC	15,1%	13,5%	12,6%	16,2%	7,5%	11,1%	14,0%
FS	5,3%	5,4%	5,2%	5,3%	5,2%	11,1%	5,6%
GP	17,7%	21,4%	23,9%	17,1%	34,7%	11,1%	19,5%
KZN	22,5%	21,8%	19,8%	22,2%	15,8%	11,1%	21,3%
LP	13,0%	10,4%	10,4%	13,6%	7,1%	11,1%	11,8%
MP	8,5%	7,3%	7,8%	9,2%	7,1%	11,1%	8,2%
NC	2,3%	2,1%	2,2%	2,2%	2,2%	11,1%	2,7%
NW	6,5%	6,7%	6,8%	8,1%	6,4%	11,1%	6,9%
WC	9,0%	11,3%	11,3%	6,1%	14,0%	11,1%	10,1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Explanatory memorandum to the Division of Revenue. National Treasury. 2015

Importantly, despite the PES Formula allocating the money according to these factors, how that is then distributed across the government departments (Health, Education etc.) is up to the Provincial Treasuries, with consultations from the various departments. Funds given out through PES to provinces and local governments are called "unconditional allocations". This is because the money can be used in any way the provinces or local government determine is best. Figure 2 shows the Provincial DoHs funding flow.

[3] Explanatory memorandum to the Division of Revenue. National Treasury. 2015

Figure 2: Provincial Department of Health Funding Flow



3 Available Data in the Public Sector

The public health sector collects data via a system called the District Health Information System (DHIS)[4]. The software is called 'DHIS' and the current version in use in South Africa is DHIS1.4. DHIS 1.4 is a health information management tool written in Microsoft Access and Visual Basic for Applications. There is a newer version of DHIS (DHIS2) which now has a centralised database structure which allows for more-rapid data delivery and turnaround of reporting. DHIS2 is a web-based DHIS and it will allow patient details to be captured immediately. This will be the start of a far more sophisticated health information system, with electronic patient records and immediate data to use as evidence in decision-making. South Africa is currently rolling out DHIS2 in the National Health Insurance (NHI) pilot districts. It requires facilities to have enough computers and constant internet access. Therefore, the roll-out requires significant infrastructure upgrades.

The DHIS is programmed to track specific indicators at all levels of the health system. The NDoH has developed a set of data elements and indicators which each facility must report on, these are referred to as the National Indicator Data Set (NIDS). The NIDS are a select number of key indicators that allow the sector to track its progress. Examples of NIDS indicators are: maternal mortality ratio, primary health care utilisation rate and average length of stay in a hospital. Each province is also able to specify additional elements and indicators, only for their province, and this is referred to as the Provincial Indicator Data Set (PIDS).

The DHIS currently only routinely collects public sector data. It is used to track utilisation and burden of disease in specific catchment areas, as well as overall health system performance. It also allows the sector to match spending with specific health/patient level measures, to draw assumptions about the effectiveness of spending. The data is used during the budget allocation process (in very broad terms) to advocate for funds provincially.

The overwhelming majority of Primary Health Care facilities in South Africa operate with no electronic health information systems. Most public hospitals have some rudimentary electronic information system, but still

[4] Developed by the Health Information Systems Program (HISP) organisation.

operate mostly on paper.[5] Due to the paper-based nature of many facilities, data is first collected on paper (in the form of patient registers and tick sheets), then inputted into the DHIS by data capturers and then sent through to district and province for sign off. The Auditor-General: South Africa (AGSA) does a randomised audit of patient information once a year during the auditing period, in each province. The AGSA checks that the patient files correspond to the data that has been recorded on the DHIS. This ensures that facilities are not fabricating patient information and is also supposed to improve quality of data reporting through these checks and balances.

The DHIS1.4 data is anonymised utilisation data, down to the facility level. Therefore, it is not possible in the public sector to understand the demographics of disease, and therefore plan for a population according to need. With the introduction of the DHIS2 and e-Health initiatives (electronic patient records), this should become a possibility in future, and will impact how funding is allocated to different areas and facilities.

4 Total Health Expenditure

Between 2005/6 onwards, the difference in expenditure year on year grows significantly (see Table 2). Figure 3 shows expenditure on public health since 1994/95. There was a significant jump in expenditure from 1996/97 to 1998/99 (~R6.6b). The introduction of Occupation Specific Dispensation (OSD)[6] in 2007, is the main cause for this rapid growth given that salaries form a very large part of total health expenditure (~70%). The roll-out of OSD was supposed to be over five years, however there were many challenges (including budgetary ones) that caused delays. From 2013/14-2015/16 the percentage difference in total expenditure changes to a more moderate increase that sits only slightly above inflation.

Table 2: Difference in Expenditure: Year on Year

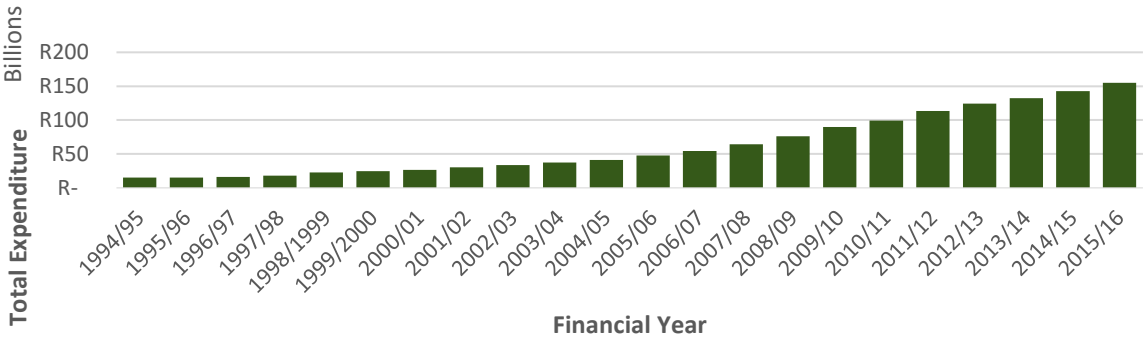
Year	Total Expenditure	Difference: YoY	% Difference in total expenditure
1994/95	R 15 028 000 000		
1995/96	R 15 345 000 000	R 317 000 000	
1996/97	R 16 158 000 000	R 813 000 000	5%
1997/98	R 18 075 000 000	R 1 917 000 000	12%
1998/1999	R 22 795 665 000	R 4 720 665 000	26%
1999/2000	R 24 626 671 000	R 1 831 006 000	8%
2000/01	R 26 604 444 000	R 1 977 773 000	8%
2001/02	R 30 100 148 000	R 3 495 704 000	13%
2002/03	R 33 552 565 000	R 3 452 417 000	11%
2003/04	R 37 542 739 000	R 3 990 174 000	12%
2004/05	R 41 257 584 000	R 3 714 845 000	10%
2005/06	R 47 699 484 000	R 6 441 900 000	16%
2006/07	R 54 375 847 000	R 6 676 363 000	14%
2007/08	R 64 149 084 000	R 9 773 237 000	18%
2008/09	R 75 988 874 000	R 11 839 790 000	18%

[5] National Health Normative Standards Framework for Interoperability in eHealth in South Africa. National Department of Health and the Council for Scientific and Industrial Research. 2014

[6] OSD was introduced to improve career pathing in the public sector and ultimately create salary bands that reflected experience, so as to retain skilled health professionals in the public sector.

Year	Total Expenditure	Difference: YoY	% Difference in total expenditure
2009/10	R 89 695 517 000	R 13 706 643 000	18%
2010/11	R 99 046 711 000	R 9 351 194 000	10%
2011/12	R 113 287 963 000	R 14 241 252 000	14%
2012/13	R 124 150 800 000	R 10 862 837 000	10%
2013/14	R 132 126 100 000	R 7 975 300 000	6%
2014/15	R 142 903 513 000	R 10 777 413 000	8%
2015/16	R 154 900 000 000	R 11 996 487 000	8%

Figure 3: Total Health Expenditure: 94/95-2015/16



A report from 2010[7] outlines South Africa's achievements and shortfalls in public health from 1994 to 2009 (see Table 3).

Table 3: Achievement and Shortfalls in South Africa's Public Health Sector

Accomplishments	**Shortcomings**
Legislation and gazetted policy	**Inefficient prevention and control of epidemics**
1 Free primary health care	1 Limited effort to curtail HIV/AIDS
2 Essential drug programme	2 Emergence of MDR-TB and XDR-TB
3 Choice on termination of pregnancy	3 Lack of attention to the epidemic of alcohol abuse
4 Anti-tobacco legislation	**Persistently skewed allocation of resources between public and private sectors**
5 Community service for graduating health professionals	4 Inequitable spending patterns compared to health needs
Better Health System Management	5 Insufficient health professionals in public sector
6 Greater parity in district expenditure	**Weaknesses in health systems management**
7 Clinic expansion and improvement	6 Poor quality of care in key programmes
Hospital revitalisation programme	7 Operational inefficiencies
9 Improved Immunisation programme	8 Insufficient delegation of authority
10 Improved malaria control	9 Persistently low health worker morale
	10 Insufficient leadership and innovation

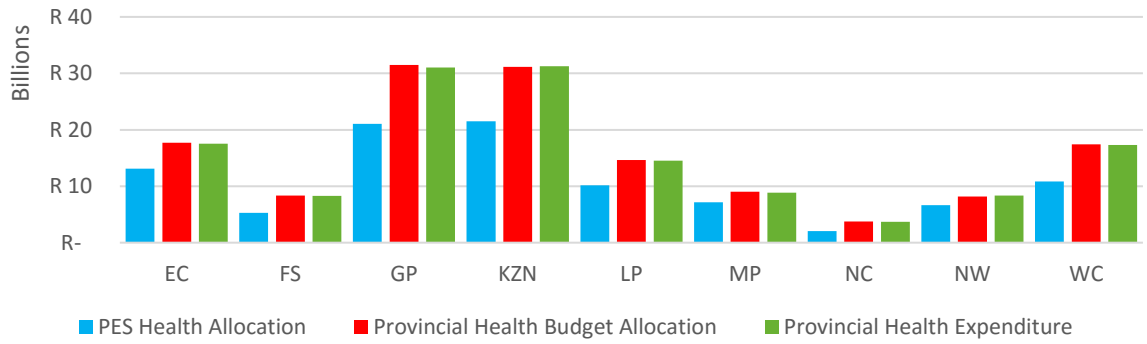
Source: An Overview of Health and Health care in South Africa 1994 – 2010: Priorities, Progress and Prospects for New Gains. Harrison, D. 2009. Pp2

[7] http://ftp.bhfglobal.com/files/bhf/overview1994-2010.pdf. Accessed 28.2.17

Since this report was written, the HIV/AIDS response has become a huge accomplishment for the country. However, some of the other challenges listed, particularly the inequity in spending in response to health need, remain relevant.

Figure 4 shows the PES allocation to health, the subsequent provincial budget allocation and expenditure for 2014/15. All Provincial Treasuries allocated more to PDoHs than what the PES formula determined. The NC and WC received 83% and 60% more than the PES amount, respectively. NW received the closest to the PES amount, at only 23% more. However, all provinces except KZN and GP spent less than their allocated health budget in 2014/15. This trend could cause provincial treasuries to rethink their allocation, and disburse the additional funds to a different government department who shows a greater ability to spend.

Figure 4: 2014/5 PES vs Provincial Health Budget vs Provincial Health Expenditure

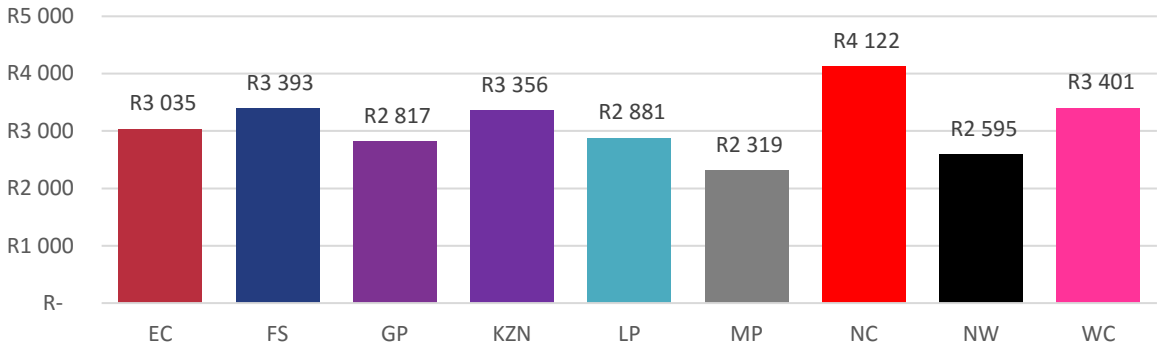


GP, KZN, LP and WC received budget increases from 2013/14 to 2014/15 of more than R1b. North West experienced a decrease in budget from 2013/14 to 2014/15 (R168m). In terms of expenditure, GP and KZN show the highest spending, and this is appropriate given the number of uninsured people Gauteng serves (11m[8]) and the HIV/AIDS burden in KZN (20% prevalence[7]). KZN and NW both spent more than their budget allocations in 2014/15. The same is true for 2013/14. All other provinces show underspending in 2013/14 and 2014/15, although this is below 3% for both years.

Figure 5 shows the per capita spend on the **uninsured population** only per province. NC shows the highest spending per capita, though this is to be expected given their sparse population. The WC shows generally better health outcomes than the other provinces and has the second highest expenditure per capita. However, FS and KZN both show very similar expenditure to WC. This could point to evidence that the provinces are not necessarily underfunded, but rather the resources are used/shared inappropriately. An in-depth analysis of each of these provinces is needed to understand how their spending differs in terms of allocation of funding to priorities. MP shows the lowest spend (R2319), and NC the highest (R4122). The rest of the provinces range from R2595 (NW) to R3401 (WC).

[8] Johnson LF, et al. (2016) Prospects for HIV control in South Africa: a model-based analysis. Global Health Action. 9: 30314.

Figure 5: Provincial Expenditure per Capita Uninsured: 2014/15[9]



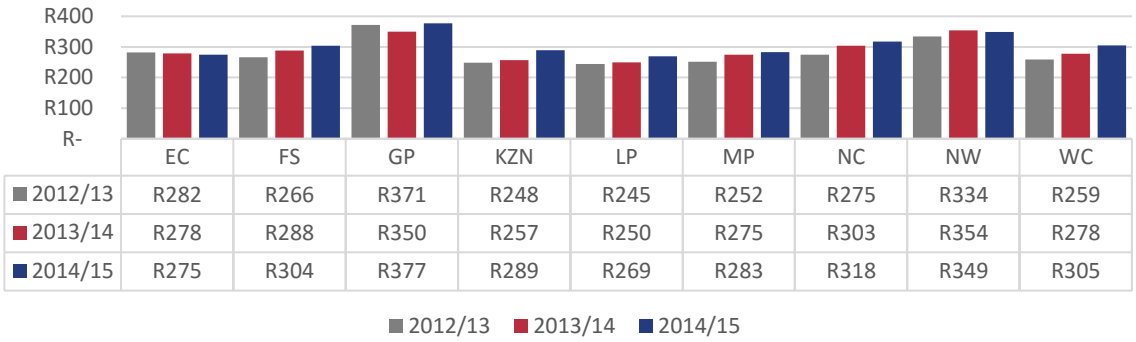
5 The Relationship between Expenditure and Service Delivery

In 2011, the Minister announced the implementation of a new policy called 'Primary Health Care Re-engineering'. This was then documented in the National Health Insurance (NHI) Green Paper (2011), as one of the first steps towards NHI. PHC Re-engineering entails bringing services closer to communities. It has three primary streams: (1) **Ward Based PHC Outreach Teams**: these teams are led by a nurse and staffed mainly by Community Health Workers (CHWs), (2) **District Clinical Specialist Teams** (DCSTs): these teams comprise of mainly obstetric and gynaecological specialists. They provide support to districts to reduce maternal and infant mortality as well as provide training to staff working in the maternal, neonatal and child health space and, (3) **Health Professionals Contracting**: Health professionals are to be sub-contracted from the private sector to provide services to public sector patients with the aim of increasing access to health care.

Given the policy move to PHC re-engineering, there is also an assumption that expenditure on PHC users should be growing as the services are expanded to reach more of the community. However, Figure 6 shows that expenditure per person using public PHC facilities has decreased from 2013/14 to 2014/15 for the EC and NW. This is unsurprising given that the NW experienced a budget decrease in nominal and real terms from 13/14 to 14/15 and the EC a decrease in real terms. This highlights some issues with both the provincial equitable share formula, and the subsequent allocation to each government department and budget program by the Provincial Treasury. It also highlights the competing need across sectors. The strength of a provincial department's bid does, to some degree, determine whether the Provincial Treasury considers increasing its allocation (at another department's expense). Therefore, while a lack of funding is surely an issue, a greater issue may be the provincial health department's ability to adequately prepare and advocate for their health system's needs.

[9] Taken from Thembisa model for year 2014. Johnson LF, et al. (2016) Prospects for HIV control in South Africa: a model-based analysis. Global Health Action. 9: 30314.

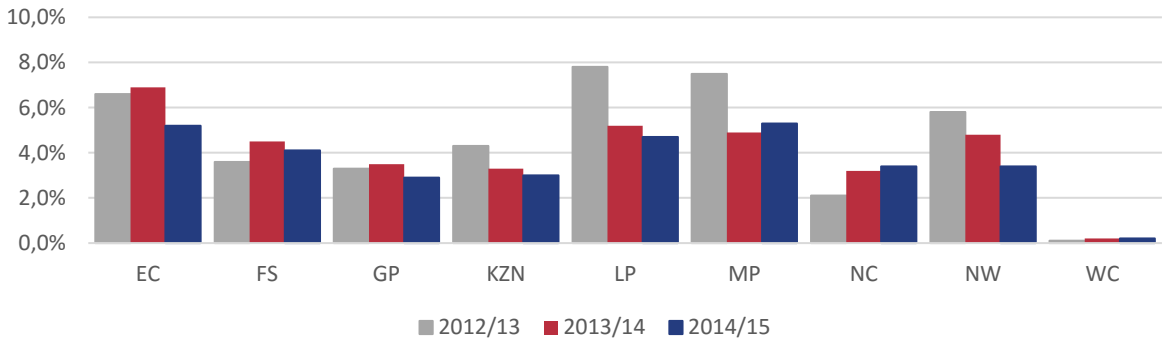
Figure 6: PHC Expenditure per Headcount[10][11]



	EC	FS	GP	KZN	LP	MP	NC	NW	WC
2012/13	R282	R266	R371	R248	R245	R252	R275	R334	R259
2013/14	R278	R288	R350	R257	R250	R275	R303	R354	R278
2014/15	R275	R304	R377	R289	R269	R283	R318	R349	R305

Social Determinants of Health (SDoH) are defined as: "*..conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status..*".[12] Clean water is a key SDoH, given the negative health consequences as a result of drinking dirty water. One such potential consequence is Diarrhoea. Diarrhoea in children is especially problematic, given the high rate of resulting dehydration. It is however, an easily treatable illness. Therefore, deaths as a result of diarrhoea can be linked to poor/unresponsive health systems and poor socio-economic circumstances. Even though access to clean water is not the mandate of the DoH, its responsiveness to cases of dirty water is within its control. One can, therefore, analyse health outcomes and service delivery performance and make assumptions about the effectiveness of spending and resource allocation. Figure 7 shows the three-year trend for the diarrhoea fatality rate in children under-5 for each province. EC, GP, KZN, LP and NW show continuous improvement over the three-years. MP and NC show a decline in performance from 13/14 to 14/15. The FS experienced a spike from 12/13 to 13/14 and while it showed improvement in 14/15, it has not gone back down to the 12/13 rate. The WC's performance has remained stable and well below the rest of the country's rates, however it is important to recognise the impact rurality has on access to basic services. Therefore, SDoH are key to ensuring equitable resource allocation that meets health needs.

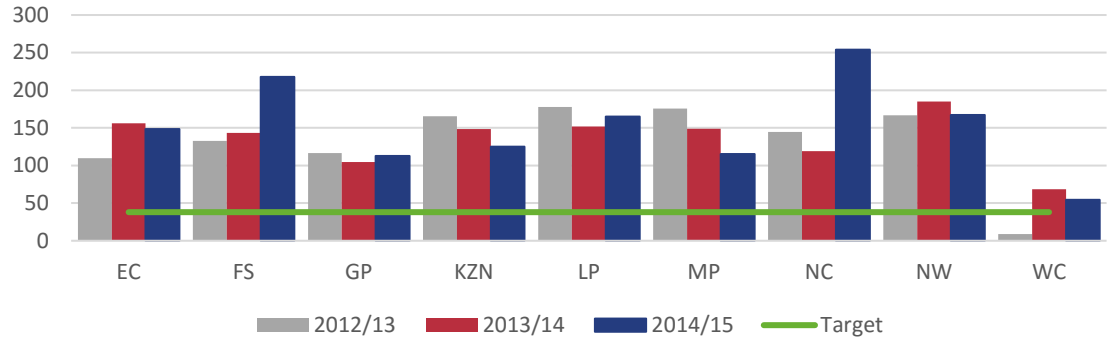
Figure 7: Diarrhoea Fatality Rate in Children under-5 years



[10] A headcount is defined as those who accessed a public PHC facility during the financial year.
[11] 2014/15 District Health Barometer. Health Systems Trust. 2015
[12] http://www.who.int/social_determinants/sdh_definition/en/. World Health Organization. 2017. Accessed on 15.3.17

Another key indicator, which could point to whether health spending is improving health outcomes, is the Maternal Mortality Ratio (MMR) in facilities. This ratio is per 100K births, and the target from the Millennium Development Goals was to decrease to 38 deaths per 100K births. Figure 8 shows the 3-year trend for MMR by province. Only the WC has achieved the target, with all other provinces experiencing maternal mortality well above 100. FS, GP, LP and NC all show declining performance from 13/14 to 14/15.

Figure 8: Maternal Mortality Ratio



6 Conclusion

The relationship between spending and performance is not direct, due to the many non-financial variables that also impact on performance. However, performance is dependent to a certain degree on spending and resource allocation. Therefore, it is important to analyse budgets and expenditure alongside service delivery performance to determine patterns in spending and highlight areas for investment and better resource allocation. What is clear from this analysis is that provinces will need to become creative and innovative with the funding they receive, as it is unlikely they will experience significant increases in financial resources in the near future. It is also clear that some provinces are achieving much more with the same expenditure per capita (uninsured). To achieve this, managers need to be trained, accountability measures need to be felt and collaboration across sectors needs to become the norm. The NDoH has a role to play in facilitating engagement across the provinces and highlighting best practices and forums for sharing challenges to try and improve the speed at which progress is made to improve the health status of South Africans.