Addendum B1:

Some fiscal incidence findings from the General Household Survey and Community Survey

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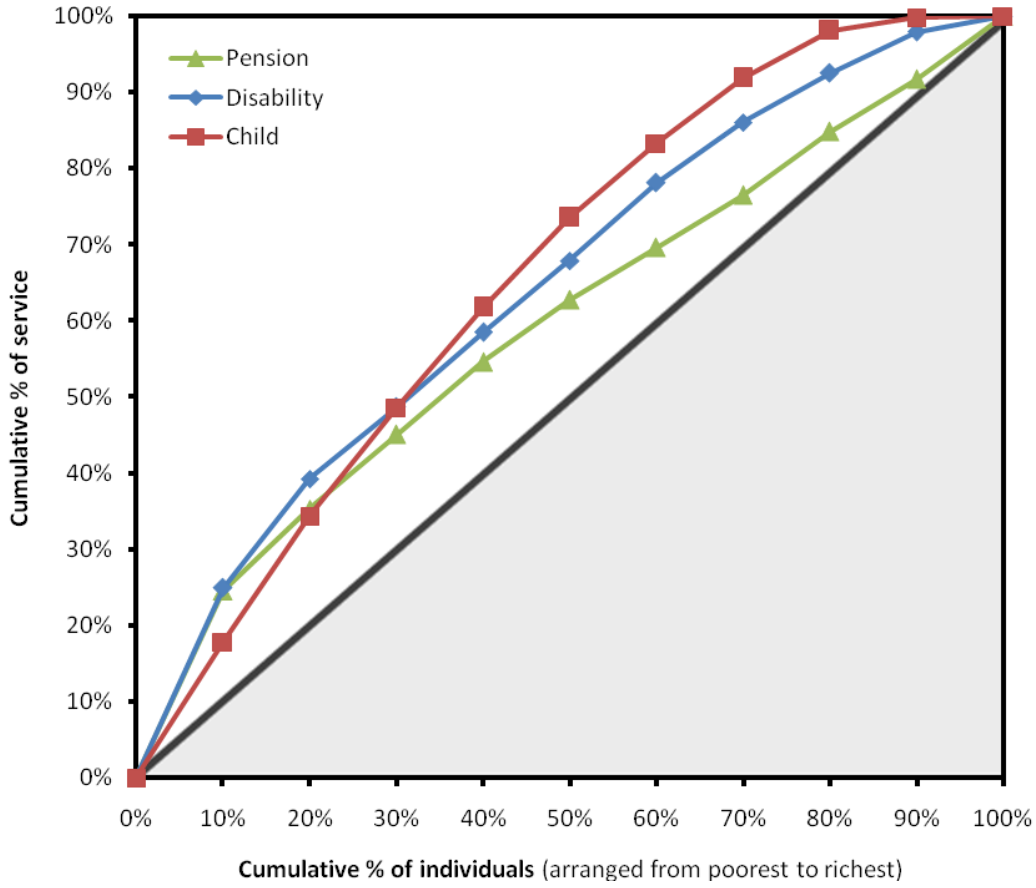
12 February 2009

This short paper includes additional findings not included in the main text, but which are nonetheless useful.

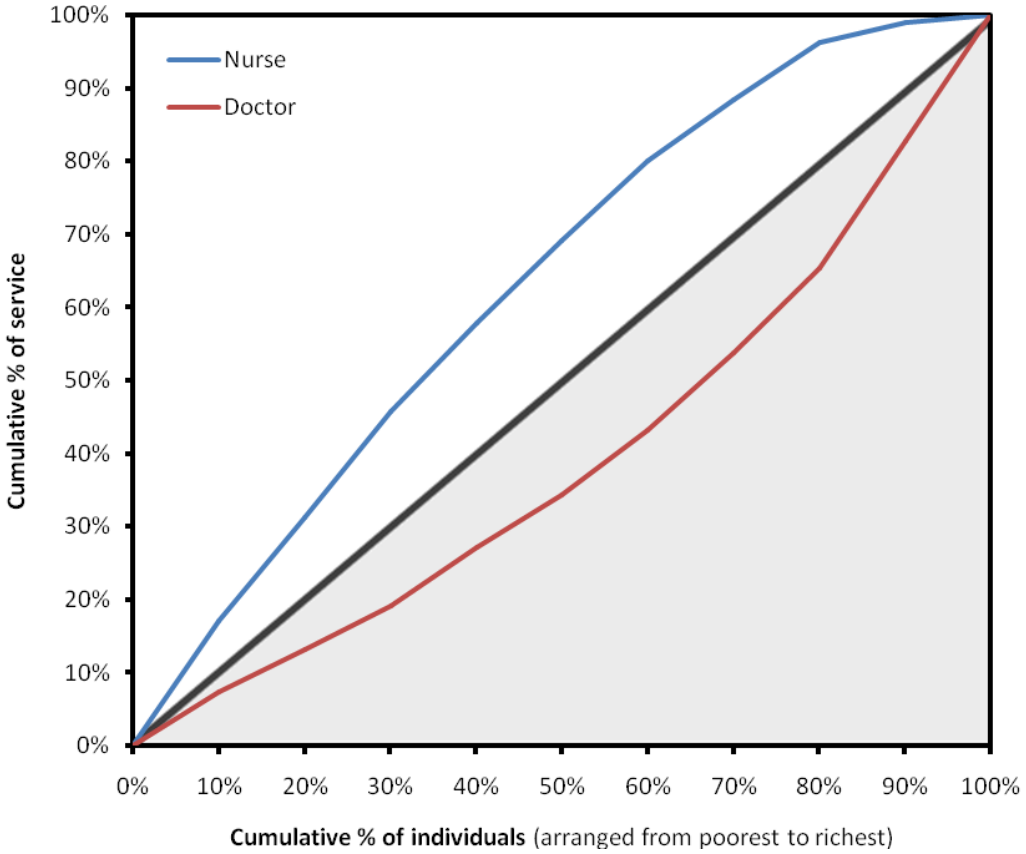
Figure 1: Concentration curves for social grant spending



These curves show that all three the social grants are redistributive – they lie above the 45 degree line of equality. Interestingly, both the disability grant and pension grant appear to be best targeted in reaching the poorest deciles (25% of these reaching the poorest 10% of the population, compared to the 18% of the childcare grant), yet the extent of leakage –

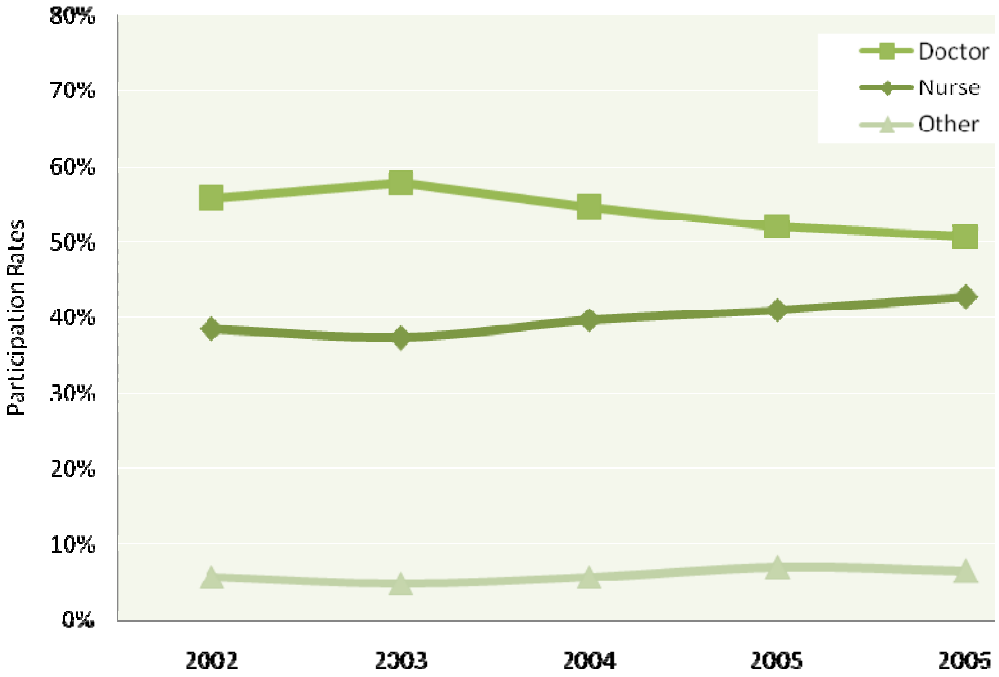
grants that go to the upper part of the income distribution – is lower for child support grants than for the pension and disability grant.

Figure 2: Concentration curves for visits to different health workers



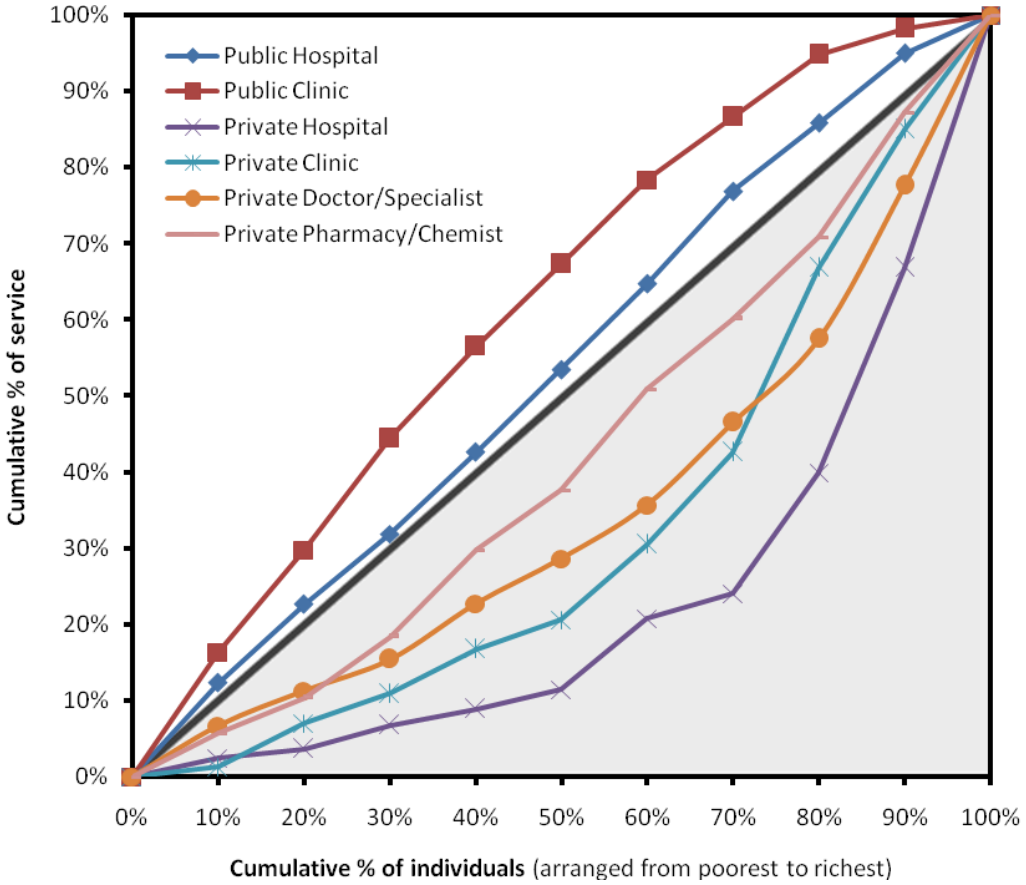
The above curve shows that poor people are more likely to visit a facility where they see a nurse, while rich people are more likely to see a doctors rather than a nurse.

Figure 3: Changes in preferences among health workers between 2002 and 2006



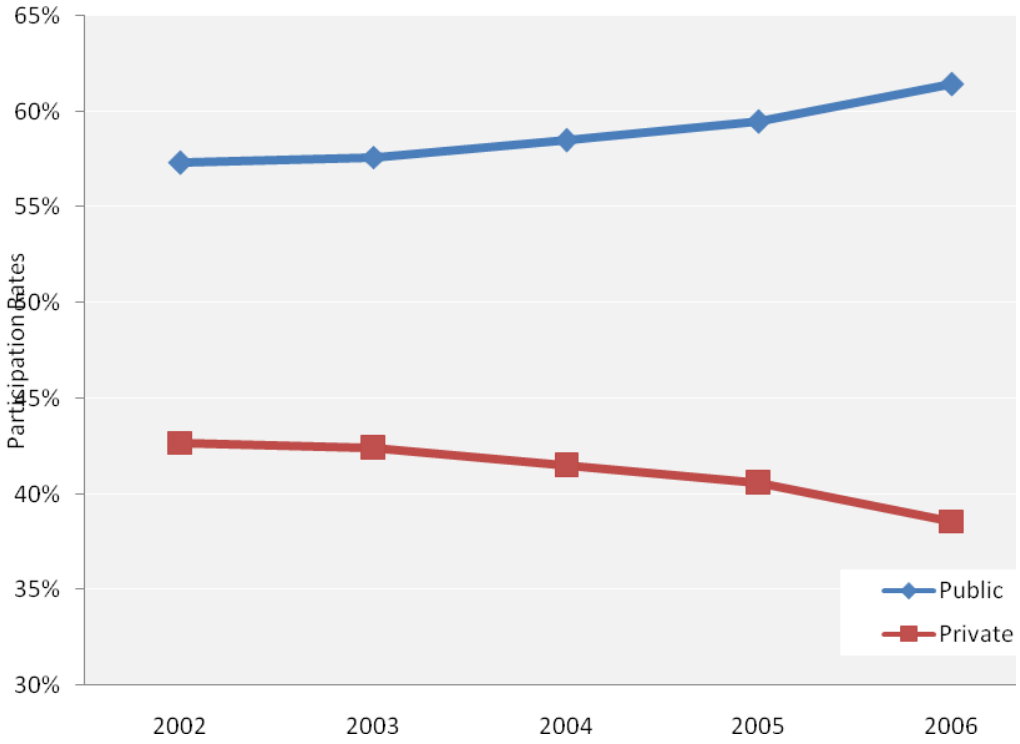
The figure shows that there has been a gradual decrease in the ratio of people who see doctors relative to those who see nurses. As there is a strong preference for being seen by a doctor, this is indicative of a deterioration in at least the *perceived* quality of care.

Figure 4: Concentration curves for various medical facilities



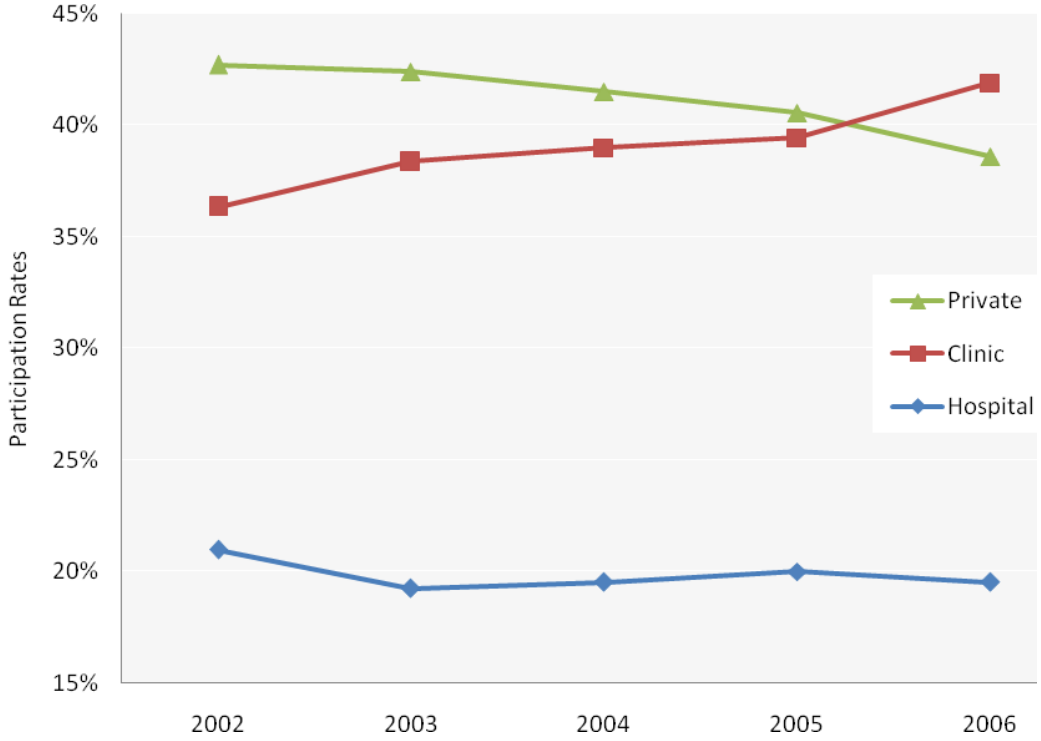
The figure provides a clear indication of how the choice between public and private healthcare is still predominantly based on economic status. All the public forms of healthcare are above the 45 degree line, indicating that the poor have the dominant share of visits, whereas all private forms of health care lie below the line.

Figure 5: Changes in use of public and private health care facilities between 2002 and 2006



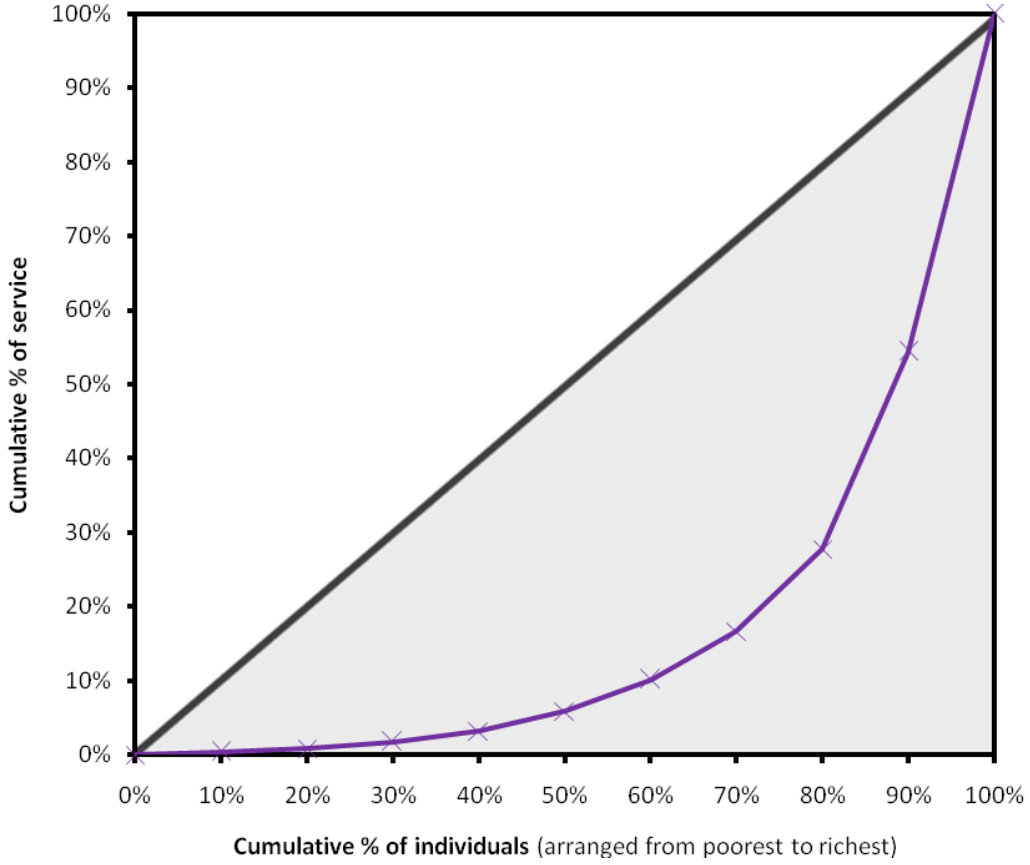
There has been a decline in participation in private relative to public health care. This seems to be a reversal of a trend away from public health services, and may reflect either improved perceptions about public care or that cost factors have reduced the strong preference for private care.

Figure 6: Changes in us of various health care facilities between 2002 and 2006



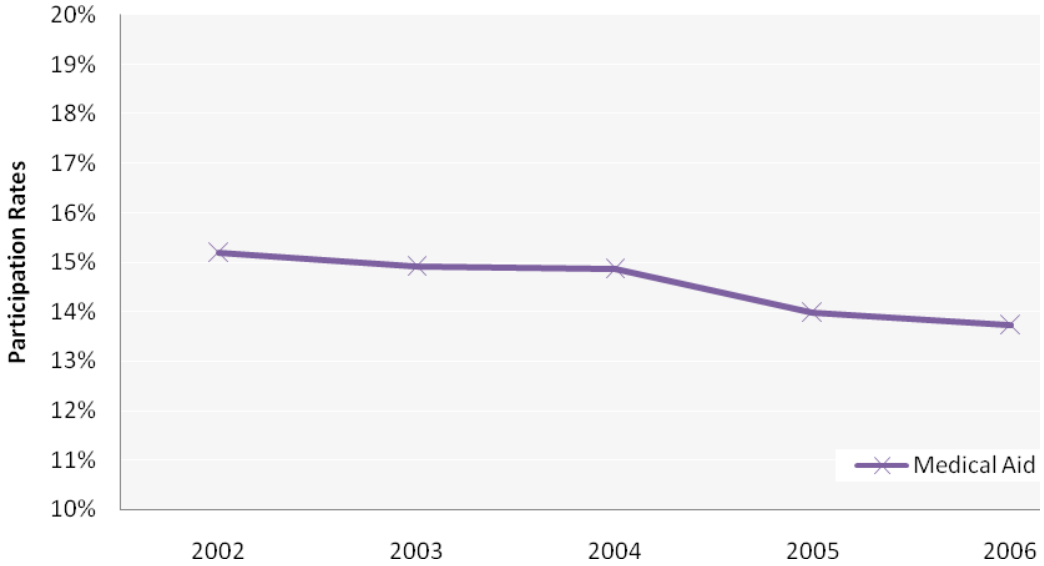
Distinguishing between the two main sources of public healthcare, the use of public hospitals has remained fairly constant in the last few years, but here appears to have been a drop in the in the percentage of people that partake in private health care and a consequent increase in the percentage of individuals that frequent public clinics. (Note: The question asked was which of these types of health facilities have been visited *last*.)

Figure 7: Concentration curve for medical aid coverage



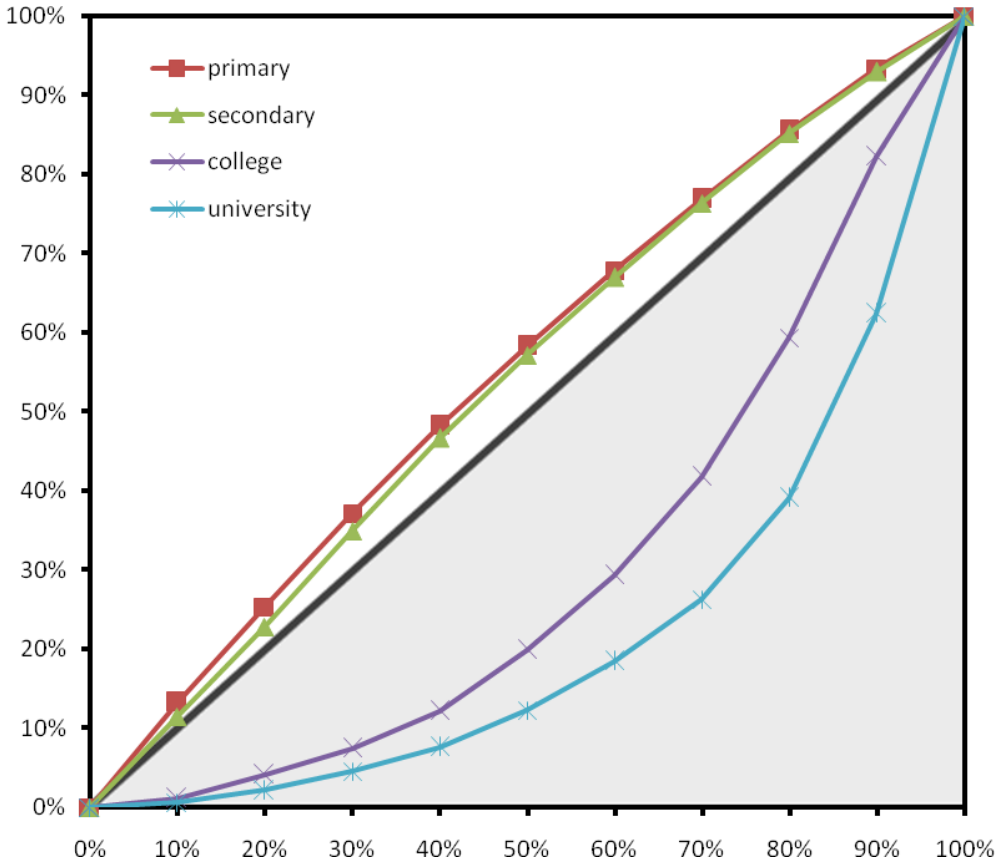
As was found in the earlier incidence studies, medical aid coverage was much higher among the richer deciles.

Figure 8: Medical aid coverage, 2002 to 2006



The proportion of the population that is covered by medical aid has gradually decreased between 2002 and 2006 from 15% to below 14%, based on the GHS surveys.

Figure 9: Concentration curve for various education institutions



While there is a higher primary and secondary school participation rate in the poorer deciles (relative to the full population, not relative to the number of school-going age), the opposite is true for college and especially university participation, where the rich are far more likely to participate.

ADDENDUM B2

National Treasury Fiscal Incidence Study: Free Basic Services

Summary report of main findings

University of Stellenbosch

By Hassan Essop and Eldridge Moses

February 2009

Introduction

As part of the National Treasury Fiscal Incidence Study, the University of Stellenbosch research team was also requested to analyse the extent to which the poor benefit from Free Basic Services (FBS), which includes free basic water, free basic electricity, free basic sanitation and free basic solid waste removal. In addition, several municipalities provide other free basic services to the indigent, such as rebates on property taxes and additional free basic water. This report provides a brief overview of the methodology followed in this study, as well as a review of the findings and suggestions for future research.

Methodology

As a starting point, the team identified the data requirements needed to successfully complete the task, with some of the key requirements being:

- Household level data
- Consumption, tariff and/or cost data
- Background information (i.e. additional incentive structures by municipalities, how the indigent is defined, etc.)

In addition, other potential data sources were identified and reviewed to ascertain whether it could be used for this study. These additional data sources were:

- Income and Expenditure Survey (IES)
- General Household Survey (GHS)
- Community Survey (CS)
- Statistics South Africa's Non-Financial Municipal Census (NFMC)
- DWAF FBS data
- NT FBS data[1]

Furthermore, given the interest in the field, other institutions and researchers on FBS were contacted to determine whether alternative data sets, articles or other information

[1] As promised on commission of the study.

were available. These institutions/researchers included, amongst others, DBSA, DPLG, Norwegian Centre for Human Rights, selected Local Government officials, Mvula Trust, Centre for Applied Legal Studies, academics from WITS and Stellenbosch University's Business School. For the most part, most of these institutions were unable to assist with data, but showed keen interest in the potential results from a fiscal incidence study on FBS.

Review of findings

Rather disappointingly, none of the data sets analysed could be used to conduct fiscal incidence analysis. Firstly, none of the surveys asked appropriate questions with regard to consumption/usage or tariffs/costs of FBS[2]. Consequently, even though the surveys provide household level data, the key data requirements as noted earlier were not fulfilled. This problem was also encountered in the NFMC data. Secondly, the non-survey data from DWAF and NT were self-reported from municipalities, with several municipalities and district municipalities not providing any information at all. Thirdly, the main data set provided by National Treasury was found to be riddled with inconsistencies and errors to such an extent that, after analysing four provinces, 66 clear errors/corrections were encountered[3]. Notably, even after all these corrections, the quality of the data is of such a nature that it is strongly suggested that the NT FBS data should not be used for any analysis at all.

Examples of the inconsistencies in the NT data set include:

- Large discrepancies in population figures.

  In order to ascertain the validity of the municipal population figures, Census 2001 municipal population weights were applied to Statistics South Africa's mid-year estimates for 2007, and compared with data provided in the NT data set. Several municipalities still made use of Census 2001 data, whilst others noted large increases (in some cases in excess of 20 per cent). This inflated the overall population figures by province, and in the case of the Eastern Cape, 20 municipalities (out of 45, including district municipalities, municipalities, and

[2] See Appendix A.1 for a more complete description, with specific reference to the results obtained from GHS 2005.

[3] Some of the errors and corrections made to the NT data set are provided in Appendix A.2.

the metropolitan area in the province) represented approximately 83 per cent of the total population in the province (using the Mid-year estimates for 2007).

- Missing and/or incorrect data

  In many cases, data for the number of poor households, number of poor, or other demographic data, as well as cost of FBS data were missing. In addition, certain errors, such as the "1 household, but 3 poor households" in the Inxuba Yethemba municipality bring the reliability of the entire data set into question.

- Large variations in average cost of FBS across municipalities

  The data per province (for the four provinces that were analysed) were aggregated and analysed. This provided additional concerns as large variations in average costs were found, for example the average cost of free basic water in the Eastern Cape ranged between R18 to R882 per household, whilst the average cost of free basic sanitation ranged between R23 to R1121 in the Western Cape per household. Also note that the NT data is annual data, which makes these figures even less believable.

In summary, given the quality and nature of the current data sets available, the research team was unable to conduct fiscal incidence analysis of FBS, and proceed with suggestions for future data collection methods and future research topics.

Suggestions for future data collection and research

The GHS2005 was the most promising of the surveys in providing information about household water consumption, and by natural extension, information about free basic water. Unfortunately, as mentioned in greater detail in Appendix A.1 to this addendum, the question on consumption in litres – although asked in a format which could intuitively be understood by those collecting water in containers – appears to have been answered by all households and not equally well when one compares the monthly water expenditure (in Rand) question.

The easiest and ideal solution to the data problem would be to have municipalities report household consumption data at monthly intervals throughout. Ideally the data would also have geographical location (area) information, race, gender of household head and asset

variables such as municipal valuations of property which municipalities already have in their possession. Indeed, this type of data will be required in future by National Treasury, although not at a household and geographical level, as noted in the FBS Indicators and Budget Allocation Guidelines, Schedule A1: Worksheets A10 - SerDel, SA9, SA11, SA12&13, SA14.

This should be relatively easy to do, especially for Metro municipalities who would have replaced legacy systems with much more user-friendly software. If it is possible to print statements for consumers, it must be possible to extract and compile reports on consumption for water and electricity.

Regarding electricity, the only information one is able to extract (again with caveats) is whether households in 2000 still did not have electricity five years later. The survey remains silent on electricity consumption, which is possibly the most prudent choice due to the relatively high rate of illegal electrical connections in South Africa.

Instead of municipalities being unable to produce coherent or consistent data, we suggest the following for survey data:

- Ask what the household's consumption level of the service is in non-monetary terms. Due to the high rate of non-payment in South Africa, what one pays is often not that closely related to actual consumption. This is more important than actual payment for fiscal incidence analysis, but the existing questions, if asked consistently, could be extremely helpful for cost-benefit analysis.
- Align access questions more closely to government objectives.

As suggested above, if National Treasury can obtain Metro-level household data, several research aims can be achieved. These include the following:

- Fiscal incidence of Free Basic Services

  Although the billing data from Metro's would not provide information about households who do not have access to FBS, such data would allow the research team to accurately measure the impact of FBS to the upper deciles. In addition, survey data can be used to estimate the size of the population who do not have access to FBS. Although NT proposes to request Local Government to provide information about the number of households that do not have access to services (or make use of alternatives, e.g. wood for fuel, water from streams, etc.), it is

unclear whether Local Government, in general, has the capacity to provide accurate data in this regard.

- Measure and compare the performance of Metro's in providing FBS

  Given the poor quality of the FBS data provided by Local Government to National Treasury, it is clear that the performance of Metro's and extent of service provision cannot be estimated with any degree of accuracy. Such a study would, for instance, allow National Treasury to compare efficacy of spending on FBS, analyse various techniques and methods used to collect revenue, and possibly to determine the extent of cross-subsidisation and the impact of the Regional Electricity Distributors (REDs) on municipal finances and ability to provide basic services.

- Water Demand Research

  Tariff and consumption data will allow further research to be conducted in this field as highlighted during the presentation to National Treasury by Mrs. Ada Jansen on the 13th of February, Stellenbosch.

- Capacity, ability and constraints faced by Local Government to provide accurate data to National Departments

  It is likely that this topic is currently under investigation by DPLG; however, it is not clear whether this view is appropriate as DPLG was unavailable for discussions.

In conclusion, we reiterate the fact that, given the quality and nature of the current data sets available, the research team was unable to conduct fiscal incidence analysis of free basic services. However, given our current understanding, it is possible to obtain suitable data to conduct such a study with the assistance of National Treasury. Given the constitutional importance of free basic services, the need for additional research in this field is of paramount importance.

APPENDIX

A.1 The General Household Survey 2005

The General Household Survey 2005 had many questions which promised insight into the distribution of basic services in South Africa. Unfortunately, either the questions asked were suitable for our purposes but yielded inconsistent answers, or the questions were too abstract to successfully translate into plausible answers for the desired questions.

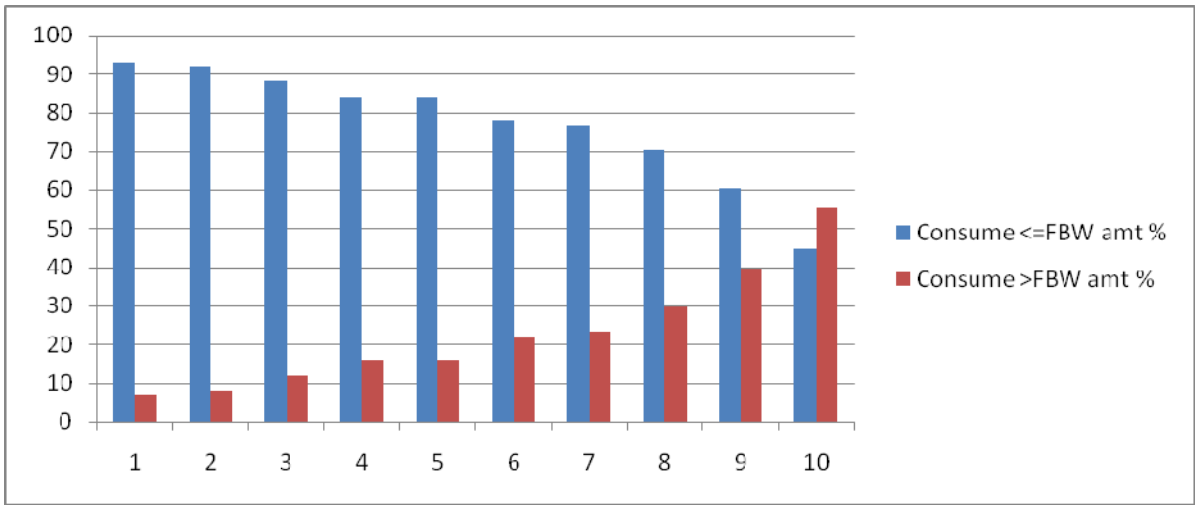
For instance, question 4.21 of the GHS 2005 asks:

How many 20 litre-containers, on average, does the household use per day?[4]

The answers were in interval form (1 – 20 litres, 21 – 60 litres, etc.). Using the Pareto midpoint calculation method to estimate average household consumption within categories, we then attempted to calculate individual water consumption. The aim was to determine whether the governmental target of 25 litres per person per day was indeed provided, and who benefited most from free water provision by decile. However, one should note the caveat that this target is only observable from government's perspective in those homes with piped water from municipalities – only 48 percent of South Africans resided in such homes in GHS2005. Figure 1 shows the proportion of individuals who only consume the free basic amount per decile before social grants.

[4] Although the universe for this question was "all household members without water on site or in the dwelling", the question appears to have been answered by all households.

Figure 1. Proportion of individuals who only consume the free basic amount per decile



Source: Own calculations based on GHS 2005 data.

The intention here is to determine who benefits most from free water provision (in terms of only consuming the free basic water amount). The graph above paints an encouraging picture as it indicates that of those households receiving piped water, the poor are more likely to pay nothing for water consumption than the middle class or rich.

We also attempted to determine the progress of government in providing access to acceptable water service levels for all South Africans. The GHS2005 does not fully accommodate an investigation based on the strict definition of RDP water service levels, therefore the criteria for RDP service levels were modified to all households where individuals reside consuming more than or 25 litres of water per day and had water on site. Other RDP possibilities are the neighbour's tap and public/ communal tap. There were very few households in these categories (less than 20%) who reported having a water source within 200m of the home, so these water sources were generalised as being below RDP level. Table 1 shows the service level of households by race.

Table 1. Access to RDP water service levels by race

BY RACE

RDP water access level	Black	Coloured	Indian	White	Total
Yes	58.7%	99.3%	100.0%	100.0%	71.8%
No	41.3%	0.7%	0.0%	0.0%	28.2%
	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Own calculations based on GHS 2005 data.

Question 4.25 of the GHS2005 asks:

How much does the household pay for water per month?

The intention here was to calculate the household water expenditure by decile and then simulate what the effect of free basic water is by:

1. initially assuming that block tariffs exist for all municipalities;
2. then calculating actual consumption by dividing the relevant midpoint categories by the tariff prevailing at that consumption level;
3. applying an average tariff to all households to determine what the monthly water bill would be like in the absence of block tariffs;
4. and then using the difference between the initial water bill in (1) and the water bill calculated in (3) to determine the impact of incremental block tariffs and free water.

Again the answers were coded in intervals with a minimum of R1 to R10 to an open category maximum of R301 or more. This format did not allow for the inclusion of those households paying nothing for water as they only consume the free amount, although this figure is theoretically quite easy to estimate as there are other questions in the GHS2005 which act as suitable qualifiers.

Table 2 shows the midpoint water consumption levels of households in South Africa receiving piped water, excluding those households not able to quantify their expenditure on water.

Table 2. Water consumption by decile of households receiving piped water

	Decile									
MP[5i]	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
0	20,805	26,334	49,871	34,149	39,455	36,383	38,350	26,484	7,146	877
5	11,947	17,943	32,674	34,779	48,464	35,471	33,766	33,704	6,154	24,525

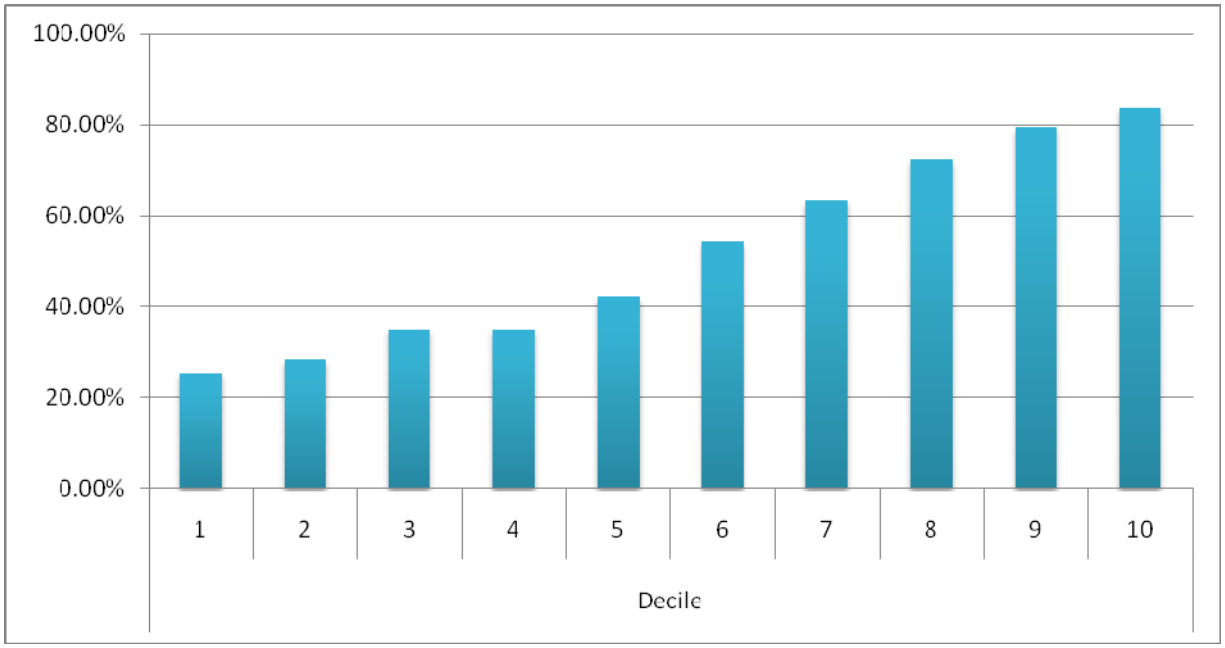
[5] Midpoint.

15	12,684	13,527	25,332	39,432	48,337	89,596	76,975	72,060	49,790	47,209
35	11,216	15,138	37,161	54,249	86,473	131,196	177,106	169,325	150,245	129,040
75	7,150	12,613	20,364	27,733	42,962	95,730	144,887	161,273	217,463	195,040
150	4,166	9,646	7,206	7,570	32,903	54,562	94,125	134,583	212,218	281,304
250	613	740	654	3,906	10,057	14,551	23,770	72,745	129,703	262,865
400	1,346	1,592	2,161	2,044	2,626	7,889	17,017	51,883	101,022	277,374
	69,927	**97,533**	**175,423**	**203,862**	**311,277**	**465,378**	**605,996**	**722,057**	**873,741**	**1,218,234**

Source: Own calculations based on GHS 2005 data.

However, a substantial number of households were unable to quantify their monthly water expenditure either because it was a fixed monthly cost included in their rent (52%) or because they did not know (1.5%). Furthermore, poorer households are much less likely to be able to estimate their monthly water bills than richer households, making consumption distribution analysis an even more arduous task. Figure 2 shows the under-reporting bias by decile, using the ability to quantify monthly water expenditure as the criterion.

Figure 2. Monthly water expenditure reporting bias by decile



Source: Own calculations based on GHS 2005 data.

One method to theoretically correct this under-reporting bias would be to calculate the inverse of the under-reporting proportion per decile and multiplying each decile with these respective co-efficients. The results (or 'corrected' version of Table 2) are shown in Table 3.

Table 3. Water consumption by decile of households receiving piped water (after 'correction' for under-reporting)

	Decile									
MP	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
0	80,886	92,322	142,980	97,607	93,672	67,148	60,507	36,588	8,966	1,050
5	46,448	62,905	93,676	99,407	115,061	65,465	53,275	46,563	7,721	29,358
15	49,313	47,423	72,627	112,707	114,759	165,356	121,449	99,552	62,471	56,512
35	43,606	53,071	106,540	155,058	205,300	242,133	279,432	233,926	188,510	154,469
75	27,798	44,219	58,383	79,268	101,998	176,677	228,598	222,802	272,848	233,475
150	16,197	33,817	20,660	21,637	78,117	100,698	148,507	185,929	266,267	336,739
250	2,383	2,594	1,875	11,164	23,877	26,855	37,504	100,499	162,737	314,666

400	5,233	5,581	6,196	5,842	6,235	14,560	26,849	71,677	126,751	332,034
	271,864	**341,934**	**502,936**	**582,691**	**739,019**	**858,892**	**956,121**	**997,537**	**1,096,272**	**1,458,303**

Source: Own calculations based on GHS 2005 data.

One can then simply multiply each column to determine what the monthly water bill would be, assuming that all households were subject to block tariffs. We had the benefit of having water consumption data from a sample of households in Cape Town which we could use to corroborate our results. Unfortunately, when calculated in this manner from the GHS data, the monthly water bill estimated for South Africa is only R 775 965 383, which is incongruent with the water bill extrapolated for South Africa from more reliable municipal data. This finding here renders the further analysis as outlined in points 3 and 4 above a futile exercise, as the magnitude of the water bill is wrong in the underlying household data.

A.2 Selected rectifications and errors found in the National Treasury Free Basic Services data set

Eastern Cape

1. The Amatole District Municipality (DM) data was dropped as the total number of people (971 833) compares poorly with Census 2001 (1.66 million) and weighted StatsSA mid-year estimates (1.74 million).
2. The Ngqushwa Local Municipality (LM) was dropped as it contained no FBS data.
3. The Nxuba LM was dropped as it contained no FBS data.
4. The Mnquma LM was dropped as it only had total number of households (HH) who received FBS , with no indication as to how the data is split in the different categories (i.e. FBS for water, electricity, etc). In addition, there is no cost data.
5. Cacadu DM was dropped as the total number of people (2 192) does not compare favourably with the total number of people in the DM in Census or the weighted StatsSA mid-year estimates for the DM, nor the equivalent figures for the Cacadu DMA.
6. Ikwezi LM contains approximately 1500 more people than expected, but the data is retained.
7. Makana LM contains 11 000 more people than expected, but is retained.
8. Sundays River LM contains 13000 more people than expected.
9. Emalahleni LM contains 10-15 000 less people than expected
10. Gariep LM contained 30000 more people than expected.
11. Ikwanca LM contains 21000 more people than expected.
12. Intsika Yethu LM contains 12000 more people than expected.
13. Inxuba Yethemba LM was dropped as it only contained one HH.
14. King Sabata Dalindyebo LM was dropped as it contained no HH or poor HH data.
15. Matatiele LM was dropped as the HH data was confused with the total number of people in the LM, and no HH data (number of poor HH and total number of HH) was included.
16. Nelson Mandela Bay Metro contains 400 000 more people than expected.

17. The data for 2008/09 and 2009/10 was excluded for all provinces as not all LMs provided such data.
18. The Mbizana LM data was dropped to avoid double counting within the O.R. Tambo DM. The O.R. Tambo DM number of people data coincides closely with the expected figure.
19. Note the large difference in the total cost to provide FBS to HH in Mbizana LM (R148 per HH) as compared to the O.R. Tambo DM (R53 per HH). The reason for this is unclear, and cannot be examined with current data.
20. The total number of people presented in the National Treasury data represents 82.5% of the total EC population as presented by StatsSA's 2007 mid-year estimates. This is unexpectedly high as only 27 municipalities (includes the Metro and the O.R. Tambo DM that consists of 7 LMs and the DM itself) out of 45 are represented in the "cleaned" data.
21. The "Total cost per HH per annum for all FBS" calculation had to be redone in nearly all instances as the original answer could not be replicated, no matter what combination of numbers provided in the data were used. It was assumed that "HH" were meant to only refer to HH receiving FBS, i.e. "poor HH that receive FBS" as described in the data.
22. The variable "Total FBS provided in municipal area (total social package)" is deceptive in terms of number of HH. This HH number is likely to include double-counting as it only adds the number of HH receiving any basic service - it is likely that HH may receive more than one FBS and would therefore be counted more than once.
23. In order to avoid the problem noted above, we have calculated the average cost per HH per FBS (i.e. for water, electricity, etc.)

Gauteng

1. Ekurhuleni Metro reports a population of 3.5million, whereas the expected figures was between 2.5 and 2.8 million
2. The Ekurhuleni Metro does not provide data on poor people or poor households, but the data is retained.

3. Note that 805 000 out of 850 000 (95%) HH receive FB water in Ekurhuleni Metro.
4. Emfuleni LM does not provide population numbers, only total number of HH and number of poor HH.
5. The Emfuleni LM data is surprising as the average cost per HH for all FBS is well below R20!
6. Kungwini LM does not provide population numbers, only total number of HH and number of poor HH.
7. Lesedi LM poor population was calculated assuming that non-poor and poor HH have the same size.
8. Lesedi LM has approximately 40 000 more people than expected.
9. Nokeng Tsa Taemane LM has 10 000 more people than expected.
10. Westonaria LM has 5000 people more than expected.

ADDENDUM B3:

The cost of fiscal subsidies to higher education students in South Africa: A comparison between 2000 and 2006

Pierre de Villiers[6]

1. Introduction

In this analysis the expenditure (subsidy) on higher education institutions (HEIs) in South Africa is compared for 2000 and 2006. In 2000 the HE sector was divided into 21 universities and 15 technikons, but after 2004 the number of HEIs was reduced to 23. This makes comparisons between 2000 and 2006 impossible if you want to compare the previous system with the one in 2006. Even comparisons between individual institutions in most cases do not make sense due to the mergers that took place in 2004 and left very few institutions unchanged. The best comparison one can make is to look at average subsidies for the whole system and to compare it between racial groups. This is what will be presented in this analysis.

2. Method of analysis

The analysis was done with headcounts of students as well as with full-time equivalent student numbers. Although headcounts can portray the overall picture, it may give the wrong impression. A full-time student taking the full complement of modules prescribed for an academic programme in a specific year will have a full-time equivalent (FE) value of one. If only one or two modules are followed the FE value will be much smaller than one. Students are subsidized on their FE-values and not headcounts. The first method assumed that all students received the same subsidy at a specific institution, irrespective of their field of study or racial group. The analysis is done for all institutions and distinguishes between racial groups.

A second method was followed where a distinction was made between the number of students enrolled in the social sciences and those enrolled in the natural sciences. This distinction is made because subsidies in natural sciences are much larger than those paid to students in the social sciences. Different fields of study are subdivided into 21 CESM (classification of educational subject matter) categories. These categories are subdivided into four funding groups with the ratio of the size of the subsidy between these funding

[6] Economics Department, University of Stellenbosch

groups being equal to 1:1.5:2.5:3.5, but the four funding groups are not strictly divided into social and natural sciences (See Diagram 1). A rule of thumb is that the subsidy of natural sciences is on average approximately 2.55 times the subsidy paid to a student in the social sciences. In this analysis it was thus assumed that the per capita subsidy of a student in natural sciences is 2.55 times as large as the subsidy paid to students in social sciences.

Diagram 1
Classification of education subject matter (CESM) into funding groups

Funding group	CESM categories included in funding group
1	07 Education, 13 Law, 14 Librarianship, 20 Psychology, 21 Social Services/Public Administration
2	04 Business/Commerce, 05 Communication, 06 Computer Sciences, 12 Languages, 18 Philosophy/Religion, 22 Social Sciences
3	02 Architecture/Planning, 08 Engineering, 10 Home Economics, 11 Industrial Arts, 16 Mathematical Sciences, 19 Physical Education
4	01 Agriculture, 03 Fine and Performing Arts, 09 Health Sciences, 15 Life and Physical Sciences

In the last instance calculations were done for contact students only because distance students get a smaller subsidy than contact students. The assumptions made in the analysis will be presented as the results are discussed.

In 2000 an amount of R437 million was awarded by government for the National Student Financial Aid Scheme (NSFAS) to help needy students and in 2006 this amount increased to R926 million. In 2000 this amount was equal to 6.2% of the subsidies paid to HEIs and in 2006 it was equal to 8.2% of that amount. NSFAS awards were not included in this analysis, because these funds are not subsidies to HEIs but payments to help needy students to pay their debt at HEIs. Keep in mind that if these amounts are added to the subsidies paid to HEIs and because 85% of NSFAS awards are paid to African students, the average subsidy of African students would increase notably. However, because it is relative small amounts the overall results will not differ that much whether it is included

or not. The government's subsidies paid to HEIs used in this report does not include NSFAS awards.

3. Analysis for 2000

In 2000 the Higher Education Institutions (HEIs) in South Africa were still divided into universities and technikons. The subsidies paid to universities were substantially higher than those paid to technikons and the 21 universities received 72.6% of the funds paid to HEIs while the 15 technikons received the remaining 27.4%. One must keep this in mind when the results of the analysis are evaluated because the HE playing field changed completely in 2004. The analysis will therefore be done for the whole HE system to make the results between 2000 and 2006 comparable.

Total Expenditure on Higher Education in South Africa was taken as the amount in Vote 15 of Estimates of National Expenditure, 2001 (2002: 302-303). An amount of R30 million was earmarked for restructuring, but because it could not be linked to a specific institution it was not included in the analysis. This amount was less than 0.5% of the funds paid to HEIs.

3.1 Headcount

Headcount numbers in HEIs were taken from Education at a Glance 2000 (2002: 24). These numbers are available according to the four main racial groups per institution. It was assumed that no distinction was made on racial grounds with regards to expenditure patterns at HEIs. Expenditure per student (irrespective of race) in each institution was therefore the same. The amount spent on a specific racial group at all institutions was added and the accumulated total was then divided by the total number of students of that racial group at all the HEIs.

There was not much difference between the per capita expenditure for the four racial groups, as can be seen in Table 1. Keep in mind that certain differences cannot be seen in the aggregate numbers. For example, the average per capita subsidy for a university student in 2000 was R11 652, while the corresponding figure for technikons was only R8 846. Throughout the analysis the whites will be used as the control group and their average per capita subsidy will be given an index value of 100. This method is followed because whites were the dominant group in higher education in the past who received the

most funds. Subsidies paid to Africans and whites are the most important because they represented more than 88% of the headcount students in 2000 and just under 88% of the subsidy expenditure was spent on them.

Table 1
Subsidy paid to Higher Education Institutions (all headcount students): 2000

	African	Indian	Coloured	White	Total
Enrollment %	60.9	6.6	5.3	27.2	100
Subsidy %	61.2	6.9	5.5	26.4	100
Per capita subsidy	R10 769	R11 306	R10 995	R10 413	R10 720
Subsidy: Index value	103.4	108.5	105.6	100.0	102.9

Included in Table 1 is the data for Unisa and Technikon South Africa that provided education almost exclusively to only distance students. Another calculation was done where these two institutions was omitted. The reason for this is that distance students receive only half the subsidy of contact students. By excluding these two institutions, student numbers decreased by 28.8% from 610 131 to 434 712, but total expenditure only decreased by 10.6% from R6 540 million to R5 844 million.

Table 2
Subsidy paid to Higher Education Institutions (excluding Unisa & Technikon SA): 2000

	African	Indian	Coloured	White	Total
Enrollment %	63.4	5.7	5.3	25.6	100
Subsidy %	62.0	6.7	5.5	25.8	100
Per capita subsidy	R13 147	R15 825	R13 914	R13 557	R13 445
Subsidy: Index value	97.0	116.7	102.6	100.0	99.2

Except for Indians who received 17.7% more than the national average subsidy of R13 445 per student there was very little difference between the per capita expenditure for the other racial groups. This is to a large extent explained by the relative high subsidy per student that the University of Durban Westville received, as well as the fact that 41% of Indian students studied through Unisa (who received a relative small per student subsidy, but was excluded in this calculation). As expected the subsidy is also notably higher than the calculations done for all the students including Unisa and Technikon South Africa.

3.2 Full-time equivalent students

Like with the previous method, HE expenditure was taken as the amount in Vote 15 of Estimates of National Expenditure, 2001 (2002: 302-303). The full-time equivalent (FE) student numbers were taken from the Research Report by Steyn and De Villiers (2006: 184) for the Council of Higher Education - Higher Education Monitor No 4. It was then assumed that the racial composition of the FE student numbers was identical to the headcount numbers. In this way the total FE numbers could be converted to the number of students of each racial group at each institution. It was also assumed that the expenditure per student in each institution was identical irrespective of race. The amount spent on a specific racial group at all institutions was added and the grand total was then divided by the total number of students of that racial group at all the HEIs. In this way an average per capita subsidy per racial group could be calculated.

There is not much difference between the calculations with headcounts and this that was done with FE student numbers, because to a large extent FE students are a constant fraction of the headcounts. The subsidy per student between the four racial groups did not differ much (as can be seen in Table 3). For example, Africans received only 1% less than the national average of R15 866 and Indians received 5% more than this average. Once again the aggregate numbers disguise certain differences between the individual HEIs. The subsidy in the university sector was R17 513 per student - 17.7% higher than the per capita average of R12 705 for the technikon sector.

Table 3
Subsidy paid to Higher Education Institutions (all FE students): 2000

	African	Indian	Coloured	White	Total
Enrollment %	61.8	6.6	5.4	26.1	100
Subsidy %	61.2	6.9	5.5	26.4	100
Per capita subsidy	R15 701	R16 644	R15 965	R16 040	R15 866
Subsidy: Index value	97.9	103.8	99.5	100.0	98.9

The analysis was repeated by excluding distance students and subtracting their subsidy from the total subsidy paid to HEIs. By excluding the distance students it is obvious that the average subsidy per student will increase. This is evident from Table 4.

Table 4
Subsidy paid to Higher Education Institutions (contact FE students): 2000

	African	Indian	Coloured	White	Total
Enrollment %	63.6	6.1	5.7	24.5	100
Subsidy %	61.9	6.8	5.6	25.7	100
Per capita subsidy	R19 002	R21 625	R19 168	R20 532	R19 548
Subsidy: Index value	92.6	105.3	93.4	100.0	95.2

The difference between the per capita expenditure per racial group is now larger but not substantial. Africans received 2.8% less than the national average of R19 548 per student while Indians on average received 10.6% more than this amount. Once again keep in mind that the per capita expenditure in the university sector was R22 043 per student, but only R15 068 in the technikon sector.

3.3 Full-time equivalent students per field of study (all students)

The expenditure on HE and the number of FE students is identical to the values used in section 3.2. The FE student numbers of both the university and technikon sector were converted to numbers according to race per field of study by means of the number of unduplicated student enrolments per race group at each institution (Department of Education website-Hemis data).

Table 5
Subsidy paid to Higher Education Institutions (all FE students): 2000

	African	Indian	Coloured	White	Total
Enrollment %	59.8	6.8	5.3	28.0	100
Subsidy %	56.7	7.7	5.2	30.4	100
Per capita subsidy	R15 041	R17 992	R15 523	R17 178	R15 867
Subsidy: Index value	87.6	104.7	90.4	100.0	92.4

The first analysis was done for all FE students. Indians received a per capita subsidy that was 13.4% higher than the national average of R15 867, while Africans received a subsidy that was 5.2% lower than this average. This is partly explained by the fact that 38.9% of Indians studied in the natural sciences, but only 26% of Africans (See Table 6).

Whites, who received a fairly high subsidy of R17 178 per student, had 35.5% of the students studying in the natural sciences with only 29.6% of Coloured students studying in the natural sciences. Except for the fairly high per capita subsidy per Indian student, there was not that much difference between the subsidies that the other racial groups received.

Table 6
Students studying in Social and Natural Sciences (all FE students): 2000

Per cent of each racial group					
	African	Indian	Coloured	White	Total
Social Sciences	74.0	61.1	70.4	64.5	70.3
Natural Sciences	26.0	38.9	29.6	35.5	29.7
Per cent of total number of students					
Social Sciences	63.0	5.9	5.3	25.7	70.3
Natural Sciences	52.3	8.9	5.3	33.5	29.7
Total	59.8	6.8	5.3	28.0	100.0

As can clearly be seen from Table 7 there was a vast difference between the per capita subsidies paid to universities and technikons. The average subsidy (for studies in both natural and social sciences) paid to technikon students was only 73% of the value of the subsidy paid to university students. Note that Unisa and Technikon South Africa (with the majority of distance students) received much smaller per capita subsidies than the other universities and technikons respectively. The average subsidy for Unisa students was only 44% of the value of the average subsidy of university students, while the subsidy for students at Technikon South Africa was only 53% of the value of the average subsidy paid to technikon students. Differences between the different institutions and racial groups are also portrayed in Table 7.

Table 7
Average per capita subsidy according to field of study, racial group and institution (all FE students): *2000*

Panel A

	Soc Sc	**Nat Sc**	**Total**	**African**	**Indian**	**Coloured**	**White**
UCT	14 592	37 210	23 798	24 967	25 497	22 482	23 307
Durban W	14 476	36 914	22 005	20 459	24 468	23 494	24 994
Fort Hare	18 989	48 421	23 842	23 824	n/a	n/a	27 982
Free State	13 155	33 544	20 336	19 143	20 716	19 516	21 245
Medunsa	21 104	53 815	52 950	52 910	53 609	52 906	51 515

Natal	13 530	34 501	20 554	20 152	20 892	19 254	21 108
The North	15 073	38 437	22 146	22 121	29 091	21 749	26 755
North West	12 628	32 202	18 077	18 082	16 543	17898	17 522
UPE	13 442	34 277	15 601	14 431	21 226	19 283	21 389
Potch	11 921	30 399	16 802	15 987	16 802	15 362	17 358
Pretoria	13 631	34 758	20 814	16 977	24 730	19 505	23 884
RAU	14 299	36 461	17 875	16 096	18 161	17 151	19 434
Rhodes	15 090	38 479	21 623	20 284	28 255	19 745	21 530
Stellenbosch	13 104	33 415	20 972	16 263	26 123	20 778	21 853
Transkei	21 205	54 073	29 423	28 895	50 525	n/a	39 465
Unisa	6 418	16 367	7 430	7 472	7 461	7 337	7 386
Venda	9 576	24 419	14 904	14 920	n/a	n/a	n/a
Vista	12 474	31 808	14 518	14 521	13 564	14 882	13 321
UWC	14 530	37 050	19 365	18 595	24 329	19 479	21 034
Wits	14 149	36 079	25 228	23 401	28 184	23 277	25 985
Zululand	15 605	39 793	21 131	21 242	17 484	15 605	20 404
Univ Tot	***11 728***	***34 183***	***17 513***	**17 068**	**18 587**	**17 088**	**18 003**
Border Tech	10 743	27 396	16 654	16 545	27 396	23 681	23 392
Cape Tech	8 724	22 246	15 507	14 554	15 786	14 659	16 580
F S Tech	9 955	25 386	14 234	13 004	16 568	13 920	16 339
Mango Tech	9 647	24 600	17 769	17 755	20 328	24 600	21 881
ML Sultan	8 579	21 877	15 435	14 405	17 631	17 434	15 153
Natal Tech	9 326	23 782	16 665	15 082	19 502	16 664	19 208
N Gaut Tech	9 488	24 195	14 473	14 473	13 165	15 371	13 165
Pen Tech	9 902	25 251	16 602	16 083	19 936	17 392	18 903
PE Tech	8 891	22 672	14 907	14 275	16 133	14 345	16 314
Pretoria	7 522	19 182	11 296	10 303	14 444	12 058	14 541
Tech SA	4 874	12 429	6 700	6 539	7 477	6 413	7 267
N West Tech	10 600	27 030	14 336	14 341	10 600	10 600	10 600
E Cape Tech	9 488	24 195	15 239	15 179	24 195	22 094	24 195
Vaal T Tech	7 806	19 904	13 352	13 129	17 299	12 255	14 736
Wits Tech	9 522	24 282	17 280	16 561	20 109	16 699	19 791
Tech Tot	***7 706***	***21 093***	***12 706***	***12 229***	***15 713***	***13 210***	***13 887***
TOTAL	**10 500**	**28 522**	**15 867**	**15 041**	**17 992**	**15 523**	**17 178**
Index value	**-**	**-**	**92.4**	**87.6**	**104.7**	**90.4**	**100.0**

Table 7 (continued)

Panel B

	Social Sc	**Index Value**	**Natural Sc**	**Index Value**
African	10 577	101.4	27 747	94.2
Indian	10 076	96.6	30 434	103.4

Coloured	10 392	99.6	27 976	94.1
White	10 432	100.0	29 445	100.0

3.4 Full-time equivalent per field of study of contact students

The last analysis was done for only full-time contact students (total number of students minus distance students). The FE student numbers were taken from a research report by Steyn and De Villiers (2006: 186-187). The subsidy paid to distance students was subtracted from the total subsidy each HEI received by taking into account that distance students only received half the subsidy of residential students. It was assumed that the split between natural and social sciences of distance students was the same as for the total number of students (as was assumed in Section 3.3). This analysis gives the best estimation of the subsidies paid to the contact students of the different racial groups. As expected the subsidy per contact student in Table 8 is higher than the subsidy per total FE student (that includes distance students) in Table 5.

Table 8

Subsidy paid to Higher Education Institutions (FE contact students): 2000

	African	Indian	Coloured	White	Total
Enrollment %	61.9	6.2	5.6	26.3	100.0
Subsidy %	57.4	7.6	5.3	29.7	100
Per capita subsidy	R18 125	R23 821	R18 727	R22 052	R19 548
Subsidy: Index value	82.2	108.0	84.9	100.0	88.6

Once again the per capita expenditure on Indian students was the highest and they received 21.8% more than the national average of R19 548. African students, on the other hand received 7.3% less than this national average. As can be seen in Table 8 there is quite a difference in the per capita subsidy paid to the different racial groups, although the low value for Africans tends to indicate that they are more likely than the other groups to study part-time and thus receive a smaller subsidy.

Table 9

Students studying in Social and Natural Sciences (FE contact students): 2000

Per cent of each racial group

	African	Indian	Coloured	White	Total
Social Sciences	69.9	48.5	64.8	56.3	64.7
Natural Sciences	30.1	51.5	35.2	43.7	35.3
Per cent of total number of students					
Social Sciences	66.9	4.7	5.6	22.9	64.7
Natural Sciences	52.7	9.1	5.5	32.6	35.3
Total	61.9	6.2	5.6	26.3	100.0

Table 10

Average per capita subsidy according to field of study, racial group and institution (FE contact students): ***2000***

Panel A

	Soc Sc	**Nat Sc**	**Total**	**African**	**Indian**	**Coloured**	**White**
UCT	14 592	37 210	23 798	24 967	25 497	22 482	23 307
Durban W	14 476	36 914	22 005	20 459	24 468	23 494	24 994
Fort Hare	18 989	48 421	23 842	23 824	n/a	n/a	27 982
Free State	13 796	35 180	21 327	20 076	21 726	20 467	22 281
Medunsa	21 104	53 815	52 950	52 910	53 609	52 906	51 515
Natal	14 955	38 136	22 720	22 276	23 094	21 283	23 333
The North	15 073	38 437	22 146	22 121	29 091	21 749	26 755
North West	12 628	32 202	18 077	18 082	16 543	17 898	17 522
UPE	16 393	41 802	19 027	17 600	25 886	23 516	26 085
Potch	13 131	33 484	18 507	17 610	18 508	16 921	19 115
Pretoria	15 294	39 000	23 354	19 048	27 747	21 885	26 799
RAU	16 017	40 844	20 023	18 030	20 344	19 212	21 770
Rhodes	15 090	38 479	21 623	20 284	28 255	19 745	21 530
Stellenbosch	13 503	34 434	21 612	16 759	26 919	21 411	22 519
Transkei	21 205	54 073	29 423	28 895	50 525	n/a	39 465
Unisa	12 851	32 769	14 876	14 961	14 938	14 689	14 788
Venda	9 576	24 419	14 904	14 920	n/a	n/a	n/a
Vista	15 215	38 798	17 708	17 712	16 544	18 152	16 249
UWC	14 530	37 500	19 365	18 595	24 329	19 479	21 034
Wits	14 149	36 079	25 228	23 401	28 184	23 277	25 985
Zululand	15 605	39 793	21 131	21 242	17 484	15 605	20 404
Univ Tot	***14 805***	***37 743***	***22 043***	***20 879***	***25 680***	***20 835***	***23 400***

Table 10 (continued)

	Soc Sc	**Nat Sc**	**Total**	**African**	**Indian**	**Coloured**	**White**

Border Tech	10 743	27 396	16 654	16 545	27 396	23 681	23 392
Cape Tech	8 740	22 287	15 535	14 580	15 815	14 686	16 610
F S Tech	9 950	25 373	14 226	12 997	16 560	13 913	16 330
Mango Tech	9 647	24 600	17 769	17 755	20 328	24 600	21 881
ML Sultan	8 612	21 959	15 493	14 460	17 697	17 499	15 210
Natal Tech	9 326	23 782	16 665	15 082	19 502	16 664	19 208
N Gaut Tech	9 488	24 195	14 473	14 473	13 165	15 371	13 165
Pen Tech	9 902	25 251	16 602	16 083	19 936	17 392	18 903
PE Tech	8 891	22 672	14 907	14 275	16 133	14 345	16 314
Pretoria	8 570	21 853	12 869	11 737	16 456	13 738	16 566
Tech SA	n/a	n/a	n/a	n/a	n/a	n/a	n/a
N West Tech	10 600	27 030	14 336	14 341	10 600	10 600	10 600
E Cape Tech	9 488	24 195	15 239	15 179	24 195	22 094	24 195
Vaal T Tech	7 806	19 904	13 352	13 129	17 299	12 255	14 736
Wits Tech	9 522	24 282	17 280	16 561	20 109	16 699	19 791
Tech Tot	***9 170***	***23 201***	***15 068***	***14 426***	***18 254***	***15 701***	***16 975***
TOTAL	**12 999**	**31 548**	**19 548**	**18 125**	**23 821**	**18 729**	**22 052**
Index value	**-**	**-**	**88.6**	**82.2**	**108.0**	**84.9**	**100.0**

Panel B

	Social Sc	**Index Value**	**Natural Sc**	**Index Value**
African	12 763	93.8	30 581	92.9
Indian	13 782	101.2	33 269	101.1
Coloured	12 651	92.9	29 921	90.9
White	13 612	100.0	32 908	100.0

From Tables 8 and 9 it is clear that the higher per capita subsidy of Indians can be explained by the fact that although they represented only 6.2% of contact student numbers, they were responsible for 9.1% of all students studying in natural sciences. This can also be explained by the fact that 39.5% of Indian students in social sciences were studying at Unisa. The result was that 51.5% of contact Indian students were studying in natural sciences. Also with white students we see a high percentage studying in natural sciences. While only 27.1% and 34.2% of African and Coloured students respectively studied in natural sciences, no less than 43.7% and of white students studied in natural sciences.

Differences between individual institutions and racial groups are summarized in Table 10. Once again the difference between technikons and universities is clear with the size of the average subsidy of a technikon student equaling only 70% of the subsidy paid per university student. The average subsidies per student paid to Unisa and Venda is much

lower than the other universities and can be explained by the above-average percentage of their students that studied in social sciences. Pretoria Technikon received the smallest subsidy per student of the technikons, but it was not out of line with the other technikons.

4. Analysis for 2006

In 2004 the 21 universities and 15 technikons merged into 23 institutions (16 comprehensive universities, 6 universities of technology and one technikon). Therefore the results between 2000 and 2006 are not directly comparable - even for individual institutions due to the mergers that took place and left very few HEIs unchanged. An analysis was also done separately for the comprehensive universities and the universities of technology and the one technikon, but due to the mergers there was little difference between the results of these two types of institutions (except for the last calculations done with contact FE students according to field of study). Therefore the results will mainly be restricted to the total education sector and will not distinguish between the comprehensive universities and the rest of the education system.

Total expenditure on Higher Education was taken as the amount in Vote 14 of Estimates of National Expenditure, 2006 (2006: 271). An amount of R636.7 million was earmarked for restructuring or unallocated. This amount is less than 6% of total expenditure on HE institutions and because it could not be linked to a specific institution it was not taken into consideration for the analysis.

4.1 Headcounts

Headcounts in HEIs was taken from Education at a Glance 2006 (2007: 24). It was assumed that the expenditure per student in each institution was identical irrespective of race. The amount spent on a specific racial group at all institutions was added and then divided by the total number of students of that racial group at all the HEIs. The calculated amounts were also deflated by the CPI to 2000 prices to make it comparable to the analysis of 2000.

Table 11

Subsidy paid to Higher Education Institutions (all headcount students): 2006

	African	Indian	Coloured	White	Total
Enrollment %	60.9	7.4	6.6	25.1	100

Subsidy %	59.7	7.4	7.0	25.9	100
Per capita subsidy *[2000 prices]*	R13 275 *[R9 914]*	R13 565 *[R10 131]*	R14 521 *[R10 845]*	R13 994 *[R10 451]*	R13 559 *[R10 126]*
Subsidy: Index value	94.9	96.9	103.8	100.0	96.9

From Table 11 it is evident that there was no big difference between the spending patterns on each of the four racial groups. The lowest per capita expenditure was on Africans with R13 275 per student and the highest expenditure was on coloureds at R14 521 per student. This boils down to the highest expenditure per student (on coloureds) that was only 8.6% higher than the lowest (on Africans).

The procedure was repeated for headcounts of contact students. The institutions with the most distance students were Unisa (226 769), North West University (10 819) and University of Pretoria (7 584). By excluding the distance students the number of students decreased from 740 173 to 475 033. As one would expect the average subsidy paid to contact students was much higher than the ones calculated for contact and distance students - R18 391 compared to R13 559 (See Table 12). If one looks at the average subsidy per racial group, the subsidy for Indians was the highest while the subsidy for Africans was the lowest. In this case the difference is a more substantial 16.2%.

Table 12

Subsidy paid to Higher Education Institutions (headcount contact students): 2006

	African	Indian	Coloured	White	Total
Enrollment %	60.6	7.1	6.5	25.8	100
Subsidy %	57.9	7.3	7.4	27.4	100
Per capita subsidy *[2000 prices]*	R17 557 *[R13 112]*	R20 947 *[R15 644]*	R19 048 *[R14 225]*	R19 525 *[R14 582]*	R18 391 *[R13 735]*
Subsidy: Index value	89.9	107.3	97.6	100.0	94.2

4.2 *Full-time equivalent students*

With this analysis the FE students were taken from Education Statistics in South Africa 2006 (2007: 38) and it was then assumed that the racial composition of FE student numbers was identical to the headcount numbers (used in Section 4.1). In this way the racial breakdown of FE students could be calculated. The first calculation was done for all FE students (contact and distance students). The results as summarized in Table 13

show a remarkable consistency with a fairly small difference between the highest subsidy value of R21 208 (for Coloureds) and the lowest value of R19 463 (for Africans).

Table 13
Subsidy paid to Higher Education Institutions (all FE students): 2006

	African	Indian	Coloured	White	Total
Enrollment %	61.2	7.2	6.7	24.9	100.00
Subsidy %	59.7	7.4	7.0	25.9	100.0
Per capita subsidy *[2000 prices]*	R19 463 *[R14 670]*	R20 847 *[R15 569]*	R21 208 *[R15 839]*	R20 961 *[R15 654]*	R20 162 *[R15 058]*
Subsidy: Index value	93.7	99.5	101.2	100.0	96.2

The next calculation was done for FE contact students only. The amount spent on each institution was reduced by subtracting the amount paid to distance students. The results are shown in Table 14. From the table it is clear that the per capita subsidy for the racial groups did not differ that much. For example, Indians received 12% more per student than the national average of R23 928 average while Africans received 4% less than this average.

Table 14
Subsidy paid to Higher Education Institutions (FE contact students): 2006

	African	Indian	Coloured	White	Total
Enrollment %	62.5	6.3	7.0	24.2	100.00
Subsidy %	60.0	7.1	7.2	25.7	100.0
Per capita subsidy *[2000 prices]*	R22 961 *[R17 147]*	R26 837 *[R20 043]*	R24 740 *[R18 476]*	R25 426 *[R18 989]*	R23 928 *[R17 870]*
Subsidy: Index value	90.3	105.5	97.3	100.0	94.1

4.3 Full-time equivalent according to field of study (all students)

The headcount of unduplicated student enrolment per racial group and institution was taken from the website of the Department of Education under the Hemis comprehensive

statistics. The breakdown between the students studying in social sciences and natural sciences is also given. The percentage of the total number of students taking natural and social sciences as represented by each racial group in each institution was then calculated. The full-time equivalent enrolments according to field of study for all HEIs were taken from Education Statistics in South Africa (2006: 38). These enrolments were not given according to racial group and it was assumed that the proportions of FE student numbers according to racial group were the same as those calculated from the headcounts (given in the website of the Department of Education). In this way it was calculated how many FE students of each racial group at each institution took social sciences and natural sciences.

It was assumed that the subsidy for natural sciences per student is 2.55 times the subsidy paid to students in social sciences. The next step was to calculate the size of the subsidy in each institution that was paid to natural sciences and social sciences. Using FE student numbers and by making the split between students in natural and social sciences is more accurate than the first method, especially if one takes into account that in 2006 29.9% of the total number of students studied courses in natural sciences and 70.1% in social sciences.

As can be seen from Table 15 Africans received 58.6% of the funds although they were 61.3% of the students. Conversely whites, for example, who represented 24.8% of the students, received 26.9% of the funds. This can be directly linked to the number of students studying in natural sciences (that received a higher subsidy). Only 27.7% of coloured and 28.1% of African students studied in natural sciences, while the corresponding figures for Indians and whites were 33.2% and 33.8% respectfully. With this method Indians received the highest subsidy of R22 041 per student and Africans the lowest of R19 256 per student. The difference between the lowest and highest subsidy values was 12.6%, slightly higher than the difference calculated with headcounts. Compared to the national average, the lowest value was 4.5% lower than that value and the highest subsidy was 9.3% higher than the national average.

Table 15
Subsidy paid to Higher Education Institutions (all FE students): 2006

	African	Indian	Coloured	White	Total
Enrollment %	61.3	7.2	6.7	24.8	100
Subsidy %	58.6	7.8	6.7	26.9	100

Per capita subsidy *[2000 prices]*	R19 256 *[R14 381]*	R22 041 *[R16 461]*	R20 125 *[R15 030]*	R21 867 *[R16 331]*	R20 162 *[R15 058]*
Subsidy: Index value	88.1	100.8	92.0	100.0	92.2

In Table 16 it can clearly be seen that although Indian students were 7.2% of the total number of students they represented 8.0% of the students taking courses in natural sciences. Also whites who were 24.8% of the total number of students represented 28.1% of the students taking courses in natural sciences. This can be explained by the higher percentage of white and Indian students that took courses in the natural sciences.

The last table in this section (Table 17) summarises the differences between the different institutions, racial groups and field of study.

Table 16

Students studying in Social and Natural Sciences (all FE students): 2006

Per cent of each racial group					
	African	Indian	Coloured	White	Total
Social Sciences	71.9	66.8	72.3	66.2	70.1
Natural sciences	28.1	33.2	27.7	33.8	29.9
Per cent of total number students					
Social Sciences	62.9	6.8	6.9	23.4	70.1
Natural Sciences	57.7	8.0	6.2	28.1	29.9
Total	61.3	7.2	6.7	24.8	100

Table 17

Average per capita subsidy according to field of study, racial group and institution (all FE students): 2006

Panel A

	Soc Sc	**Nat Sc**	**Total**	**African**	**Indian**	**Coloured**	**White**
CAPUT	12 158	31 002	20 524	20 712	21 372	19 610	21 481
UCT	18 180	46 359	29 699	31 198	30 439	28 857	28 880
FS UT	13 157	33 549	21 452	20 939	22 948	20 271	24 069
DUT	14 071	35 880	23 284	21 968	26 598	24 435	27 991
UFH	18 005	45 912	23 696	24 063	23 326	19 456	19 724
UFS	16 909	43 119	25 158	24 239	23 791	21 049	27 116
UJ	14 216	36 251	20 765	21 334	19 847	18 813	19 790

UKZN	17 830	45 467	26 888	26 612	27 868	23 603	26 184
UL	17 154	43 744	28 305	27 988	40 188	39 502	38 233
NMMU	15 666	39 947	22 996	22 051	23 072	22 410	25 485
NWU	13 501	34 427	18 552	17 518	17 436	16 997	20 354
UP	15 655	39 919	25 221	22 549	28 072	25 186	27 359
RU	18 658	47 577	25 948	25 631	33 145	22 746	25 558
UNISA	7 516	19 166	8 781	8 828	8 749	8 524	8 752
US	16 898	43 089	27 384	25 364	33 760	27 719	27 451
TUT	14 354	36 603	22 710	21 874	25 290	21 228	28 369
UV	12 695	32 371	18 581	18 588	17 142	n/a	15 569
VUT	10 987	28 017	18 586	18 490	21 040	14 811	21 298
WSUT	12 573	32 061	17 825	17 723	30 747	26 060	26 889
UWC	17 242	43 967	26 802	26 936	31 929	24 626	39 071
UW	18 489	47 148	31 375	30 728	32 745	29 337	31 796
UZ	14 796	37 731	18 217	18 165	19 881	18 230	19 899
MTECH	9 821	25 042	17 480	17 476	21 510	19 564	21 510
TOTAL	**12 994**	**36 974**	**20 162**	**19 256**	**22 041**	**20 125**	**21 867**
2000 prices	*9 704*	*27 613*	*15 058*	*14 381*	*16 461*	*15 030*	*16 331*
Index value	**-**	**-**	**92.2**	**88.1**	**100.8**	**92.0**	**100.0**

Table 17 (continued)

Panel B

	Social Sc	**Index Value**	**Natural Sc**	**Index Value**
African	12 844 *[9 592]**	96.8	35 626 *[26 607]*	92.1
Indian	13 031 *[9 732]*	98.2	40 182 *[30 009]*	103.9
Coloured	13 403 *[10 009]*	101.0	37 648 *[28 117]*	97.3
White	13 266 *[9 907]*	100.0	38 685 *[28 891]*	100.0

** Values in brackets are in 2000 prices.*

4.4 Full-time equivalent according to field of study of contact students

This method is identical to the previous method except that distance students were removed from the data. The data of full-time equivalent distance students was taken from Education Statistics in South Africa 2006 (2008: 38). These FE distance students were then deducted from the total FE student numbers that was used in Section 4.3. The FE contact students was then converted to racial numbers by once again assuming that their distribution was the same as the headcounts that were available according to racial group per institution.

Distance students are normally subsidized at 50% of the amount for contact students (except master and doctoral degrees). The subsidy paid to the different institutions was thus adjusted and the amount for distance students was subtracted from the total subsidy paid to each institution.

Table 18

Subsidy paid to Higher Education Institutions (FE contact students): 2006

	African	Indian	Coloured	White	Total
Enrollment %	62.4	6.3	6.9	24.4	100
Subsidy %	58.5	7.6	6.8	27.1	100
Per capita subsidy *[2000 prices]*	R22 610 *[R16 886]*	R28 931 *[R21 606]*	R23 529 *[R17 572]*	R26 809 *[R20 021]*	R24 098 *[R17 997]*
Subsidy: Index value	84.3	107.9	87.8	100.0	89.9

With this method the subsidy per student ranges from R22 610 for Africans to R28 931 for Indians. There is thus a substantial difference of 21.8% between the lowest and the highest per capita subsidy. Africans received only 6.2% less than the national average of R24 098, while Indians received 20% more than the national average of R24 098. The difference in subsidy can to a large extent be explained by the percentage of students studying in the natural sciences (as portrayed by Table 19).

Table 19

Students studying in Social and Natural Sciences (FE contact students): 2006

Per cent of each racial group					
	African	Indian	Coloured	White	Total
Social Sciences	66.1	54.9	66.5	57.3	63.3
Natural Sciences	33.9	45.1	33.5	42.7	36.7
Per cent of total number students					
Social Sciences	65.1	5.5	7.3	22.1	63.3
Natural Sciences	57.6	7.8	6.3	28.3	36.7
Total	62.4	6.3	6.9	24.4	100.0

The biggest difference between this and the previous method is the distance students of Unisa (109 120 students out of the total of 127 269 distance students) that was excluded

from the calculations. The only other institution where a substantial number of distance students was excluded is North West University that had 5 107 FE distance students.

While less than 34% of African and Coloured students studied in the natural sciences, the percentages for white and Indian students are 42.7 and 45.1 per cent respectfully. Because the subsidy per student in the natural sciences is more than 2½ times the subsidy of students in social sciences, it is obvious that the per capita subsidy per student for White and Indian students will be higher than for the other two racial groups. Another factor is the number of students studying at universities of technology and the only remaining technikon who received a smaller subsidy per student than the comprehensive universities. With this last analysis of contact students the average subsidy paid to students at comprehensive universities was 21.4% higher than the subsidy paid to the other students (and was consistently higher for all racial groups). As was mentioned earlier, this was not the case with the other calculations.

Table 20 summarises the differences between the different institutions, racial groups and field of study.

Table 20

Average per capita subsidy according to field of study, racial group and institution (FE contact students): 2006

Panel A

	Soc Sc	**Nat Sc**	**Total**	**African**	**Indian**	**Coloured**	**White**
CAPUT	12 169	31 031	20 530	20 745	21 504	19 493	21 630
UCT	18 180	46 359	29 699	31 394	30 533	28 757	28 782
FS UT	13 243	33 768	21 733	21 108	23 587	20 301	25 007
DUT	14 071	35 880	23 284	21 609	27 760	24 795	29 761
UFH	18 347	46 785	24 447	24 764	24 124	20 611	20 863
UFS	17 311	44 143	26 265	25 401	24 975	22 306	28 067
UJ	14 302	36 471	20 962	21 609	19 927	18 773	19 864
UKZN	18 530	47 251	28 836	28 564	29 792	25 520	28 140
UL	17 154	43 744	28 305	27 956	42 028	41 202	39 684
NMMU	16 390	41 794	25 151	24 086	25 235	24 492	27 874

NWU	14 574	37 163	20 877	19 745	19 653	19 162	22 775
UP	16 118	41 100	26 971	24 142	29 865	26 935	29 153
RU	18 734	47 771	26 137	25 848	32 529	23 169	25 781
UNISA	14 963	n/a	14 963	14 963	14 963	14 963	14 963
US	16 898	43 089	27 384	25 287	34 087	27 733	27 454
TUT	14 611	37 257	23 592	22 688	26 360	21 987	29 617
UV	12 695	32 371	18 581	18 591	16 608	n/a	14 587
VUT	10 987	28 017	18 586	18 471	21 619	14 224	21 948
WSUT	12 692	32 365	18 139	18 037	30 453	26 112	26 890
UWC	17 273	44 046	26 813	26 922	30 902	24 995	36 184
UW	18 489	47 148	31 375	30 632	32 965	29 049	31 862
UZ	14 796	37 731	18 217	18 160	20 052	18 231	20 072
MTECH	9 821	25 042	17 480	17 474	25 042	21 103	25 042
TOTAL	**15 374**	**39 116**	**24 098**	**22 610**	**28 931**	**23 529**	**26 809**
2000 prices	*11 482*	*29 212*	*17 997*	*16 886*	*21 606*	*17 572*	*20 021*
Index value	**-**	**-**	**89.9**	**84.3**	**107.9**	**87.8**	**100.0**

Panel B

	Social Sc	**Index Value**	**Natural Sc**	**Index Value**
African	14 896 *[11 125]**	91.7	37 629 *[28 102]*	91.8
Indian	17 198 *[12 844]*	105.9	43 191 *[32 256]*	105.3
Coloured	15 636 *[11 677]*	96.3	39 206 *[29 280]*	95.6
White	16 245 *[12 132]*	100.0	40 999 *[30 619]*	100.0

** Values in brackets are in 2000 prices.*

5. Concluding remarks

The results of this analysis are summarized in Tables 21 to 23. Table 21 gives an indication how average subsidies of the different racial groups compared to that of whites (because they are used as the control group with an index value of 100), Table 22 portrays the total subsidy amounts paid to the different racial groups, while Table 23 gives an indication whether the average subsidies kept up with inflation.

Table 21

Index of average subsidy according to racial group

	Method used					
	Headcount	**Headcount (contact)**	**FE**	**FE (contact)**	**FE (Ns&Ss)**	**FE (Ns&Ss**

						contact)
African 2000	103.4	97.0	97.9	92.6	87.6	82.2
African 2006	94.9	89.9	93.7	90.3	88.1	84.3
Indian 2000	108.5	116.7	103.8	105.3	104.7	108.0
Indian 2006	96.9	107.3	99.5	105.5	100.8	107.9
Coloured 2000	105.6	102.6	99.5	93.4	90.4	84.9
Coloured 2006	103.8	97.6	101.2	97.3	92.0	87.8
White 2000	100.0	100.0	100.0	100.0	100.0	100.0
White 2006	100.0	100.0	100.0	100.0	100.0	100.0
Total 2000	102.9	99.2	98.9	95.2	92.4	88.6
Total 2006	96.9	94.2	96.2	94.1	92.2	89.9

The overall picture of Table 21 is that the subsidies of the African, coloureds and Indian students in general deteriorated slightly compared to the subsidy levels of whites. However, with the calculations for contact FE students according to field of study (last column in Table 21) it was found that either the other racial groups' relative situation improved over time or they received higher subsidies than the white group. The same conclusion can be made for all FE students according to field of study. With the calculations for contact students the results indicate that Indian students in general received the highest subsidies, but never more than 8% above the subsidies of whites. White and Indian students received the highest subsidies when field of study is taken into consideration. Too a large extent this can be explained by a larger percentage of these two racial groups that took programmes in natural sciences who received a subsidy 2½ times that of students in social sciences. With these calculations it was also found that Africans on average received the lowest subsidies, slightly lower than those of coloureds. The biggest difference between African and white subsidies (FE contact students with field of study incorporated) was the 17.8% in 2000, but that gap decreased to 15.7% in 2006. Another explanation for the difference in subsidies received by the respective racial groups can be found in the higher subsidies that were paid to universities relative to technikons in 2000. In the new education setup the different subsidies paid to the comprehensive universities and the universities of technology and the remaining technikon did not play as an important role although it was significant in the calculation of the subsidies of contact FE students according to field of study.

Table 22

Total subsidy paid to racial groups

	Method used					
	Headcount	**Headcount (contact)**	**FE**	**FE (contact)**	**FE (Ns&Ss)**	**FE (Ns&Ss contact)**
African 2000	4 001 926 070	3 623 717 599	4 001 926 070	3 428 662 165	3 709 984 902	3 180 586 682
African 2006	5 988 674 845	5 054 131 111	5 988 674 845	5 315 217 685	5 877 771 665	5 223 764 662
[2000 prices]	*4 472 498 018*	*3 774 556 468*	*4 472 498 018*	*3 969 542 707*	*4 389 672 632*	*3 901 243 213*
Indian 2000	454 265 275	392 581 436	454 265 275	377 079 574	504 890 689	421 611 678
Indian 2006	744 164 206	648 219 741	744 164 206	630 883 026	786 050 088	679 413 397
[2000 prices]	*555 761 170*	*484 107 349*	*555 761 170*	*471 159 840*	*587 042 635*	*507 403 582*
Coloured 2000	358 412 545	320 766 110	358 412 545	311 752 678	340 052 570	295 132 562
Coloured 2006	704 834 510	638 041 427	704 834 510	637 054 980	668 665 524	603 770 881
[2000 prices]	*526 388 730*	*476 505 920*	*526 388 730*	*475 769 216*	*499 376 791*	*450 911 785*
White 2000	1 725 893 110	1 507 831 855	1 725 893 110	1 425 837 833	1 985 568 839	1 646 001 328
White 2006	2 598 229 438	2 395 966 820	2 598 229 438	2 281 861 912	2 703 415 733	2 420 964 353
[2000 prices]	*1 940 425 271*	*1 789 370 291*	*1 940 425 271*	*1 740 153 780*	*2 018 981 130*	*1 808 039 098*
Total 2000	6 540 497 000	5 844 897 000	6 540 497 000	5 543 332 250	6 540 497 000	5 554 332 250
Total 2006	10 035 903 000	8 736 359 099	10 035 903 000	8 865 017 602	10 035 903 000	8 927 913 292
[2000 prices]	*7 495 073 189*	*6 524 540 029*	*7 495 073 189*	*6 620 625 543*	*7 495 073 189*	*6 667 597 679*

As stated above, Table 22 gives the total subsidies that were paid to the different racial groups with the different calculation methods used. The figures in 2006 are also given in 2000 prices to make it directly comparable with the values calculated for 2000. When the data for 2000 and 2006 (in constant 2000 prices) are compared it is clear that in real terms the education subsidy for all racial groups increased during this time period. This may give the impression that the relative financial position of students improved over time. This, however, overlooks the important issue of what happened with student numbers during this same period.

This variable is incorporated in Table 23 where the average subsidy per racial group for the two years is portrayed. Values for 2006 are given in constant 2000 prices. The general message from Table 22 is that in real terms subsidies per student decreased almost across the board. Although there are a few exceptions, subsidies to students at HEIs in South Africa did not keep up with inflation. This had the effect that, in order to balance their books, HEIs in South Africa increased tuition fees by more than the inflation rate (see

research report by Steyn and De Villiers, 2006). This makes access to and the affordability of higher education for the poor a contentious issue. Although this issue falls outside the scope of this report, it is not something that can be ignored.

Table 23
Value of average subsidy according to racial group (in constant 2000 prices)

	Method used					
	Headcount	**Headcount (contact)**	**FE**	**FE (contact)**	**FE (Ns&Ss)**	**FE (Ns&Ss contact)**
African 2000	10 769	13 147	15 701	19 002	15 041	18 125
African 2006	9 914	13 112	14 670	17 148	14 381	16 886
Indian 2000	11 306	15 825	16 644	21 625	17 992	23 821
Indian 2006	10 131	15 644	15 569	20 043	16 461	21 606
Coloured 2000	10 995	13 914	15 965	19 168	15 523	18 727
Coloured 2006	10 845	14 225	15 839	18 476	15 030	17 572
White 2000	10 413	13 557	16 040	20 532	17 178	22 052
White 2006	10 451	14 582	15 654	18 989	16 331	20 021
Total 2000	10 720	13 445	15 866	19 548	15 867	19 548
Total 2006	10 126	13 735	15 058	17 870	15 058	17 997

The overall picture is that white and Indian students received in general higher subsidies than African or coloured students. It can, however, to a large extend be explained by field of study and if more African and coloured students study in natural sciences the subsidy levels will move even closer to each other. What we see here in higher education is too a large extent a result of what is happening in the school system. Not enough African and coloured learners takes mathematics and science to qualify to study courses in natural sciences. Before this issue is not corrected at school level, average subsidies of Indian and white students will stay higher than that of African and coloured students.

Appendix A

Number of students per racial group

	Method used					
	Headcount	**Headcount (contact)**	**FE**	**FE (contact)**	**FE (Ns&Ss)**	**FE (Ns&Ss contact)**
African 2000	371 618	275 630	254 884	180 434	246 662	175 480
African 2006	451 108	287 878	304 875	231 487	305 243	231 039
Indian 2000	40 179	24 808	27 294	16 264	28 061	17 699
Indian 2006	54 859	30 946	35 696	23 508	35 663	23 484
Coloured 2000	32 597	23 054	22 449	17 437	21 906	15 758
Coloured 2006	48 538	33 497	33 234	25 751	33 225	25 660
White 2000	165 737	111 220	107 600	69 445	115 586	74 642
White 2006	185 668	122 712	123 955	89 744	123 628	90 305
Total 2000	610 131	434 712	412 227	283 581	412 216	283 580
Total 2006	740 173	475 033	497 759	370 489	497 759	370 488

ADDENDUM B4:

FISCAL INCIDENCE ANALYSIS

HEALTHCARE

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February 2009

CONTENTS

TABLES

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FIGURES

1. INTRODUCTION

This evaluation of the health function forms part of a broader assessment of the impact of government policy on social sector goals. Although the broader evaluation provides an evaluation of changes that can be measured from 2000 to 2006, this study focuses entirely on the year 2006 making use of income date produced by the project used in conjunction with the General Household Survey of 2006 (GHS2006) produced by Statistics South Africa.

The purpose of this analysis, within the context of the broader study, is to:

1. Provide an understanding of access to health services by income;
2. Evaluate how services are prioritised by income group;
3. Examine the impact of risk pooling within the private sector through medical schemes;
4. Examine how various medical conditions impact on income groups; and
5. Examine service satisfaction between the public and private sectors, as well as by income group.

This study makes particular use of "concentration curves" to isolate distributional affects and information and is shown graphically.

> *A concentration curve shows the cumulative proportion of spending going to cumulative proportions of the population. It is thus similar to a Lorenz curve. However, unlike the Lorenz curve, which shows the cumulative proportion of income earned by the cumulative population, a concentration curve can lie above the diagonal: The poorest 40% of the population cannot earn more than 40% of income, but they can indeed obtain more than 40% of spending on social grants, for instance.* (Van der Berg, 2005, p.7)

The concentration curves are used in relation to service utilisation, disease prevalence and incidence, and service satisfaction. Although under normal circumstances a fiscal incidence analysis would distribute utilisation in relation to cost, this is not done in this study as the GHS2006 provides no information on which particular hospital or service is used irrespective of whether it is in the public or private sector, or by level of care. Consequently, it is impossible to properly attribute the cost of a local service to a visit of one form or another. Aside from this, unit costs for services by type are relatively similar within the public sector due to the equalisation of budgets, with differences occurring only between levels of care (generalist versus highly specialised care in a central hospital).

For this reason the concentration curves assume a uniform unit cost for a service. This has the effect of focusing attention on the distribution of utilisation or preferences by income. It is important to note that if the GHS2006 provided usage by hospital type (district, regional, central) in the public sector, it would be impossible to work out what level of care they actually accessed, with a strong possibility that results could be distorted. Many central hospitals provide services found in district and regional hospitals. Consequently, if a survey failed to identify the level of care used within a hospital, it would be impossible to draw any concrete conclusions.

2. METHODOLOGICAL ISSUES

2.1 Data used

The main source for data is the GHS2006. However, the GHS2006 does not provide adequate income date for the incidence analysis. A distribution of household per capita income was consequently developed by the broader project[7] combining income distribution information from the Income and Expenditure Survey of 2006 (Statistics South Africa) with asset information from the GHS2006. An income distribution before and after social grants was also generated. The distribution after accounting for social grants was used in this study, as no meaningful conclusions would be possible from the pre-grant income distribution. This is because behaviour in relation to services within the GHS2006 is in reality based on households experiencing with grants. As there would be no control group to compare the behaviour/utilisation difference in a pre-grant scenario, using this income distribution would merely distort the results.

2.2 Concentration curves

Concentration curves are used throughout to demonstrate possible distributional affects within the health system. This includes examination of sub-populations that need to be examined discretely. This includes the split between the population on a medical and those not on a medical scheme. Also, the split by province, for those not on a medical scheme is examined. Distinguishing between the medical scheme and non-medical scheme populations is important as these reflect mutually exclusive systems based on whether or not one earns an income.

Although it is fairly obvious that the income distributions will differ significantly for the medical scheme population relative to the non-medical scheme population, the question that needs to be examined is whether lower income groups within the medical scheme population are prejudiced. For this to be examined the income distribution for the population in medical schemes is broken into deciles.

A similar exercise is carried out for provinces, where income distributions by decile are produced for each province for the non-medical scheme population. If the national income distribution were used, a provincial analysis would be distorted where its income distribution varied from the national distribution. The results would only show this effect rather than variations in access by income within the province.

The following discrete income distributions were consequently developed:

1. National population;
2. National medical scheme population;
3. National non-medical scheme population; and
4. Provincial non-medical scheme population[8].

[7] This dataset was generated by Servaas van der Berg (University of Stellenbosch) for the project.

[8] No meaningful analysis would be possible looking at the medical scheme population by province and consequently this was not included in the study.

2.3 Service utilisation

The GHS2006 surveys the last service used by an individual in the past month. Consequently, if a person used a service more than once this would be missed. This distorts the reliability of the survey as it is not possible to extrapolate the result neatly into actual utilisation estimates. One obvious problem that materialises occurs where a patient released from hospital is provided with a prescription that must be collected from a pharmacy. Where the person concerned visits a pharmacy to collect a script, crude adherence to the survey (which includes a visit to a pharmacy in the survey) would mask a significant number of hospital visits. Furthermore, any service with more frequency of visits would disproportionately become the most recent visit than less frequent services (such as a hospital or specialist visit). For the results of this analysis not to be distorted, however, it is necessary to assume that this error will be the same across all income groups; at least generating a consistent distributional pattern even though the magnitudes may be unreliable.

2.4 Incidence and prevalence of conditions

In addition to service usage the GHS2006 surveyed whether or not a person was treated for a limited number of conditions in the past month. Although this question should not suffer from the same errors as service usage, it nevertheless does not allow for easy and reliable extrapolation. In particular it fails to distinguish between an acute or chronic condition. An acute condition would in all likelihood only occur in the previous month, and could be extrapolated to an annual prevalence by multiplying the survey result by 12. However, a chronic condition (e.g. diabetes, hypertension, AIDS) is ongoing, and the survey is predominantly measuring how many people have an ongoing condition at any point in time. This survey result cannot be multiplied by 12, and the survey result for the past month should be regarded as the annual prevalence for that condition.

The survey cannot properly distinguish between incidence (the number of new cases) and prevalence (the number of cases at any point in time). With acute conditions incidence and prevalence will predominantly be the same for a given time period. However, for chronic conditions only prevalence can be measured. For this reason this report only refers to prevalence, irrespective of whether the condition measured is chronic or acute in nature.

3. GENERAL CHARACTERISTICS OF THE HEALTH SYSTEM

3.1 Overview

Health sector users can be broken down broadly into those with access to medical scheme cover and those without. Those who have no medical scheme cover will generate a natural bias toward the use of private sector medical services. Those who do not have medical scheme cover nevertheless still make use of private services, but primarily on an out-of-hospital basis. To generate an accurate perspective of the health system as a whole, and its achievements in relation to access and equity, the two populations need to be evaluated discretely. For those not familiar with the health system, therefore, this section provides an evaluation based on the GHS2006 with the primary purpose of providing a context for the incidence analysis provided in the rest of the report.

3.2 Overarching dimensions

The GHS2006 estimates the total medical scheme population at 6.5 million with 40.8 million non-medical scheme members in 2006. However, the Council for Medical Schemes reported actual medical scheme members at 7.1 million, which is far higher. Overall medical scheme membership has also continued to rise to 7.7 million by the second quarter of 2008.[9]

The age profile of the non-medical schemes population differs considerably from the higher income medical schemes population, with far fewer younger people in medical schemes. However, this bias largely reflects the White population demographics, which accounts for 42% of the total medical scheme population. The African population also accounts for 42% of the medical scheme population, but has far fewer old people represented. The non-medical scheme population is predominantly made up of Africans and Coloureds.

[9] Unpublished 2nd quarter report by the Council for Medical Schemes for 2008. These reports are based on the quarterly management accounts submitted to the Council for Medical Schemes.

Figure 3.1: Breakdown of the non-medical scheme population by age and race (2006)

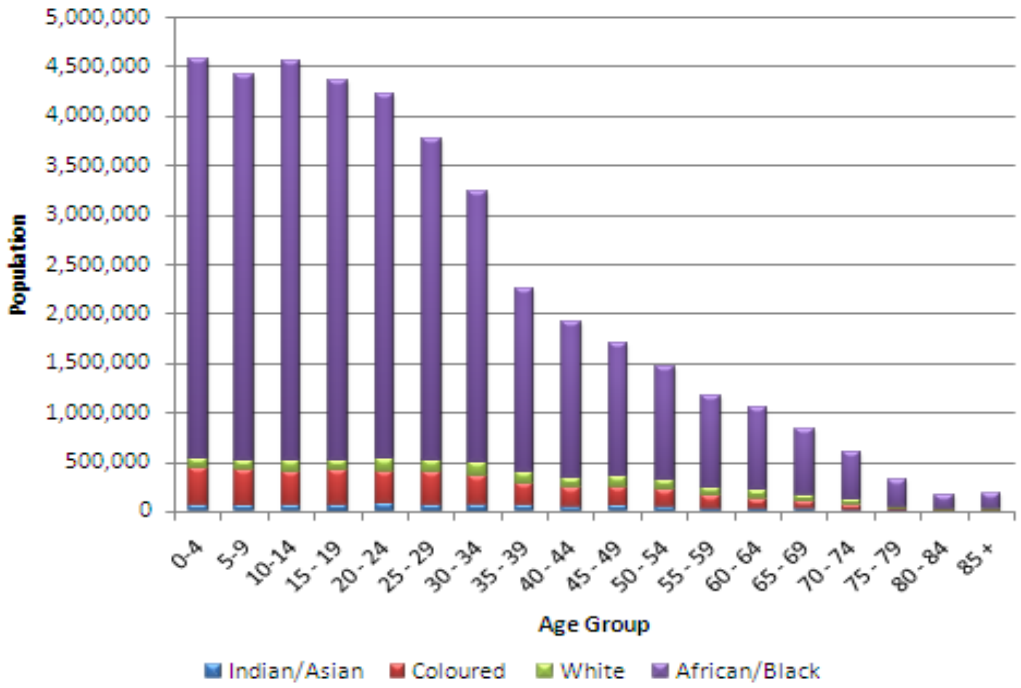
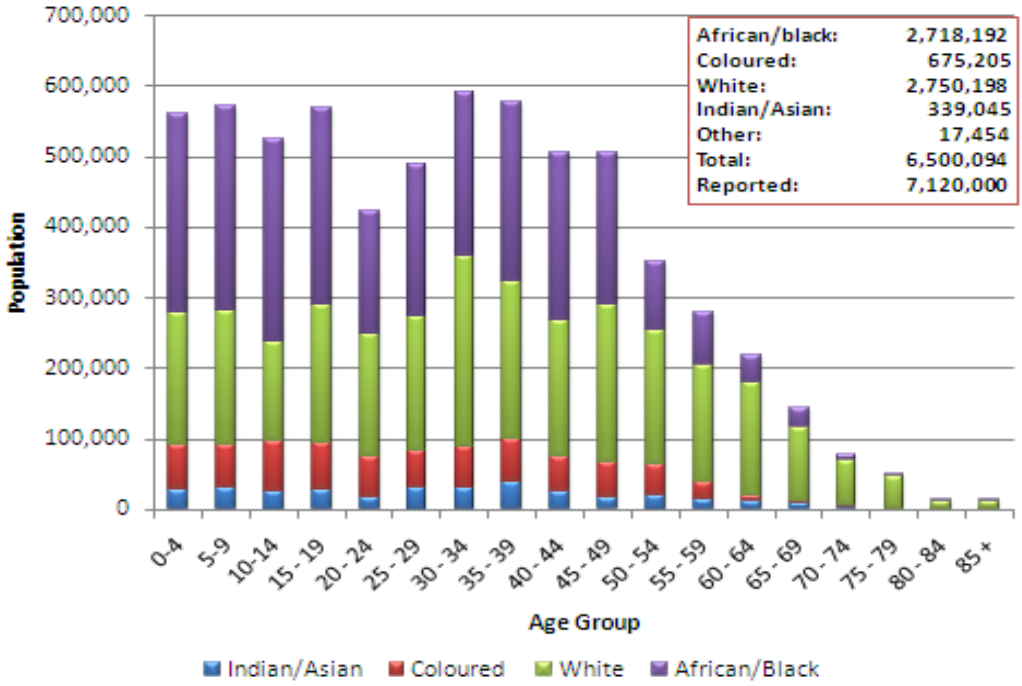


Figure 3.2: Breakdown of the medical scheme population by age and race (2006)

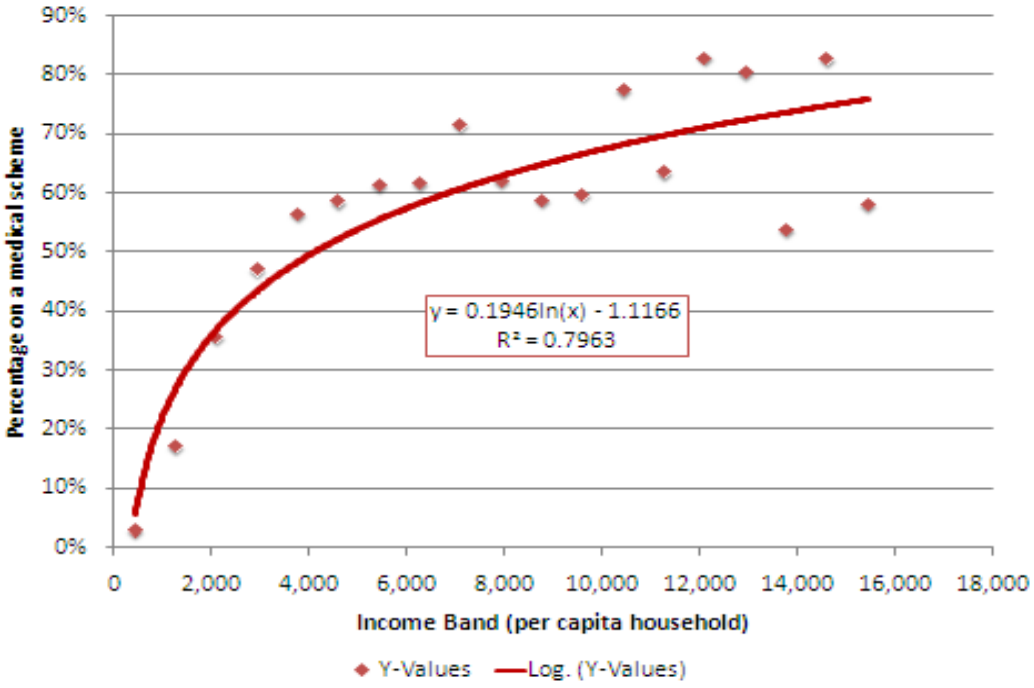


Source: GHS2006 and the Council for Medical Schemes Annual Report 2006/7

3.3 Medical scheme participation

Medical scheme participation is a function of income with the proportion of the population in medical schemes rising significantly as income rises. There is a rapid rise to around 60% participation from around R4,000 per month. This indicates that preferences for medical scheme cover are very high even amongst fairly low income groups.

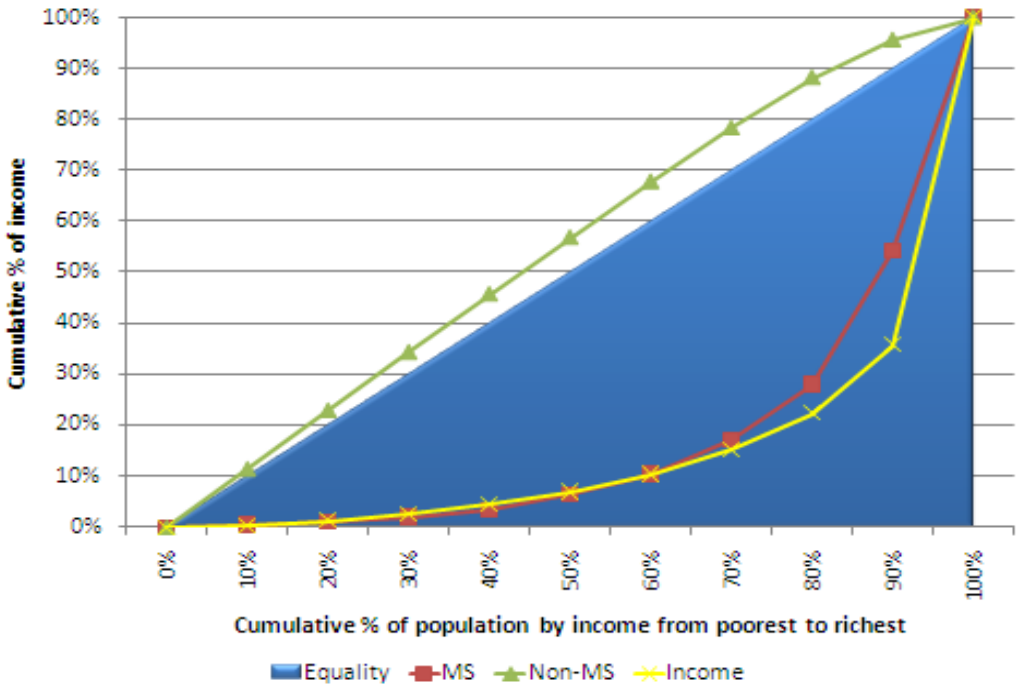
Figure 3.3: Medical scheme participation by income for households in the monthly per capita household income range R0 to R16,000 (2006)


90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percentage on a medical scheme
y = 0.1946ln(x) - 1.1166
R² = 0.7963
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
Income Band (per capita household)
Y-Values
Log. (Y-Values)

3.4 Income characteristics

The non-medical scheme population demonstrates a slight bias toward low-income groups with the medical scheme population closely following the income distribution of the country as a whole. However, medical scheme participation is slightly more progressive than the distribution of income. (See **figure 4**).

Figure 3.4: Concentration curve comparing the cumulative proportion of income attributable to the cumulative proportion of the population by income (2006)



3.5 Conclusions

The health system can be divided into two discrete systems with their own dynamics. The medical scheme population typically makes use of private health providers, while the non-medical scheme population predominantly uses the public provider system. However, as will be shown below, even within the non-medical scheme population private sector participation increases with income for non-hospital services. Medical scheme participation also increases dramatically with fairly small rises in income, suggesting a very strong pull away from public services when the affordability barrier is overcome. For this reason medical scheme participation is more progressive than the income distribution of the country as a whole.

4. SERVICE USE

4.1 Overview

The GHS2006 questions relating to service use, although not reliable as an indicator of actual utilisation, can be used to show differences in preferences and potential access to services by income. The central focus here is to evaluate whether the survey can identify any distortion in utilisation patterns due to income. This would be expected where, for instance, clinics and hospitals are located only on more affluent areas, or where access is dependent upon some form of financial outlay. Lower income groups would be susceptible to both direct and indirect financial barriers, with user fees representing the form and transport costs and example of the latter. If any systematic bias in access favours higher income groups the concentration curves for utilisation would be expected to fall below the equality line.

Conversely, a bias in favour of low-income groups could exist where higher income groups are required to pay the costs of their service use while lower income groups are fully subsidised. Here higher income groups could be prejudiced if they are not able to risk pool in some way for their expected expenses. Although the bias, either in favour of, or against, low-income groups can be evaluated, the survey is not able to properly examine whether the health system treats higher income groups fairly. This bias is a feature of countries with strict means tests for free services, but where there inadequate social security arrangements exist for income earners.[10]

4.2 National

Service utilisation by the non-medical scheme population shows an increasing preference for private doctors/specialists as income rises, with a consequential decline in the utilisation of public sector clinics. Hospital service utilisation however does not vary significantly by income group. It is however expected that without access to a medical scheme, hospital use will concentrate on public sector services irrespective of income. Nevertheless, the concentration curve reveals that hospital utilisation slightly favours lower income groups.

The concentration curve for the medical scheme population (**figure 4.2**) shows that service use is biased toward lower income groups. This potentially demonstrates that private sector risk pooling, via medical schemes, reduces income biases in access to services.[11] By contrast, the absence of risk pooling, as occurs with the non-medical scheme population in relation to private doctor/specialist services, results in increasing utilisation with income (utilisation falls below the equity line in **figure 4.1**).

Figure 4.1: Service utilisation from poorest to richest deciles of the non-medical scheme population (2006)

[10] The United States is a classic example of this problem where the most excluded group involves middle-income professionals and self-employed people unable to access affordable voluntary insurance.
[11] Although contributions may be regressive, once in the risk pool benefits are progressive.

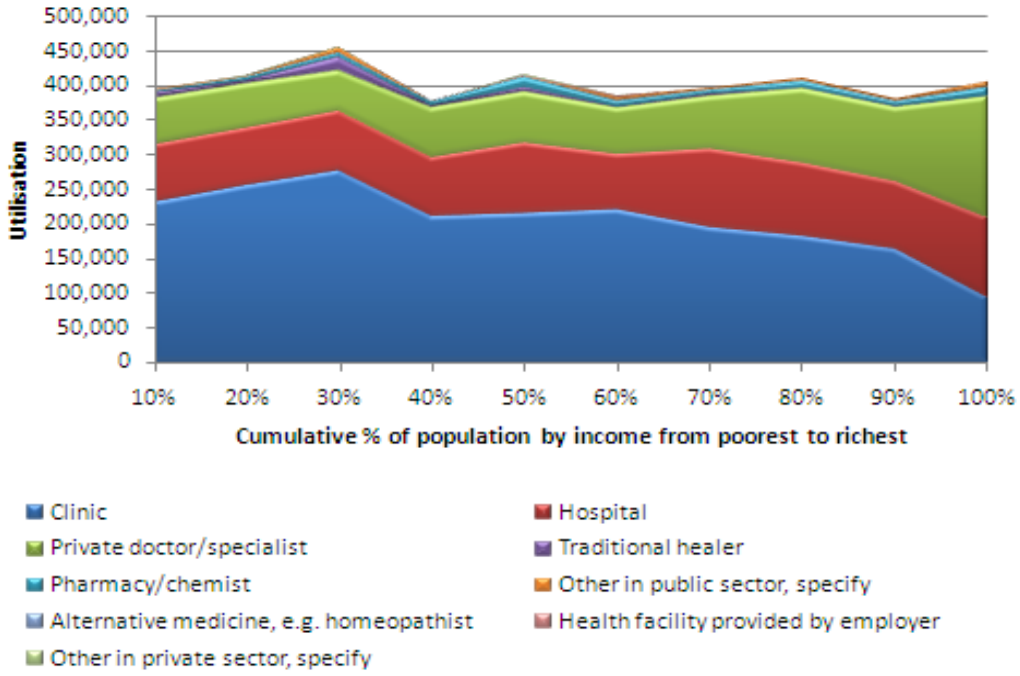


Figure 4.2: Non-medical scheme population: concentration curve of service use (2006)

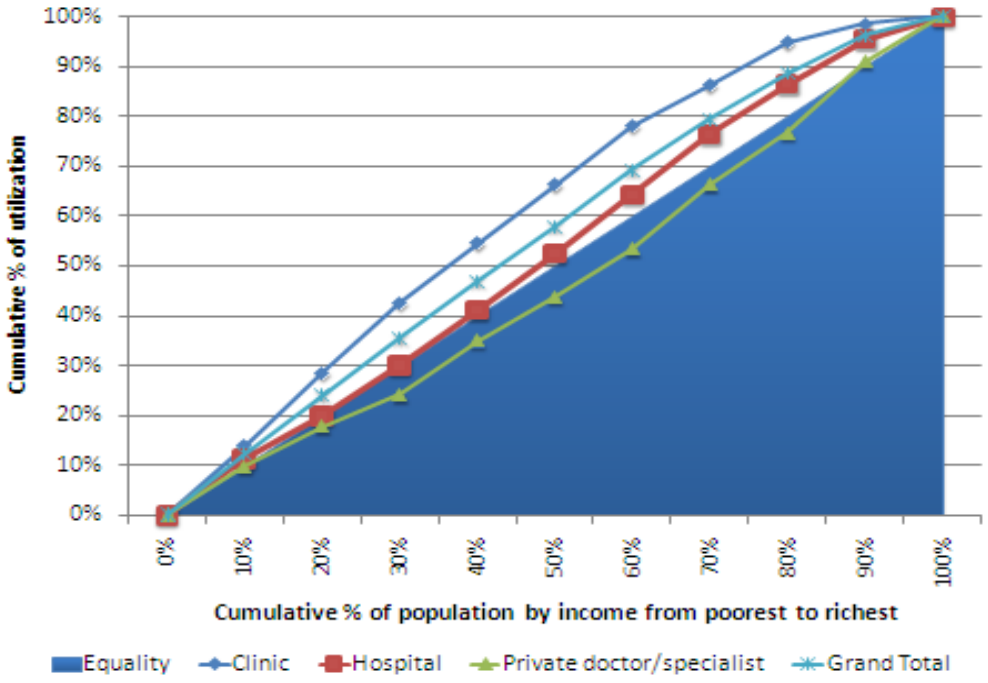
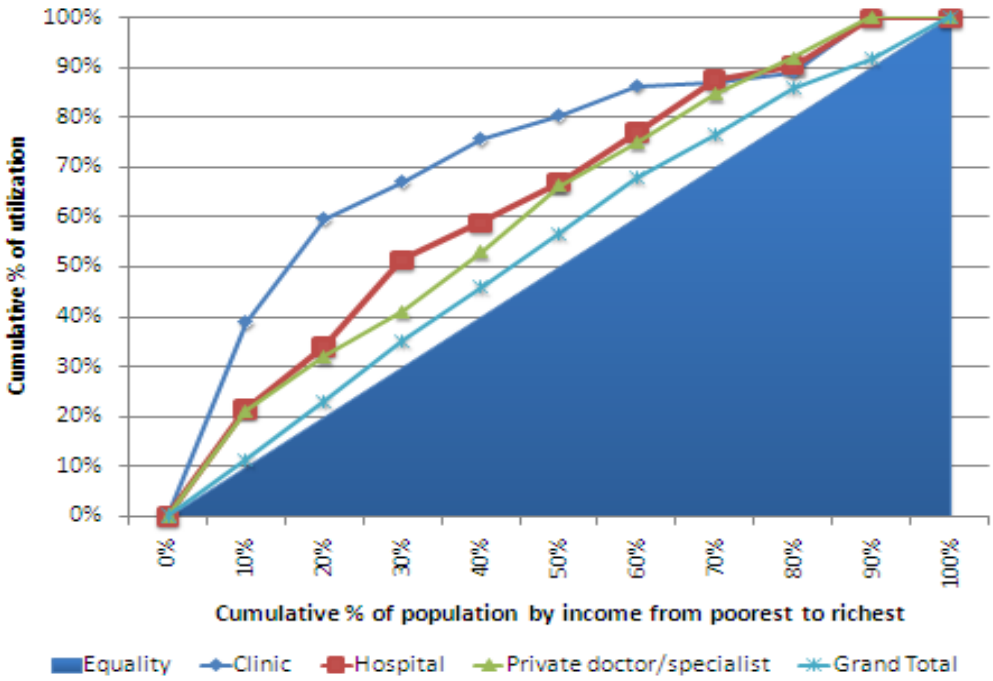


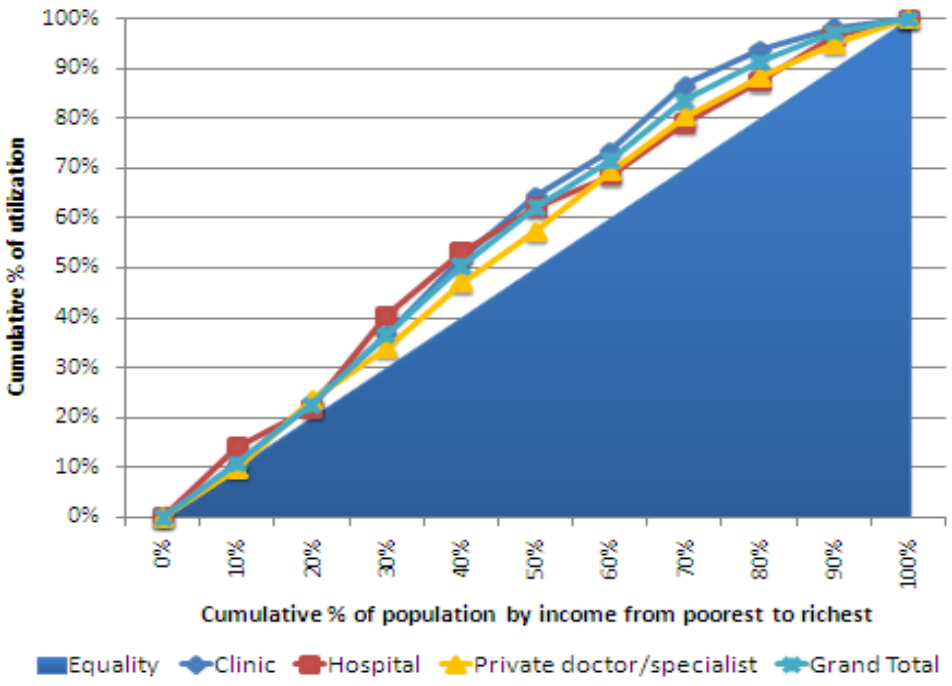
Figure 4.3: Medical scheme population: concentration curve of service use (2006)



4.3 Eastern Cape

For the non-medical scheme population in the Eastern Cape access to all major public sector services is biased slightly toward lower income services. Interestingly this bias can also be detected in access to private doctor/specialist services, which deviates from the national picture.

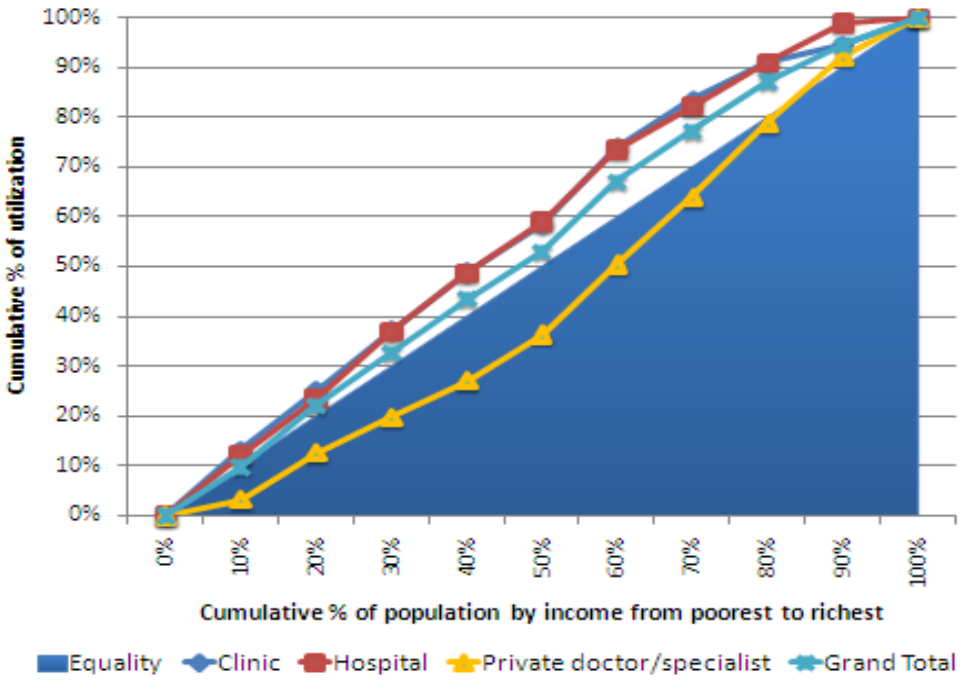
Figure 4.4: Non-medical scheme population: concentration curve of service use in the Eastern Cape (2006)



4.4 Free State

For the non-medical scheme population in the Free State access to public services is slightly biased toward low-income groups. Both hospital and clinic services demonstrate a similar pattern of use. Private doctor/specialist services, consistent with the national picture, are biased toward higher income groups (curve falls below the equality line).

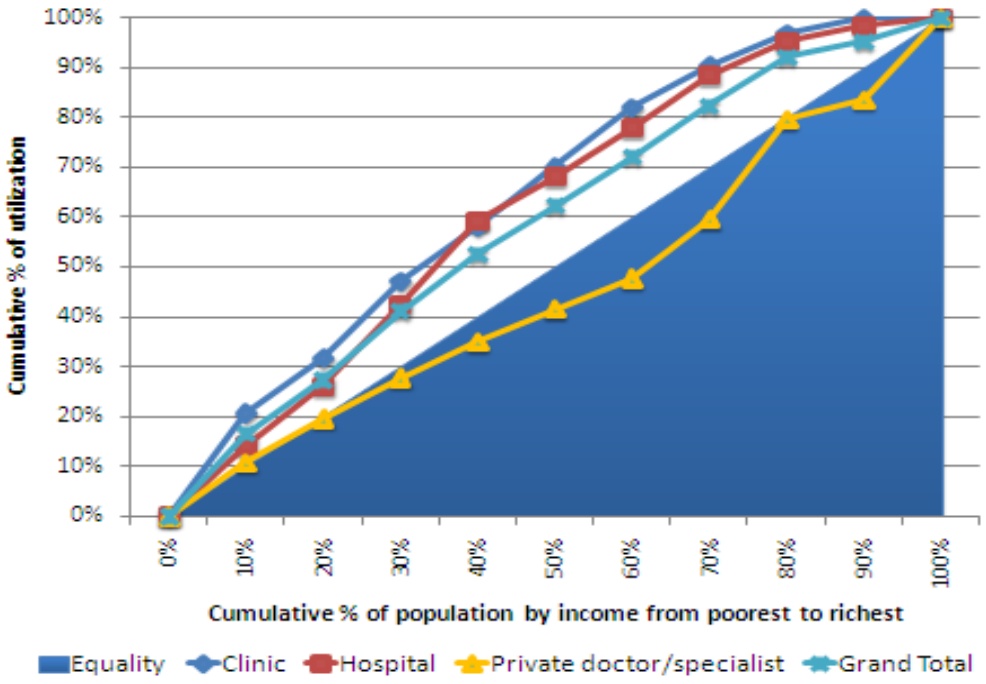
Figure 4.5: Non-medical scheme population: concentration curve of service use in the Free State (2006)



4.5 Gauteng

The non-medical scheme population in Gauteng shows a relatively pronounced bias toward lower income groups in the use of public sector services, with both clinic and hospitals services demonstrating a very similar pattern. Private doctor/specialist services, however, are slightly biased toward higher income groups (curve falls below the equality line).

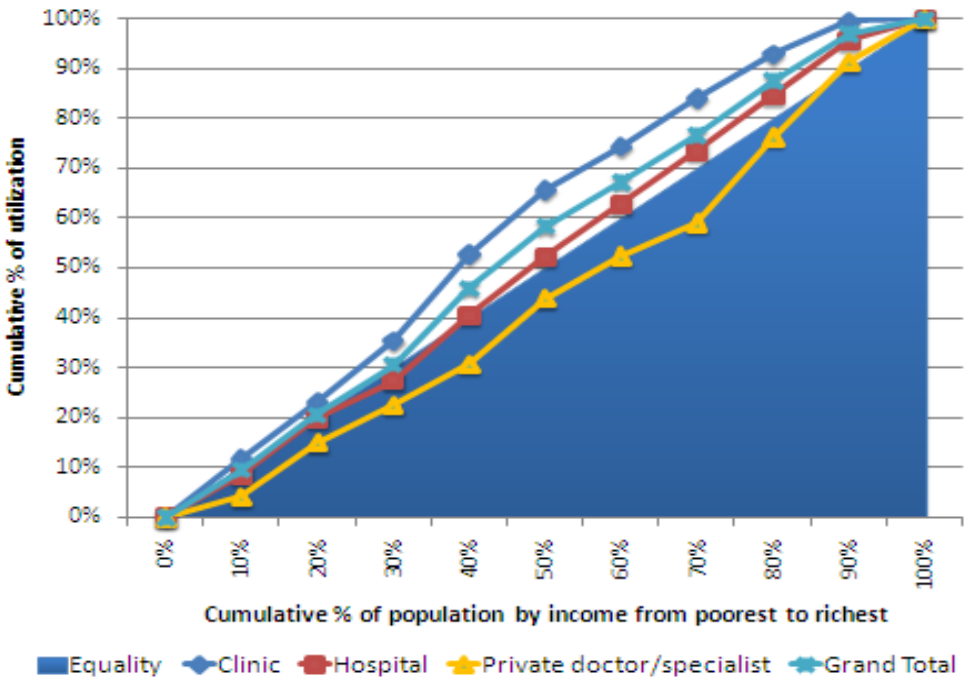
Figure 4.6: Non-medical scheme population: concentration curve of service use in the Gauteng (2006)



4.6 Kwazulu-Natal

The non-medical scheme population in Kwazulu-Natal is slightly biased toward lower income groups. However, the bias is more pronounced for clinic rather than hospital services. Consistent with the national pattern, private doctor/specialist services are biased toward higher income groups.

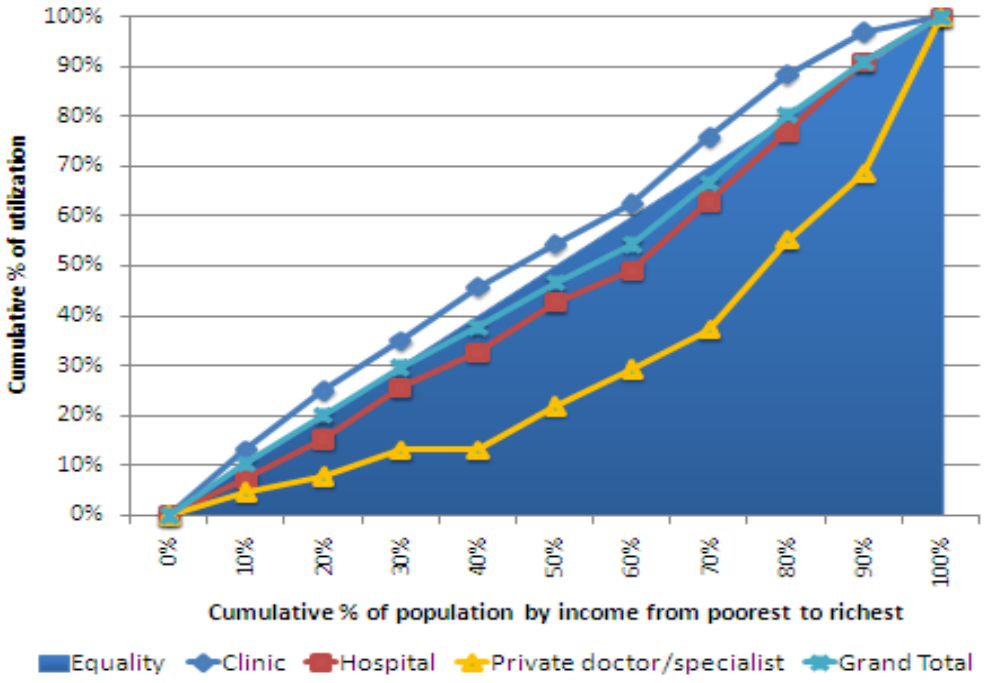
Figure 4.7: Non-medical scheme population: concentration curve of service use in the Kwazulu-Natal (2006)



4.7 Limpopo

The non-medical scheme population in Limpopo indicates that access to public hospital services is biased against low-income groups and is inconsistent with both the national pattern and the pattern exhibited in other provinces. Clinic services are however slightly biased in favour of low-income groups, but only just. The pattern of use for hospital services suggests an access problem for those with lower income. This pattern requires some further investigation to establish why this is occurring. One possible explanation may involve the need to incur significant transport costs to access public services, creating a slight income barrier. Interestingly, usage of private doctor/specialist services is strongly biased toward high-income groups, much more so than occurs in other provinces.

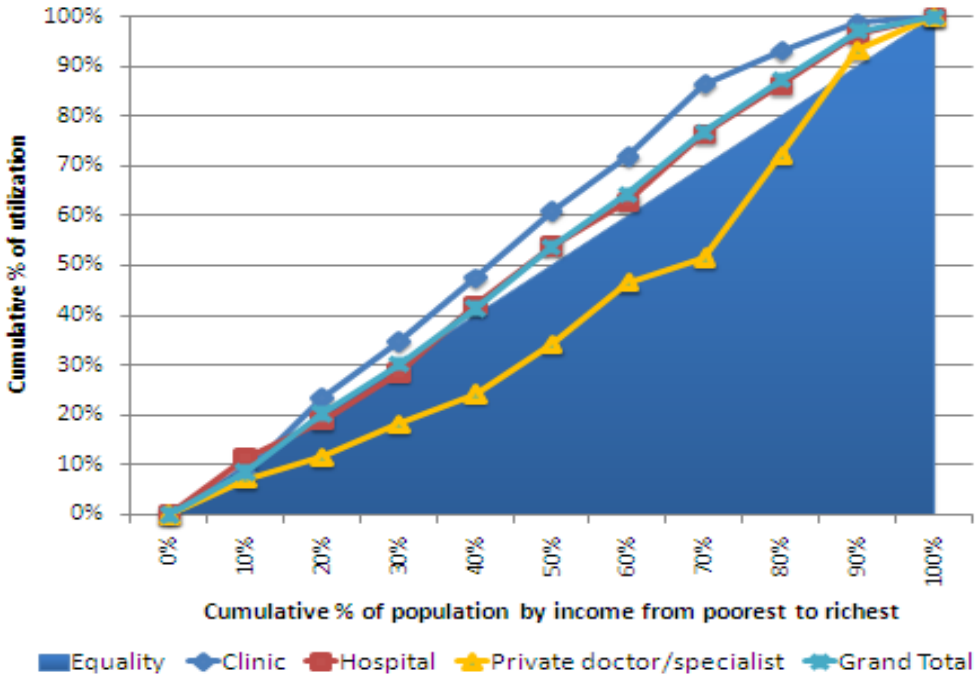
Figure 4.8: Non-medical scheme population: concentration curve of service use in the Limpopo (2006)



4.8 Mpumalanga

The non-medical scheme population in Mpumalanga demonstrates a slight bias toward low-income groups for hospital and clinic services. Hospital services are only very slightly above the equality line. Utilisation of private doctor/specialist services however demonstrate a fairly pronounced bias toward higher income groups, consistent with the national pattern.

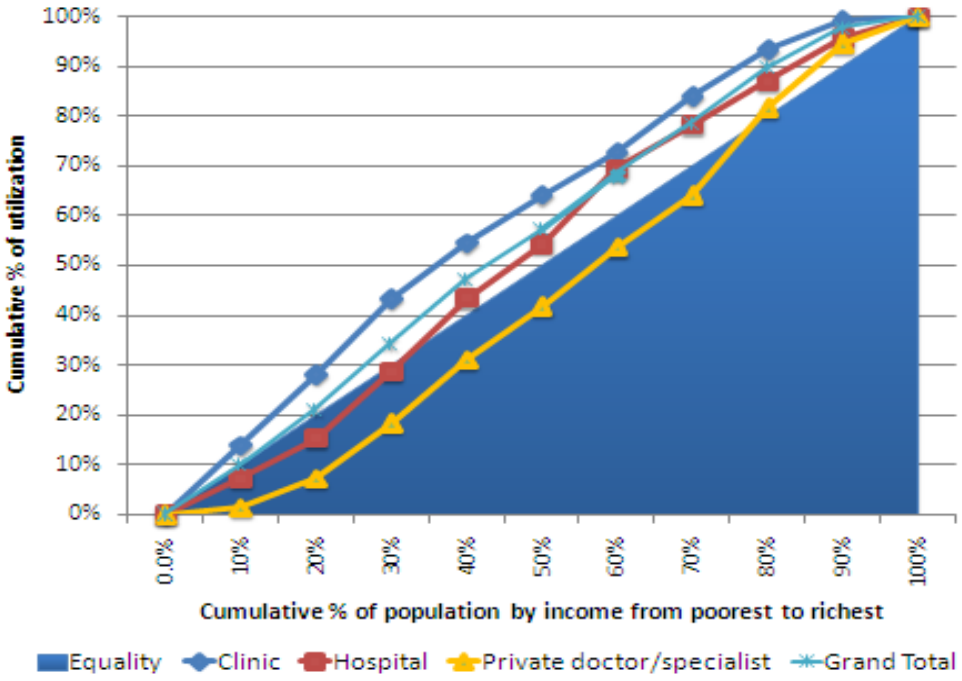
Figure 4.9: Non-medical scheme population: concentration curve of service use in Mpumalanga (2006)



4.9 North West

The non-medical scheme population in North West shows that hospital service use is only slightly biased toward low-income groups, with a more pronounced bias for clinic services. For the lowest three deciles, however, hospital utilisation falls below the equality line, suggesting some access problems for very low-income groups. As with Limpopo this could be explained by large distances between hospitals with an affordability barrier resulting from transport costs. However, the bias in the very low deciles is not carried throughout. Access to private doctor/specialist services follow the national pattern in falling below the equality line generally.

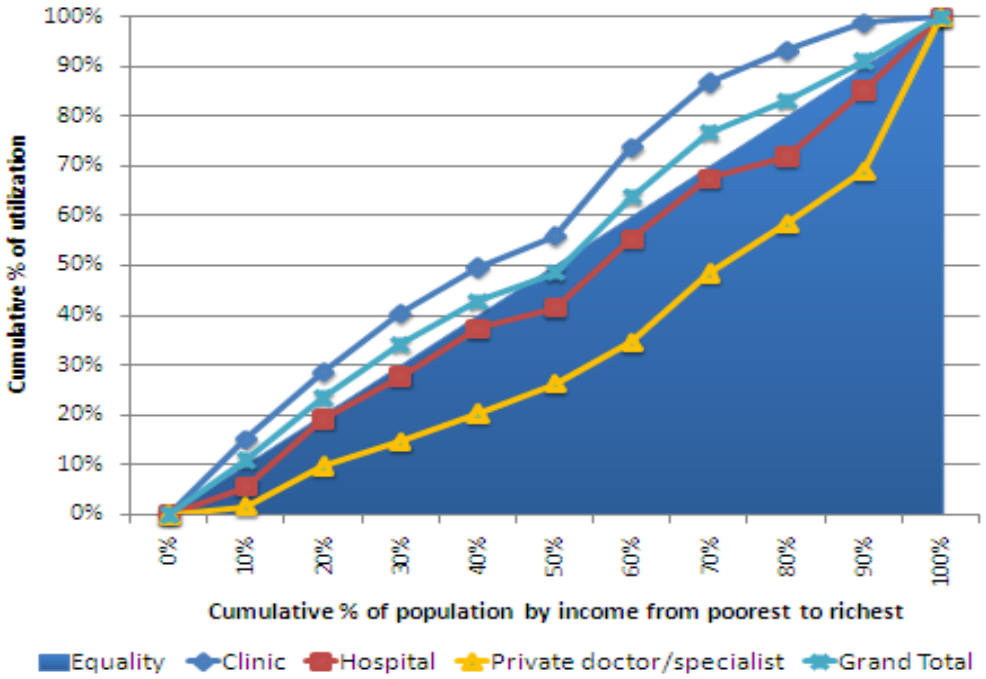
Figure 4.10: Non-medical scheme population: concentration curve of service use in the North West (2006)



4.10 Northern Cape

The non-medical scheme population in the Northern Cape demonstrates a slight bias toward low-income groups for clinic services, but a bias to higher-income groups for public hospital services. As with Limpopo and North West hospital service access may be affected by transportation costs. This is plausible in the Northern Cape given the very large distances that may need to be covered. Consistent with national trends, access to private doctor/specialist services shows a pronounced bias toward high-income groups.

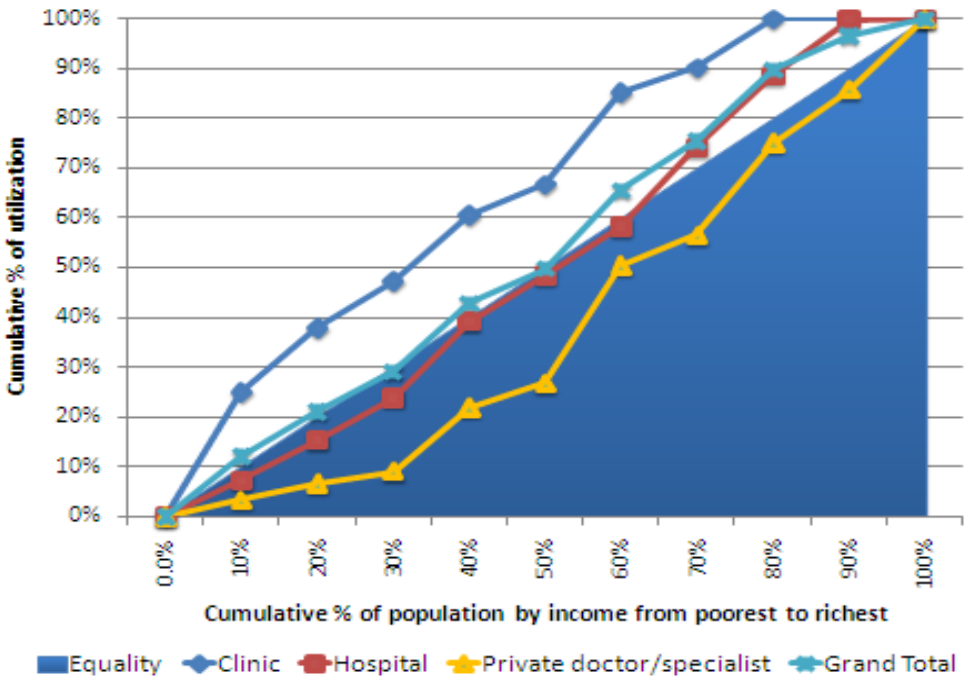
Figure 4.11: Non-medical scheme population: concentration curve of service use in the Northern Cape (2006)



4.11 Western Cape

The utilisation of services by the non-medical scheme population in the Western Cape shows a strong bias toward low-income groups for clinic services, but an ambiguous result for hospital services. Lower income deciles fall below the equality line while for higher-income deciles untilisation rises slightly above the equality line. What would cause this effect is unclear and it requires further investigation. To the extent that this results from transport costs as a barrier, it may suggest that public hospitals are inefficiently located in the Western Cape. The utilisation of private doctors/specialists however follows the national pattern with a bias toward high-income groups.

Figure 4.12: Non-medical scheme population: concentration curve of service use in the Western Cape (2006)



4.12 Conclusions

Nationally the utilisation of key services by the non-medical scheme population demonstrates that access is predominantly biased in favour of low-income groups. However, in four provinces, Limpopo, Mpumalanga, Northern cape, and the Western Cape, hospital services deviate from this pattern with slight biases toward higher income populations. The explanation for this is unclear, but suggests that some form of indirect income barrier must be in place.

As public hospitals are required to treat low-income people without charge, the cause must involve an indirect income-related barrier of some form. A likely candidate would be transport costs which can arise for at least two reasons. The first would be due to the geographical make-up of a province, with many small towns with great distances in-between. The second would involve the poor distribution of resources, such that geographical access favours a higher-income group. This issue would require further research and investigation to resolve.

The utilisation pattern for doctor/specialist services predictably biases higher income groups in all provinces. However, this pattern of use differs significantly from medical beneficiary use of doctor/specialist services which shows a bias toward the lower-income groups. The differences in utilisation bias indicate that income differentials are removed when risk pooling via a medical scheme is possible.

5. HEALTH CONDITIONS

5.1 Overview

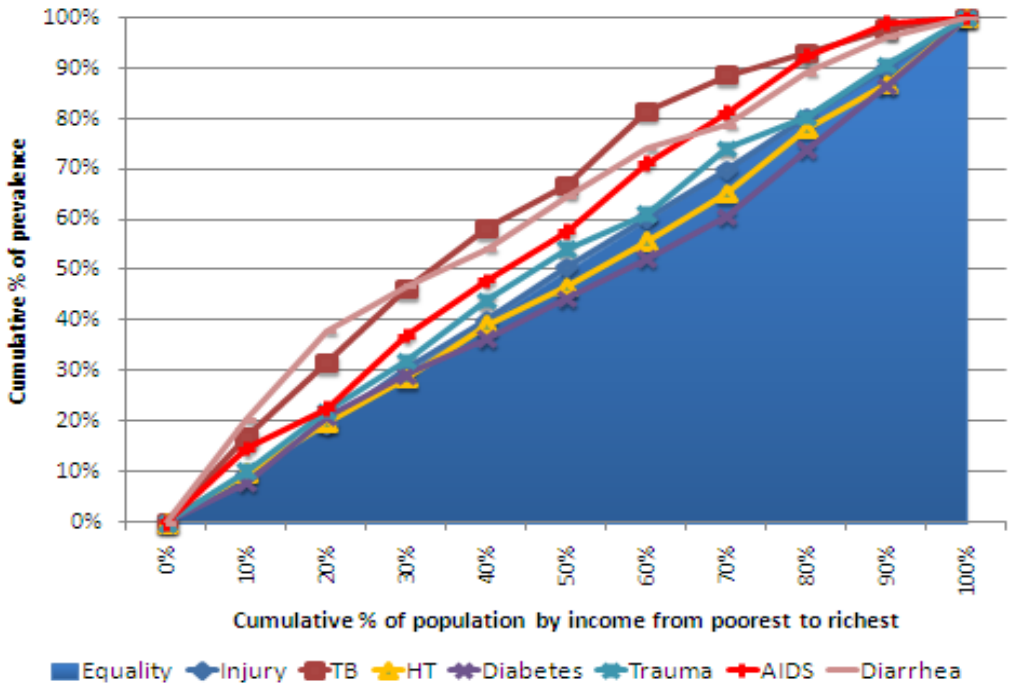
The GHS2006 requests information from respondents on any *conditions* they required treatment for in the previous month. As the survey requests information from lay people, the conditions are specified in very broad terms. Nevertheless, they are useful general indicators of specific priority conditions which are important from a public health perspective. A simple validation was performed on the age spread of the conditions against the expected morbidity profile against what would be expected (see **annexure A**). The results showed broadly consistent patterns, suggesting the data could at least reflect a reasonably consistent profile of morbidity. However, the survey does not necessarily provide an accurate picture of true prevalence.

The analysis here is performed entirely on the non-medical scheme population to determine variations in morbidity patterns by income.

5.2 Results

The non-medical scheme population indicates that certain conditions are biased toward low-income groups while others bias higher-income groups. Within the former group are Tuberculosis (TB), Diarrhoea, and AIDS. However, AIDS is not as pronounced in the lowest income groups as is the case with TB and HT. Trauma appears to closely follow the equality line, while chronic conditions associated with lifestyle show a slight bias toward higher income groups. This overall pattern is largely as expected, with infectious disease prevalence biased toward lower income groups and chronic conditions biased toward higher income groups. Both “injury and illness” and trauma show no important bias, suggesting these conditions are not affected by income level.

Figure 5.1: Concentration curves of prevalence for selected health conditions for the non-medical scheme population (2006)



6. SERVICE SATISFACTION

6.1 Overview

The self-assessed satisfaction by users of a health service does not amount to an indicator of service quality. It does however provide some indication of how responsive a service is to the comforts associated with receiving health treatment. Given that requiring medical treatment is generally regarded as an unpleasant experience and to be avoided, service satisfaction has as much to do with responding to creature comforts as to resolving the clinical condition resulting in the visit. Such creature comforts would include: reduced waiting times; comfortable waiting rooms; polite and sensitive staff; and pleasant surroundings. However, some discomforts also border on treatment quality: rude staff that make patients avoid further treatment; dirty premises and linen that cause hospital-based infection; the absence of adequate hospital food; and the failure to provide adequate access to family support.

Given the subjectivity involved, significant poor performance could be hidden in a response depending upon the pre-existing expectations of a patient. If expectations are generally poor and a service beats those poor expectations, a generally higher level of satisfaction may be reported.

> *Although many studies report that patients are generally satisfied with the quality of ANC services, the same studies show that quality was a problem. This maybe because expectations of a service are generally low. At a national level, quality of care in contraceptive services has shown that 20% of women reported that the*

> *provider shouted or scolded the patient in a family planning setting. (*King MS *et al*, 2006, p.18.)

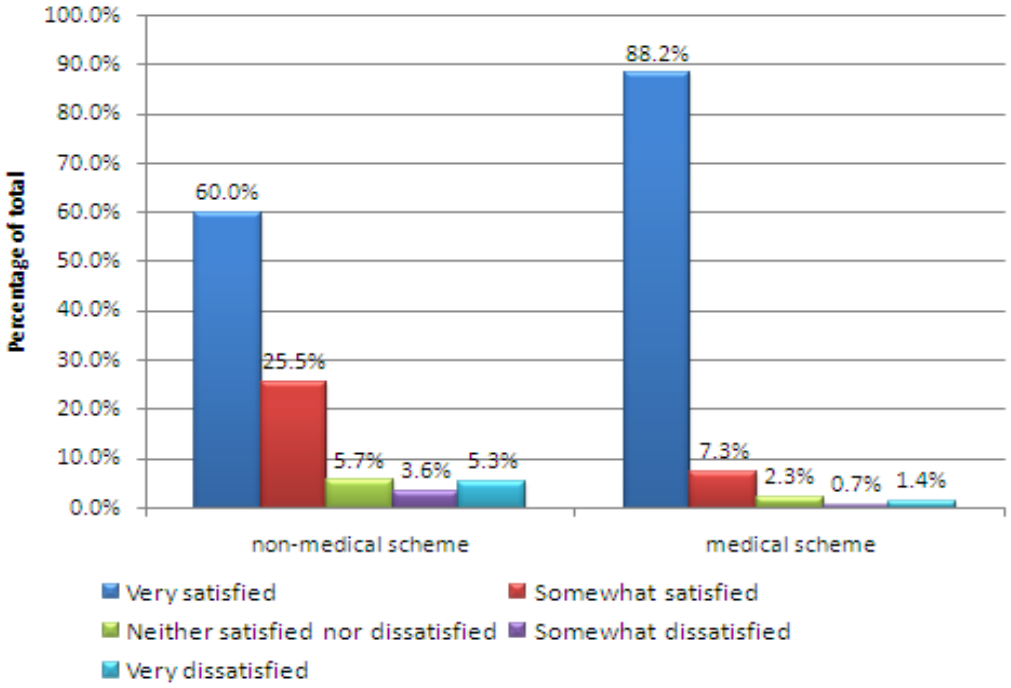
This makes interpretation of the reported information problematic, but not without some value. The survey requests that respondents indicate their satisfaction at various levels: very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, and very dissatisfied. The category "somewhat satisfied" could be regarded as largely driven by expectations, as the service largely essentially matched what was expected. The "very satisfied" patient would however be indicating that expectations were exceeded. It is furthermore quite reasonable to assume that patients used to private sector services, such as those covered by a medical scheme, would not provide the same rating to a public sector services as those patients who conventionally only make use of public sector services.

For these reasons the "very satisfied" category is potentially the most important indicator of service acceptability to patients with the "somewhat satisfied" category potentially ambiguous. The differences in the reported experience between the medical scheme and non-medical scheme populations are very significant for this category in relation to all three major service categories examined, suggesting a high level of dissatisfaction with public services.

6.2 Results

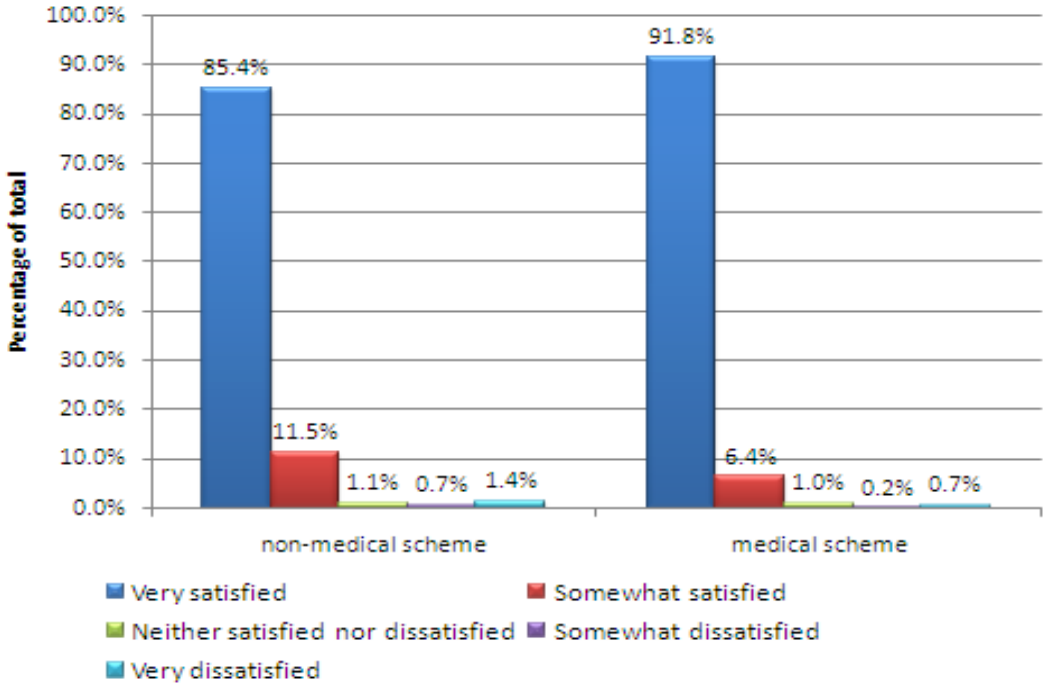
For hospital services, the medical scheme population reports 88.2% of patients are "very satisfied" compared to 60.0% the non-medical scheme population (accessing public hospitals). This reflects a substantial difference in how patients are treated between the two sectors. Although 25.5% of the non-medical scheme patients are "somewhat satisfied", when seen against the backdrop of likely low expectations this is not a good result.

Figure 7.1:Satisfaction with hospital services



By contrast with hospital services, clinic services are rated far higher by non-medical scheme members than are hospital services. As these are used quite frequently in a year, the 85.4% "very satisfied" response suggests that patients are generally treated quite well. Interestingly, medical scheme members rate clinic services at 91.8% which is exceedingly high. It is however not clear what medical scheme members understand a clinic to be, as clinics are really only found in the public sector.

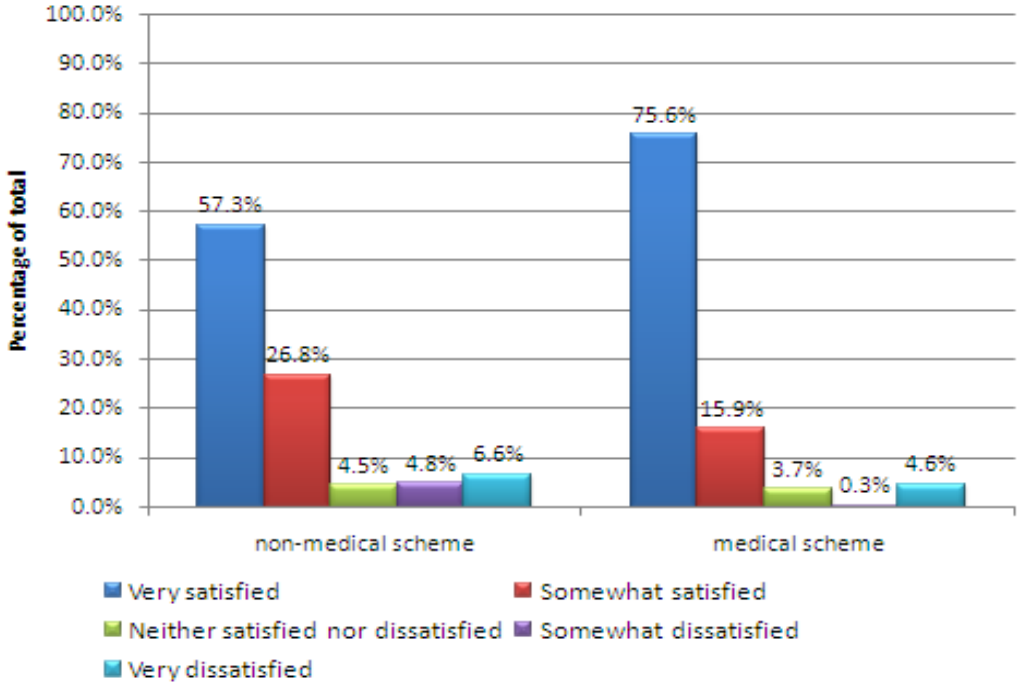
Figure 7.2:Satisfaction with clinic services



Despite a relatively high utilisation of private doctors/specialists by non-medical scheme patients in all income groups, only 57.3% are satisfied with the service compared with 75.6% on medical schemes. The low rating by non-medical scheme members is interesting as these services will be used on a discretionary basis (by choice). Furthermore, as indicated in **figure 4.1**, private doctor/specialist utilisation systematically substitutes for clinic services as incomes rise. It is possible that the low satisfaction levels result from a higher expectation from private relative to clinic services. It is also possible that private doctors/specialists treat non-medical scheme members differently to medical scheme members. Given the lower, and more unreliable, reimbursement likely from non-medical scheme members, consultations are likely to be shorter and less satisfactory than for medical scheme members.

The distinctly lower rating of private doctor/specialist services by medical scheme members relative to their rating of hospital services is also of interest. This may point to problems with the patient-doctor relationship within the private sector, which may be driven by commercial imperatives. However, as the survey does not distinguish between general practitioners (GPs) and specialists it is difficult to assess the source of the potential problem. However, if it is assumed that hospital-based care is most closely tied up with hospital care, which has a higher rating, it is possible that the lower satisfaction level is driven by the care provided by GPs. The same reasoning would apply to non-medical scheme members, who are potentially reflecting their experience of GP cash practices which, due to commercial imperatives, have a tendency to focus on patient turnover rather than quality.

Figure 7.3:Satisfaction with private doctor/specialist services



6.3 Conclusions

Although the results of the satisfaction survey cannot be regarded as conclusive, they reveal a number of important patterns which cannot be dismissed. For hospital services there are stark difference between non-medical scheme and medical scheme populations in their experiences of hospital and private doctor/specialist services, with non-medical scheme populations worse-off. Doctor/specialist services are preferred by higher income groups, but rated lower than hospital services and public sector clinics. It is likely that much of this result, by both non-medical scheme and medical scheme patients, is driven by experiences of GP services. With respect to the non-medical scheme population this may reflect their treatment in GP cash practices. The commercial imperatives underpinning GP practices may also affect medical scheme members. In the case of clinic-based services, the rating by both non-medical scheme and medical scheme populations is high, which suggests that their accessibility and centrality within their communities may be impacting on perceptions.

7.

8. SUMMARY OF FINDINGS

8.1 General

Although there are concerns with the precision of the health-related questions in the GHS2006, the results of the survey is able to provide some indicative insights into a range of health issues relating to access and equity. Overall they show that access to public services is biased in favour of low-income groups, and participation in a medical scheme removes income-biases in access service through the removal of point of service affordability barriers.

8.2 National

The division between the medical scheme and non-medical scheme populations appears reasonably consistent with relevant reported information. Although the reported total medical scheme population is greater for 2006 by around 600,000, the household participation by income appears valid.

Overall the African population is now equal to the White population on medical schemes, with both standing at 42% of the total. However, the African population is far younger than the White population, suggesting that participation has occurred relatively recently, possibly within the past 15 years. It is therefore likely that in the next few years the African population will overtake the White population. In large measure this reflects the pattern of formal employment.

Medical scheme participation is highly correlated with increases in income, with a distinctive move into scheme cover for monthly per capita incomes lying between R2,000 and R6,000. These results suggest that the demand for scheme participation is very high once the affordability is lowered. This is also an indicator of general dissatisfaction with public sector services. This conclusion is also supported by the fact that the income distribution of medical scheme members is better than that for the country as a whole.

8.3 Service utilisation

Nationally the utilisation of key health services by the non-medical scheme population suggests that access is predominantly biased in favour of low-income groups. However, in the provinces of Limpopo, Mpumalanga, Northern Cape, and Western Cape, hospital services are biased toward higher-income groups. The reason for this may relate to the presence of indirect income barriers such as high transport costs.

The utilisation pattern within the non-medical scheme population for doctor/specialist services is predictably biased toward higher income groups, as these services will be accessed using out-of-pocket payments at the point of service. However, the bias is not as pronounced as the national income distribution, suggesting the existence of a strong preference for these services across all income groups.

By contrast with the non-medical scheme population, access to private doctor/specialist services is biased toward low-income groups, suggesting that the risk-pooling effect obtained through medical scheme participation significantly removes affordability barriers at the point of service and consequently any access bias in favour of high-income groups.

8.4 Prevalence of certain health conditions

Overall seven “conditions” out of the GHS2006 are reported on in this report and analysed using concentration curves to bring out variations by income. The results indicate that prevalence patterns generally reflect common-sense expectation, with infectious diseases (including AIDS and TB) biased toward low-income groups and chronic conditions (diseases linked to lifestyle) biased toward higher-income groups. However, trauma shows no significant bias by income.

8.5 Service satisfaction

Service satisfaction levels differ significantly between the medical scheme and non-medical scheme populations, indicative of differences in the quality of care offered between the public and private sectors. This is particularly pronounced in the case of hospital services. However, where both populations access private services a difference in satisfaction is evident; suggesting that private providers vary their behaviour depending upon whether or not someone is on a medical scheme.

The survey also indicates high levels of satisfaction by the non-medical scheme population with clinic services, which are public sector services. By comparison private doctor/specialist services are rated much lower despite the fact that their utilisation is preference-driven. This points to the existence both of differential treatment by private doctors/specialists depending upon medical scheme participation; and the possibility that expectations of service quality are higher for private services, which leads to dissatisfaction when expectations are not met.

Expectations in relation to clinic services, in contrast to private doctor/specialist services, are potentially generally low, leading to a better assessment when reasonable treatment is forthcoming. However, the fact that private doctor/specialist services are substituted for clinic services as incomes rise strongly suggests that these services are in reality rated higher. This would support the view that expectations are also higher for private services and probably distort findings on satisfaction.

The results for private doctor/specialist services possibly relate more to GP than specialist services for both the medical scheme and the non-medical scheme population. Consequently, the generally poor relative rating of these services by both populations is potentially indicative of some level of dissatisfaction with GP services.

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ANNEXURE A: INCIDENCE AND PREVALENCE GRAPHS FOR SELECTED CONDITIONS

Figure A1: Prevalence and count of Illness or Injury (2006)

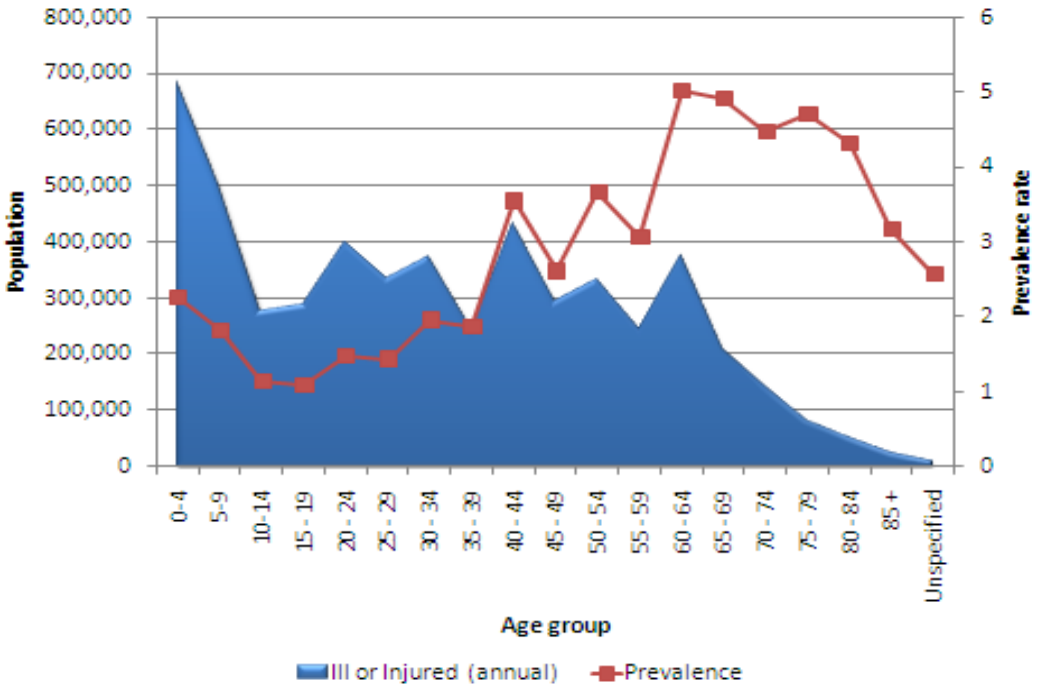


Figure A2: Prevalence and count of Tuberculosis (2006)

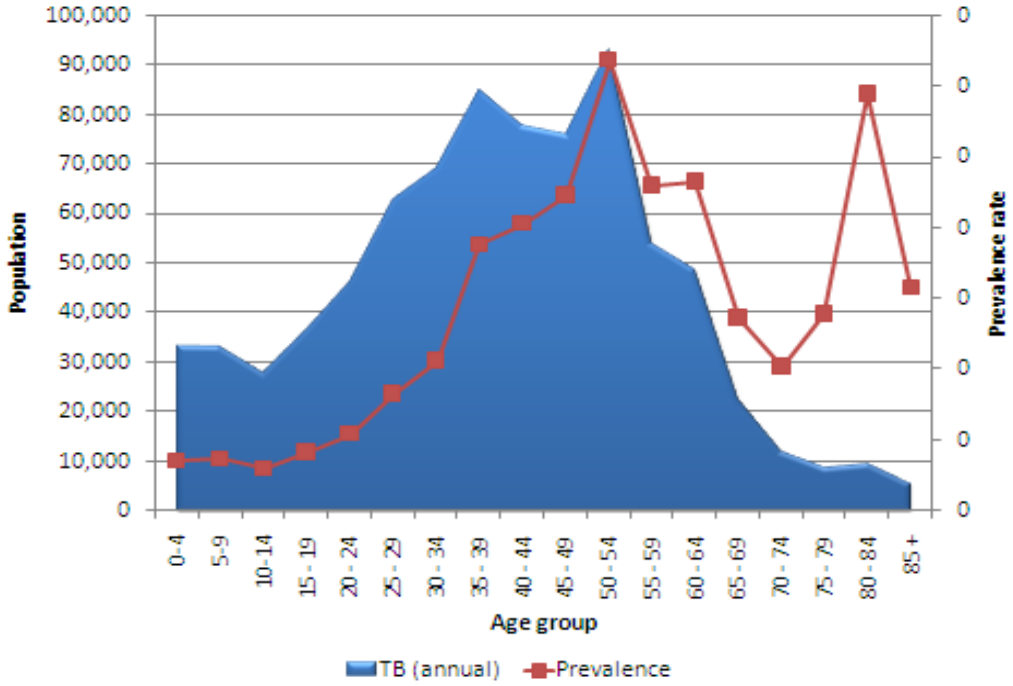


Figure A3: Prevalence and count of Hypertension (2006)

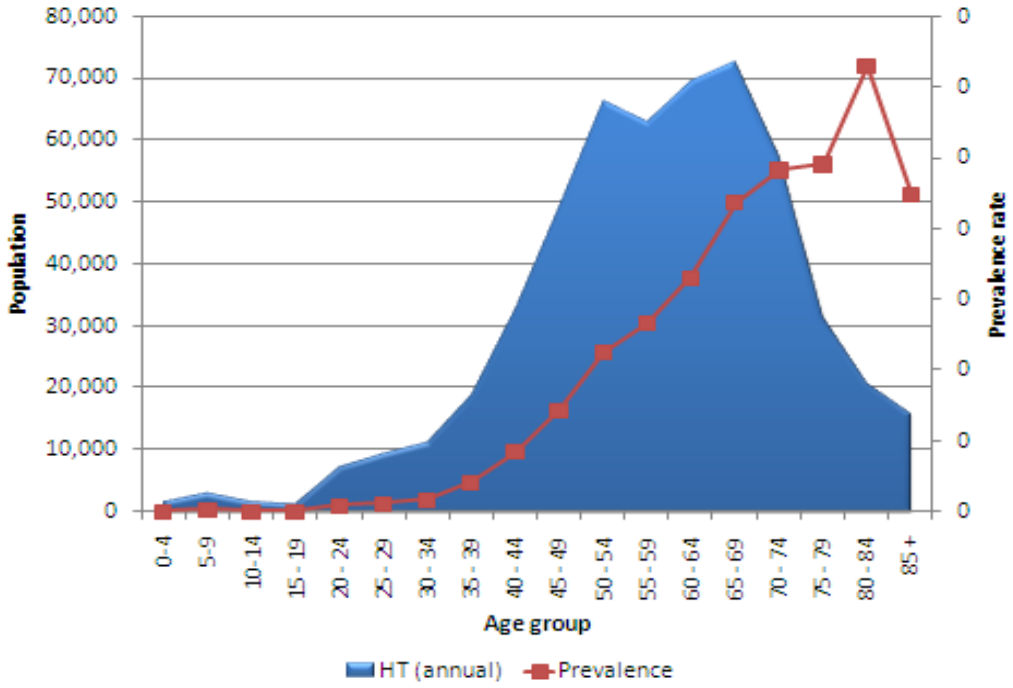


Figure A4: Prevalence and count of Diabetes (2006)

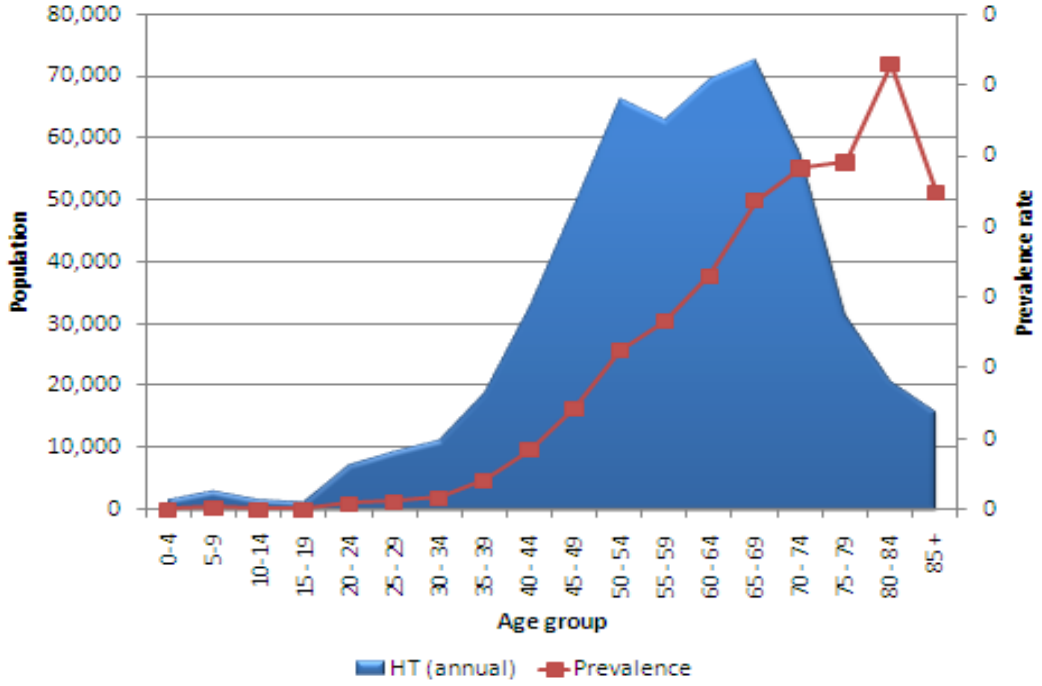


Figure A5: Prevalence and count of Trauma (2006)

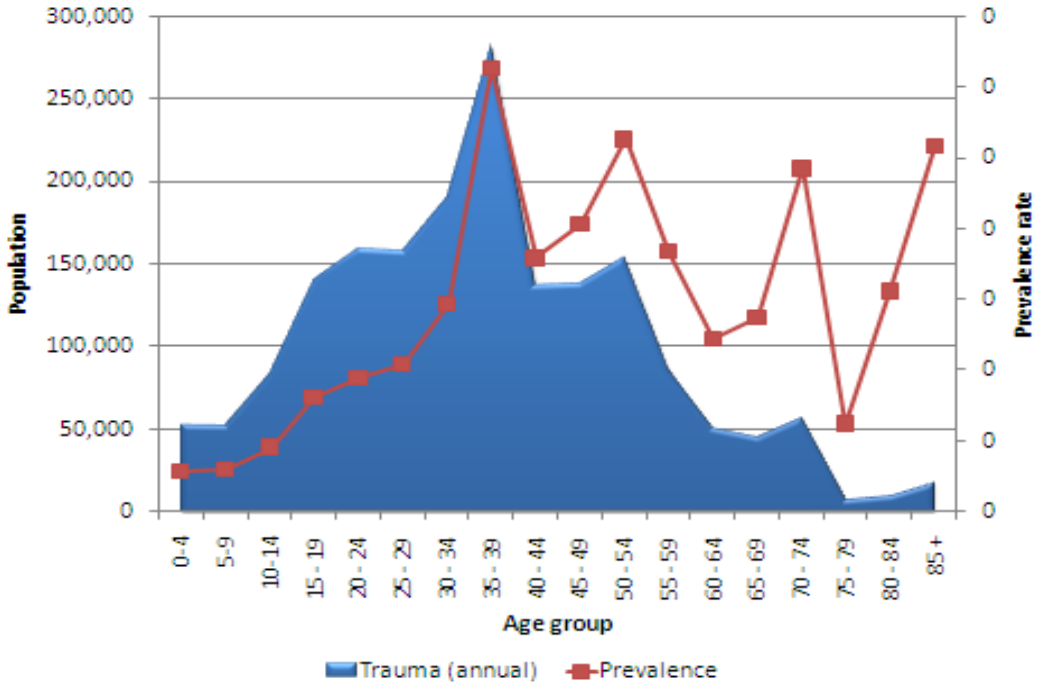


Figure A6: Prevalence and count of AIDS (2006)

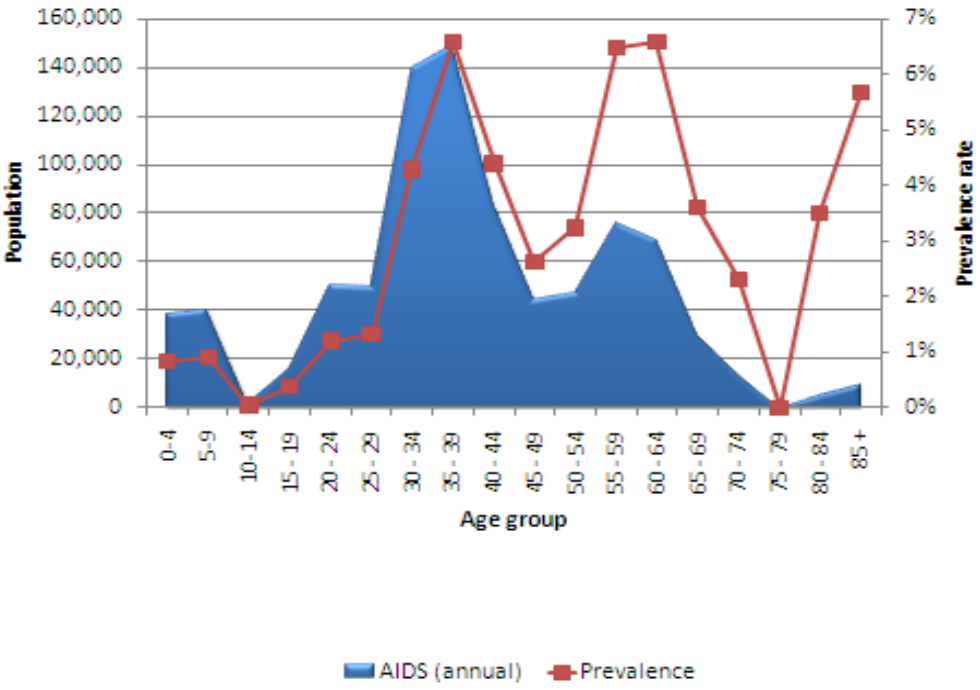
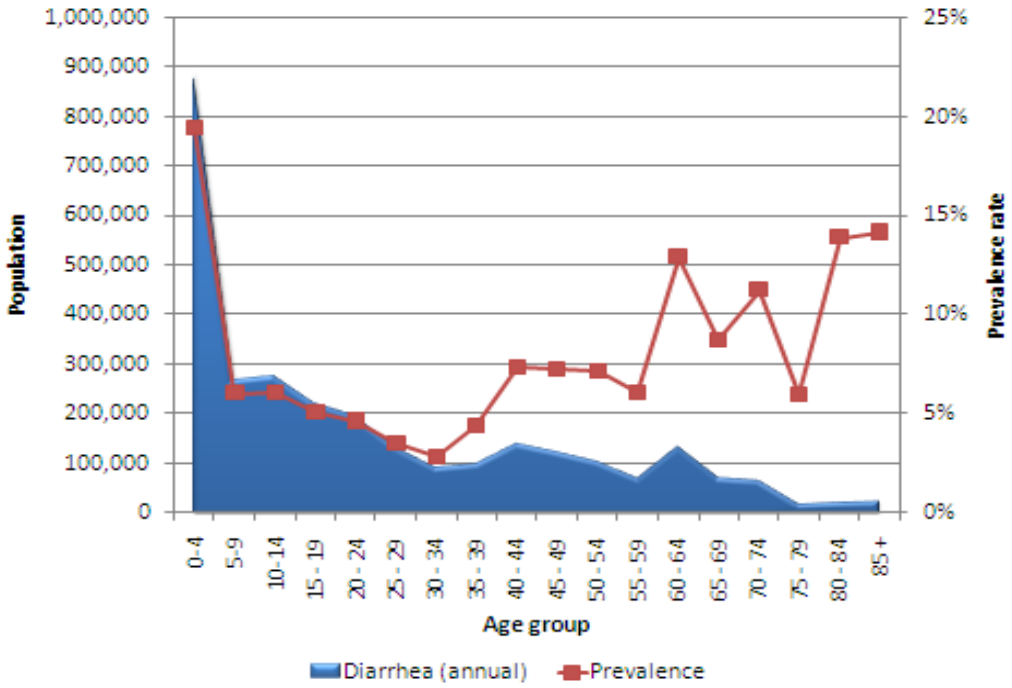


Figure A7: Prevalence and count of Diarrhoea (2006)


1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Population
25%
20%
15%
10%
5%
0%
Prevalence rate
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85+
Age group
Diarrhea (annual)
Prevalence