literature suggest that men find it challenging, in general, to admit to illness or injuries (Beck, 2004; Harrison, O'Sullivan, Hoffman, Dolezal & Morrell, 2006; Phaswana-Mafuya, Peltzer, Chirinda, Kose, Hoosain, Ramlagan, Tabane & Davids, 2013). This, in turn, affects their health-seeking behaviour. These findings bring us back to the point that availability and affordability of health care alone do not guarantee utilisation of health services; a service must be deemed acceptable by the potential client before it is used.

3.3 Conclusion

The literature review revealed a relative lack of research pertaining to access to public health care in the South African context. This adds impetus to the relevance of the mini-thesis.

Based on the literature review, supply-side availability and affordability issues seem to dominate the access arena in health care. While important, it threatens to overshadow demand-side aspects linked to access i.e. acceptability. This finding contextualises the contribution the study makes to the South African public health literature, as it aims to shed light on the often overlooked demand-side facets of health-seeking behaviour.

The subjectivity of the acceptability dimension of access is made more complex by the fact that South Africa's society is highly heterogeneous across many dimensions: ethnicity, socio-economics status, culture, religion and rural-urban settlement. Preferences for health care may therefore be biased accordingly. This makes research in the area of acceptability challenging, and could explain the lack of South African data and literature on public preferences for health care.

CHAPTER FOUR: METHODOLOGY

4.1 Introduction

Chapter Four provides insights into some generic and specific challenges faced when conducting health-related research, particularly in the context of public health care in South Africa. It delivers a description of the data, methods and limitations of the empirical analyses.

The sub-section on data provides the justification for the use of General Household Survey (GHS) data and touches on the weaknesses of a few GHS questionnaires[10]. There is also a short section which focuses on the restrictions placed on the sample, followed by a description of how the socio-economic status quintile variables were created.

The data sub-section is followed by the rationale for estimating linear probability models (LPMs) in the multivariate analysis. Limitations of the study are presented before the chapter concludes.

4.2 Data

The empirical investigation of access to public health care in South Africa was conducted using nationally representative South African data from the annual GHS from 2002 to 2012. The survey is conducted and collated by Statistics South Africa (StatsSA), and is publicly available. Its relatively large sample size (approximately one hundred thousand individuals per GHS) ensured statistical power, making GHS data a popular source for quantitative health studies (Burger, 2007; Van Der Berg et al, 2009). The GHS data set contains a mixture of both individual, and household, level socio-economic and demographic characteristics, and importantly, health and health care characteristics. Analyses of the data provided insights into general trends in health care as well as the perceptions and characteristics of individuals accessing public health facilities in South Africa.

A more health-specific (and thus data-rich) Demographic and Health Survey (DHS) was conducted in 1998 and 2003, but it was not utilized for the following reasons: Firstly, DHS 1998 was too outdated. Secondly, the DHS 2003 data was never released to the public. The National Income Dynamics Study, a panel study containing health-related questions, was not used because it has only been conducted for three waves (2008, 2010 and 2012). The relatively short duration of the study limits meaningful long-terms analysis.

[10] The more recent GHS surveys of 2009 to 2012.

Sample restrictions

The analysis was conducted at both a household and individual level, depending on the variable being analysed and the availability of data. For analysis conducted at an individual level, only respondents equal to or older than eighteen years were included. This minimum age criteria was chosen arbitrarily but justified on the grounds that certain questions were not applicable to individuals younger than eighteen years. In addition, the inclusion of responses from individuals under the age of eighteen years may be unreliable, for a range of reasons, and could add noise to the analysis. Weighted frequencies were used throughout the descriptive analysis (Chapter Five) and the multivariate analysis (Chapter Six).

The main sub-sample of interest for this study was individuals who reported that they 'suffered illness or injury during the past month'[11]. These individuals were most likely to have utilised some form of health service in either the public or private sector. Using this sub-sample for most of the analyses introduces bias since these respondents were more likely to suffer from acute illnesses or injuries vis-à-vis chronic illnesses. The incentives for seeking health services when acutely ill or injured differ from the incentives for seeking health services when chronically ill or injured - presumably it is higher. This issue of sample bias is explored in more detail in section 4.4 which deals with limitations of the study.

Creation of socio-economic status quintiles

A socio-economics status (SES) index was created using PCA[12] in lieu of adequate income and expenditure data in the GHS data set. Public and private asset and expenditure variables were used to derive the SES index. More specifically, the index was composed of dwelling type, real[13] expenditure[14] per capita, the household head's level of education, access to water and type of sanitation system. The derived SES index was then used to divide the population into quintiles in each survey.

4.3 Methods

The empirical analysis, Chapter Five, navigates through the descriptive statistics which provide the platform for the multivariate regression analyses explored in Chapter Six. This mini-thesis

[11] From now on it is assumed that 'suffered illness and injury' occurred 'during the past month' i.e. the illness or injury occurred within 30 days prior to the interview.
[12] See *Nonparametric Econometrics: Theory and Practice* (Wolf, 2008) for a detailed discussion of the methodology of PCA.
[13] August 2012 prices.
[14] Created using the mid-point method to derive household expenditure in each interval.

will employ qualitative response regression models i.e. models in which the dependant variable is not quantitative or an interval scale. Qualitative response regression models are used increasingly in the research fields of social science and health (Gujarati, 2003:580).

The most straight-forward qualitative response model is a binary model in which the dependent variable is dichotomised e.g. 'respondent is insured' = 1, 'respondent not insured' = 0. In the multivariate analyses, GHS data related to the three dimensions of access – availability, affordability, acceptability – were dichotomised and used as dependent variables for the qualitative response regression models.

The simplest binary regression model is the linear probability model (LPM) which involves regressing the dichotomised dependent variable on relevant explanatory variables by using the standard ordinary least squares (OLS) method (Gujarati, 2003:624). The LPM can be expressed as:

$$Y_i = \beta_1 + \beta_2 X_i + u_i \ldots (1)$$

where X is an explanatory variable and Y is the dichotomised dependent variable. Model 1 looks like a typical linear regression model except for the fact that the dependent variable is binary. It is called a linear probability model since the conditional expectation of Y_i, given X_i, E ($Y_i \mid X_i$), can be understood as the conditional probability that the event will occur given X_i i.e. Pr ($Y_i = 1 \mid X_i$) (Gujarati, 2003:583).

While straight-forward and intuitive in interpretation, the LPM is accompanied by a few estimation problems[15]. The main problem is the restrictive assumption that the probability of an event occurring increases linearly with the level of the independent variable i.e. the incremental effect of X remains constant throughout (Gujarati, 2003:624). This is counterintuitive since one would assume that the rate of increase in probability would reduce beyond a particular point. This weakness can be avoided by using probit or logit models (Gujarati, 2011:154).

A detailed description of logit and probit models fall beyond the scope of the mini-thesis, therefore only rudimentary references will be made with regard to these models. For all applied purposes, logit and probit models produce similar results (Gujarati, 2003:625). The main

[15] Non-normality of u_i, heteroskedasticity of u_i, possibility of Y_i lying outside the 0-1 range, generally lower R^2 *values* (Gujarati, 2003: 593).

difference between the two models lies in its underlying distributions: a logistic distribution for logit models and a normal distribution for probit models (Gujarati, 2011:161).

When interpreting the relationship between the probabilities and the explanatory variables, it becomes non-linear because of the logistic transformations. One then makes the log transformation a linear function of *x* to ensure comprehensible results. The regressand in the logit model thus becomes the log of the odds ratio and a logit regression examines the linear relationship between this term and the explanatory variables.

When the underlying distribution changes from a log distribution to a normal distribution, the probit model emerges (Gujarati, 2003:625). The parameters of a probit model are normally estimated by the maximum likelihood method (Gujarati, 2011:164).

The choice between the two, logit or probit, is a matter of preference since sophisticated software packages are easily able to manage the computational power required to run such regressions (Gujarati, 2011:163). A major drawback of logit and probit models is that the resultant coefficients do not lend itself to intuitive interpretation. Another drawback is that the coefficients are estimated at a point and do not hold for the entire distribution.

Linear probability models are increasingly viewed as a credible alternative to logit and probit models (Wooldridge, 2010: 455). In addition, Friedman (2012) argues that LPM predicted probabilities are nearly identical to results generated using probit models. This was indeed the case in the mini-thesis, where the LPMs and the probit regressions revealed very similar results. This finding is highlighted in Chapter Six.

In Chapter Six, the multivariate analysis, LPMs are used to show how the various dimensions of access are associated with socio-demographic, education, employment and household characteristics with the aim of better understanding the underlying reasons for the observed health access trends in South Africa. The findings obtained from the empirical analyses will be further explored through the lens of the analytical framework based on the three dimensions of access – availability, affordability and acceptability.

4.4 Limitations

Even though the GHS questions remained relatively consistent throughout the period under review, some of the health-related questions which were asked at an individual level from 2002 to 2008 were asked at a household level in 2009 and completely omitted from 2010 to 2012.

In addition, some of the health-related questions and categorical options in the 2009 GHS were different to prior years and additional health-related questions were posed e.g. a question regarding the reasons for not joining a medical aid was asked in 2009 only.

The short-comings described above lead to incomparability between certain GHS years and made a complete review of all health-related observations impossible. Consequently, the majority of trends described in Chapters Five and Six were only observed from 2002 to 2008. Where possible, 2002 to 2012 analyses have been conducted and interpreted.

The inconsistencies and discontinuities in GHS data over the review period should raise serious concerns amongst researchers. It is challenging enough to access demand-side data at a national level, and it appears that future GHS surveys will not contain the wealth of demand-side data that it previously possessed.

The GHS questionnaire also contains questions which may be construed as ambiguous. This may have elicited inaccurate answers from respondents, creating room for error in the interpretation of such responses. Ambiguous questions are highlighted as encountered in the empirical analysis of Chapter Five.

While some questions in the GHS required an objective response, e.g. 'Is (name) taking medication for the chronic illness(es) listed[16]…', others required responses which were normative in nature e.g. 'How satisfied were you (the respondent) with the service you received during this particular visit?[17]'. Subjective, perception-based questions may be subject to issues of heterogeneity, a valid concern in the South African context. However, due to the complexity of this issue and the limited scope of the mini-thesis, it will not be addressed directly.

As mentioned in the discussion of data in section 4.2, the sub-sample of interest focused on individuals who reported recent illness or injury. This is an introduced sample bias and is therefore appropriately expanded on in this sub-section which deals with limitations of the study.

To demonstrate how the filter question, 'In the past month, did … suffer from any illnesses or injuries?' may bias the reporting of illnesses towards acute conditions, a comparison of the prevalence of chronic diseases *with* and *without* the presence of the filter question was conducted. The GHS enabled such analyses because it contained questions related to the type

[16] Question 1.32b in GHS, 2010.
[17] Question 3.55 in GHS, 2010.

of illnesses or injuries respondents suffered from. From 2009 onwards, certain illnesses were given an additional classification of 'chronic' e.g. chronic diabetes. Table 4.1 shows the distribution of individuals who suffered from chronic diabetes and reported that they 'suffered from illness or injury during the past month' (diabetes-related). When filtering for illness or injury, 53 percent of chronic diabetics were captured in the sub-sample.

Table 4.1: Cross tabulation of 'if suffered illness or injury' (diabetes) and chronic disease (diabetes), 2009-2012

If suffered illness - diabetes -	Chronic diabetes: yes	Chronic diabetes: no	Total	Key
Yes	794 724 81.39 52.90	181 710 18.61 0.80	976 431 100.00 4.04	Frequency Row percentage Column percentage
No	707 644 3.05 47.10	22 469 982 96.95 99.20	23 177 626 100.00 95.96	Frequency Row percentage Column percentage
Total	1 502 365 6.22 100.00	22 651 692 93.78 100.00	24 154 057 100.00 100.00	Frequency Row percentage Column percentage

Source: Own calculations using GHS 2009-2012 data.

The same analysis was done for chronic hypertension and it yielded similar results, with only 50 percent of respondents suffering from hypertension ending up in the sub-sample of interest. The analyses showed that while the sub-sample of interest may accurately reflect acute illnesses, chronic illnesses are underrepresented. Empirical results derived using this sub-sample may therefore not necessarily be applicable to respondents suffering from chronic diseases.

Preliminary analyses revealed an average share of 12.51 percent of the population suffering with illnesses and injuries[18], which amounted to approximately one hundred and thirty-seven thousand observations in the pooled data set. The sub-sample therefore remained large enough to ensure statistical power.

Another source of bias could stem from what Demery (2003) refers to as 'perception bias', a concept which captures how individuals from different income groups perceive or experience illness or injury. The subjectivity of illness and injury across income groups could bias the sub-sample since the poor may have higher pain or discomfort threshold levels associated with their

[18] During 30 days prior to the GHS interview.

interpretation of illness or injury. A conference paper by Rossouw (2014) concluded that poor South Africans underestimate their health needs via self-censoring of their reported health needs. Collectively, such findings add impetus to being cautious when interpreting the results of subjective-based health questions.

The empirical analyses are cross-sectional in nature and therefore causal relationships cannot be determined. This is mainly due to the problem of endogeneity, where the response variable and regressors influence each other simultaneously. As such the direction of causality between the response variable and the regressor cannot be determined. Omitted-variable bias and measurement errors in the regressors may also explain why causal relationships cannot be determined in cross-sectional analyses (Baum, 2006: 185). Matters are further complicated by the fact that unobservable heterogeneity cannot be accounted for with cross section data (Van Doorslaer & Gerdtham, 2003). Interpretation of the results in Chapters Five and Six are therefore limited to establishing correlations between variables.

4.5 Conclusion

The large number of observations in the pooled 2002 to 2012 GHS data set ensured statistical power and allowed the researcher to make inferences about the South African population. This advantage, along with easy accessibility of GSH data and its inclusion of health-related questions, made the GHS data set a good choice for the study.

While the LPM approach has its weaknesses, its simplicity and ease of interpretation outweighs its disadvantages in the context of this mini-thesis. In addition, the results obtained from LPMs should not differ significantly from that of probit models[19]. The mini-thesis mainly aims to establish relationships since the cross-sectional nature of the data limits determination of causality. The LPM suffices to meet these aims and is therefore a suitable model for this study.

Findings of the study need to be interpreted in the context of the limitations mentioned above, noting most importantly that causal relationships cannot be determined. The sub-section on limitations also described issues linked to sample bias and highlighted that empirical analyses were constrained by the nature of the survey questions as well as inconsistencies and discontinuities in the GHS across periods under review. The methodology has laid the technical foundation for the empirical analysis which follows.

[19] This can be seen by comparing probit results (in Appendix A) with LPM results (Chapter Six). It is discussed again briefly in Chapter Six.

CHAPTER FIVE: EMPIRICAL ANALYSIS

5.1 Introduction

The empirical analysis begins with descriptive statistics which include cross tabulations (e.g. the percentage of people with access to public health care facilities by income, race, and so forth) and a statistical breakdown of the experiences and perceptions of public health care services by a range of demographic and socio-economic variables.

The primary findings are reported and analysed according to the access framework described in Chapter Two, delving into the dimensions of access – availability, affordability, acceptability - analysing variables related to it. All descriptive statistics were weighted and specified to exclude individuals younger than eighteen years in age.

5.2 Preliminary analysis of variables of interest

It should be noted that it was not always possible to clearly delineate the access dimensions due to certain GHS questions capturing more than one dimension in the survey responses. In such cases, there may be overlap in the reporting of the dimensions (e.g. affordability issues discussed with availability issues), but it is kept as such to facilitate the flow of reading.

Figure 5.1 takes a closer look at individuals who reported illness and injury by analysing how many of them consulted a health worker. The sub-sample of individuals reporting illness or injury excluded observations of respondents who did not consult because they deemed it 'unnecessary'. The rationale for this exclusion is based on the assumption that individuals who reported illness or injury, yet thought it unnecessary to consult a health worker, were most likely not ill to begin with.

The above-described behaviour[20] appeared to be more prevalent amongst the affluent, reflecting a reporting bias of illness. This rationale is supported by a recent empirical South African study by Rossouw (2014) which focused on health perceptions along the poor-affluent divide. The study found that self-reported data were likely to under-capture the gap between poor and affluent health outcomes, with the poor being less likely to perceive and report themselves as ill.

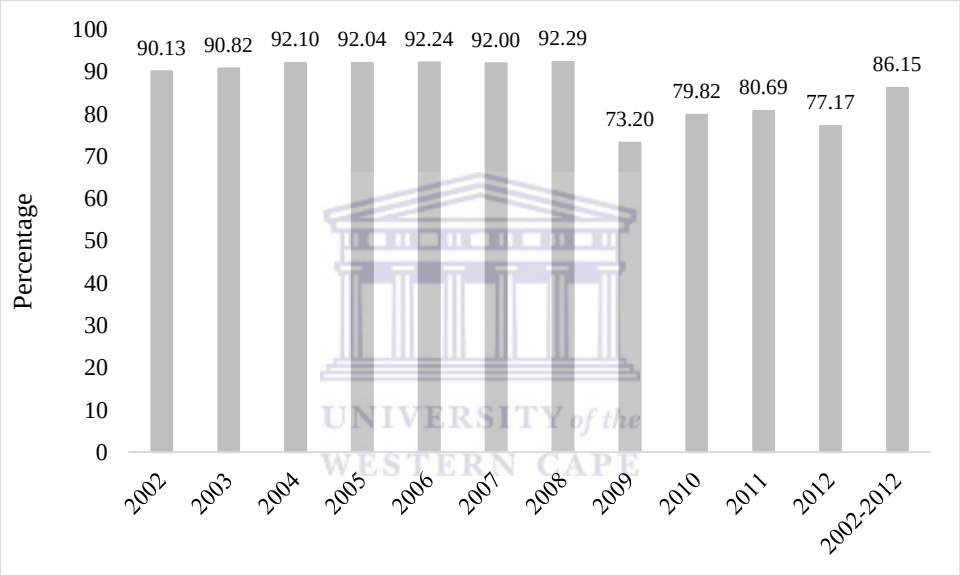
Of those who 'suffered illness and injury during the past month' (excluding individuals who did not consult because they deemed it 'unnecessary'), the majority - an average share of 86

[20] I.e. reported illness or injury yet did not consult because they deemed it 'unnecessary'.

percent - consulted a health worker (see figure 5.1). This is an expected result since a rational response to being ill or injured is to seek medical attention. The fact that a high proportion of individuals consulted a health worker implies that overall there was good access to health care.

It is worth noting that there appears to be two batches of estimates in figure 5.1 i.e. high and consistent levels for consulting a health worker between 2002 and 2008, followed by lower and more variable levels between 2009 and 2012. This may be linked to changes in the GHS questionnaires across these two periods.

Figure 5.1: Share of individuals who 'suffered illness or injury during the past month' and consulted a health worker, 2002-2012



Source: Own calculations using GHS 2002-2012 data.

The analyses for the remainder of the chapter will mainly explore the sub-sample who reported to be ill or injured *and* consulted a health worker. Before proceeding with these analyses, a brief detour is taken to review the reasons why ill or injured individuals did not consult a health worker. This question included the additional category of 'self-care' from 2009 onwards. Tables 5.1 and 5.2 provide the relative shares of the reasons respondents selected for not consulting.

Table 5.1: Share of various reasons selected by individuals for not consulting a health worker when ill or injured, 2002-2008

Year	Too expensive	Too far	Not necessary	Don't know/other	Unspecified	Total
2002	32.54	5.73	52.39	7.59	1.74	100.00
2003	29.41	7.24	49.41	12.64	1.30	100.00
2004	20.86	7.48	59.45	9.91	2.30	100.00
2005	19.73	7.92	61.33	8.97	2.05	100.00
2006	19.34	7.94	60.19	5.85	6.69	100.00
2007	14.48	5.65	69.91	7.32	2.63	100.00
2008	11.83	6.82	72.38	5.13	3.83	100.00
Total	20.35	6.94	61.78	7.94	2.99	100.00

Source: Own calculations using GHS 2002-2008 data.

From 2002 to 2008, the reason with the highest average share for not consulting was 'not necessary'. Sixty-two percent of respondents deemed their illness or injury too minor to warrant a consultation with a health worker. The validity of this selection cannot be extracted from the data: respondents may or may not have correctly judged their need for a consultation.

If one considers the need for health care as a more objective or verifiable benchmark than self-reported illness of injury, then the gap between these sample sizes could be seen as capturing some of the subjective bias in self-reported illness or injury. As discussed in the methodology (Chapter Four), the results in table 5.1 could be explained by the perception-bias phenomenon where respondents from higher income groups who are reported illness or injury were not truly ill or injured since they deemed it unnecessary to consult a health worker. When table 5.1 was decomposed according to various types of illness and injury, 'not necessary' remained the main reason for not consulting, irrespective of illness or injury type.

Distance ('too far from health worker') did not accrue a significant share, while 'too expensive' accounted for 20.35 percent of the share, on average, from 2002 to 2008. There was a decreasing trend in selecting 'too expensive' as a reason for not consulting. When table 5.1 was further decomposed by race, it was evident that 'too expensive' occupied a smaller share amongst Whites (average share of 6 percent from 2002 to 2008) than Blacks (average share of 23 percent from 2002 to 2008). In spite of this variance, the general trend persisted with 'not necessary' being the main reason for not consulting, irrespective of race.

Table. 5.2 captured the additional categories provided in the 2009 to 2012 questionnaire: 'self-care' and 'fear of stigma' were added to the respondents' options. These additions provided a more detailed description of the rationale for not consulting when ill or injured. However, one needs to consider the impact an additional category could have on the category selection. These additional categories could bias the results and potentially render the 2002 to 2008 and 2009 to 2012 results incomparable.

An example of what is described above can be seen in the following: the proportion of individuals claiming 'too far' as a reason for not consulting dropped from an average of about 7 percent in 2002 to 2008 (table 5.1) to an average of only 1 percent in 2009 to 2012 (table 5.2). Similarly, 'too expensive' fell from a 2002 to 2008 average of 20 percent to a 2009 to 2012 average of 4 percent. This dramatic difference may be interpreted as an improvement in health care access, but a more reasonable interpretation would be that it was due to the change of categorization in the pre- and post-2009 GHS.

An additional consideration needs to be highlighted: the categories provided are not mutually exclusive. To some degree the assessment of necessity and preference for self-care is influenced by distance, stigma and costs. Caution is therefore applied when interpreting the results.

Table 5.2: Share of various reasons selected by individuals for not consulting a health worker when ill or injured, 2009-2012

Year	Too expensive	Too far	Not necessary	Self-care	Fear of stigma	Don't know/ other	Unspecified	Total
2009	3.57	1.18	34.48	54.52	0.74	1.99	3.51	100.00
2010	3.41	0.88	25.19	65.37	0.84	2.96	1.34	100.00
2011	4.27	1.39	24.66	64.41	0.29	2.45	2.54	100.00
2012	4.23	1.04	19.83	69.07	0.42	2.10	3.11	100.00
Total	3.85	1.12	27.22	62.16	0.61	2.34	2.70	100.00

Source: Own calculations using GHS 2009-2012 data.

'Self-care' accounted for the main share of the reasons selected for not consulting when ill or injured, an average share of 62 percent from 2009 to 2012. It appears that the addition of 'self-care' has captured the bulk of the 'not necessary' votes from the 2002 to 2008 data, which now have an average share of 27 percent over the period.

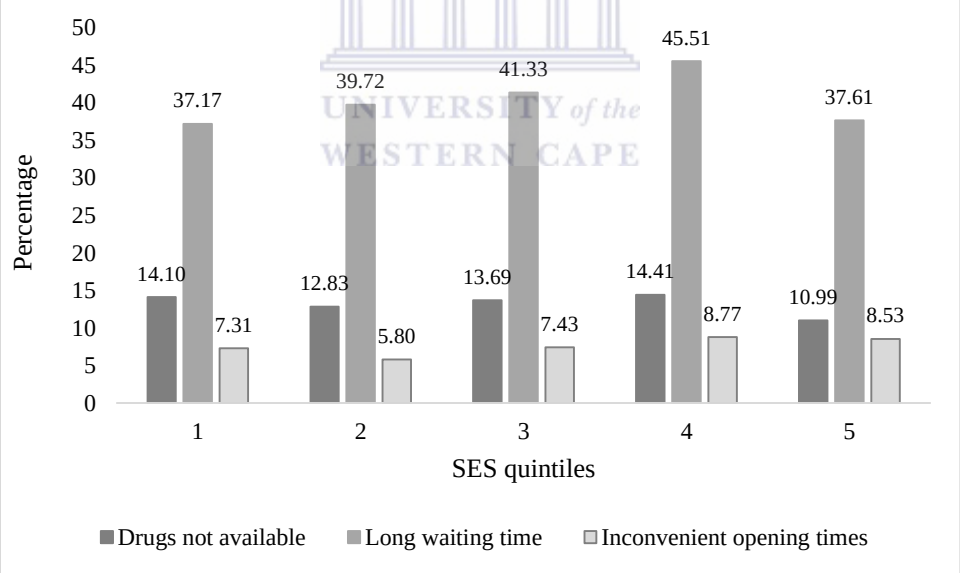
When analysing at an aggregate level, 'fear of stigma' did not feature as a significant reason for not consulting a health worker. This may seem counter-intuitive in the South African context but upon further thought, it seemed reasonable that a respondent who experienced stigma may not admit to it in a questionnaire. In addition, the average result for 'fear of stigma' differed vastly when decomposed according to various disease entities. This is discussed in more detail under the sub-section of acceptability[21].

The chapter now proceeds to probe deeper into descriptive aspects associated with the three dimensions of access: availability, affordability and acceptability.

5.2.1 Availability

Analysis of the aggregated (2002-2008) individual experiences linked to *availability* at public health facilities i.e. 'drugs not available', 'long waiting time' and 'inconvenient opening times', revealed a relatively equal distribution across SES quintiles (see figure 5.2).

Figure 5.2: Experiences linked to *availability* at public health facility at last visit, by SES quintile, 2002-2008 aggregate



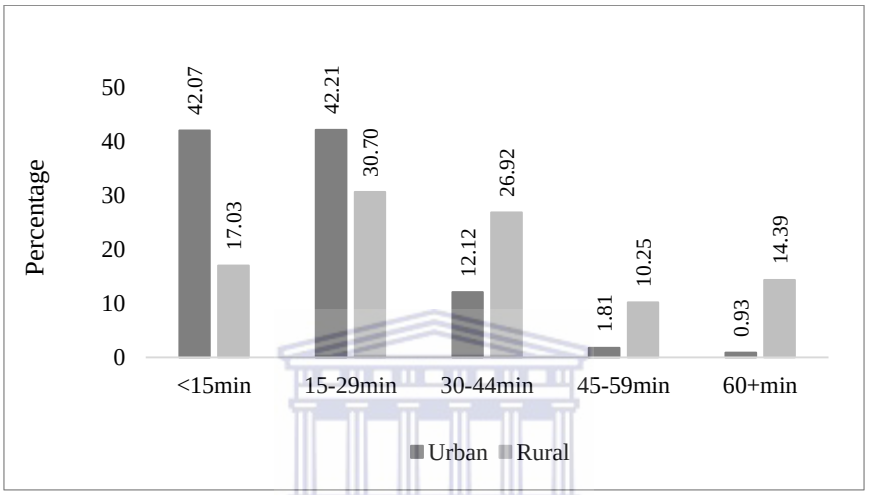
Source: Own calculations using GHS 2009-2008 data.

'Long waiting times' was observed as the main complaint, with all SES quintiles having a proportion of more than 37 percent for excessive waiting times at public health facilities. This implies that all users, irrespective of SES quintile, have high opportunity costs associated with waiting for health care at public health facilities.

[21] See sub-section 5.2.3.

When analysing the next proxy for *availability* i.e. time taken to reach nearest public health facility, it was worthwhile assessing travel time to clinics and hospitals separately. Similarly, rural and urban settlements were also considered separately. Data for distance-related questions were collected at a household level, while the rural-urban settlement question was only asked from 2002 to 2004 and again from 2010 to 2012.

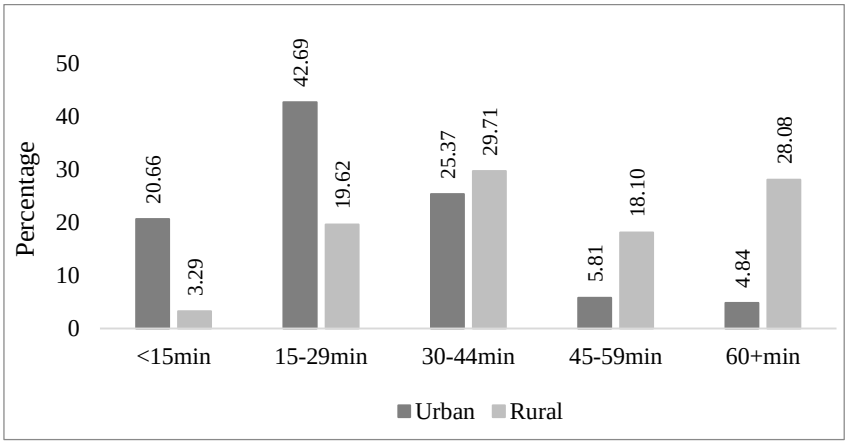
Figure 5.3: Time taken to nearest clinic by rural-urban settlement, 2002-2004 and 2010-2012 aggregate



Source: Own calculations using GHS 2002-2004, 2010-2012 data.

Figure 5.3 shows the time taken to the nearest clinic, by rural-urban location, and reveals the expected result that urban households are closer to clinics, with 42 percent of urban households being less than 15 minutes away from the nearest clinic. Fourteen percent of rural households still travel more than 1 hour to the nearest clinic.

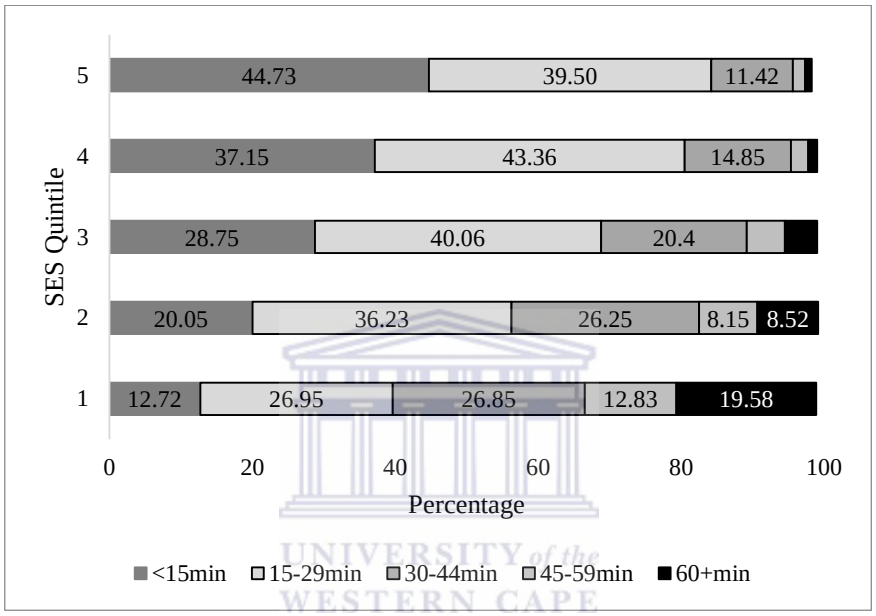
Figure 5.4: Time taken to nearest hospital by rural-urban settlement, 2002-2004 and 2010-2012 aggregate



Source: Own calculations using GHS 2002-2004, 2010-2012 data.

Figure 5.4, showing the distance to hospitals, juxtaposes figure 5.3 and makes it clear that rural households were closer to clinics than hospitals. This observation is expected and aligns with the NDoH's focus on primary health care and improving physical access to clinics. The time taken to hospitals for rural households were considerably longer in comparison to urban households (see figure 5.4). These findings reveal a clear rural-urban disparity in terms of physical access to public health facilities.

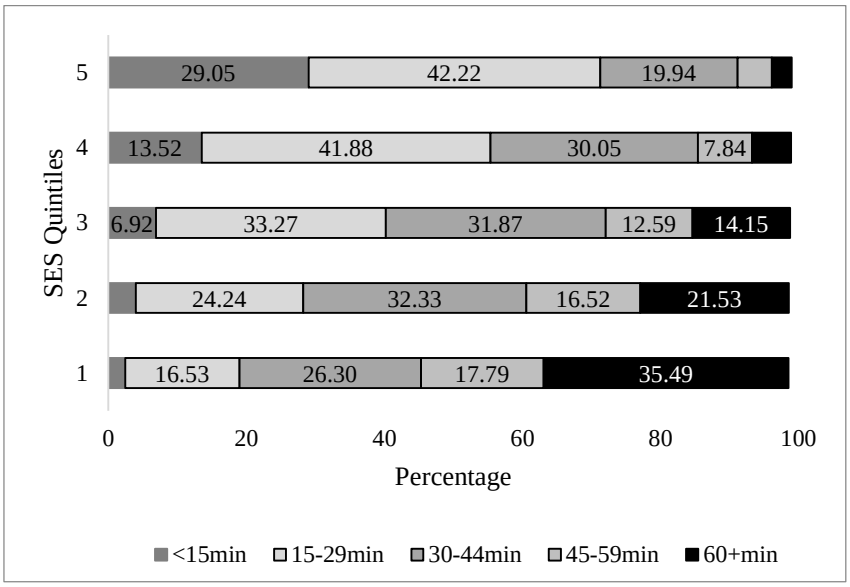
Figure 5.5: Time taken to nearest clinic by SES quintile, 2002-2008 aggregate



Source: Own calculations using GHS 2002-2008 data.

Analyses of the time taken to the nearest clinic (figure 5.5) and hospital (figure 5.6) by SES quintile supported the previously reported finding that the vulnerable have better access to clinics than hospitals. About 20 percent of SES quintile 1 spent more than an hour to get to the nearest clinic but 35 percent spent more than an hour to get to the nearest hospital. One can thus conclude that clinics are more accessible to the poor than hospitals.

Figure 5.6: Time taken to nearest hospital by SES quintile, 2002-2008 aggregate



Source: Own calculations using GHS 2002-2008 data.

5.2.2 Affordability

Some of the GHS health-related questions linked to affordability were ambiguous since no definition or explanation accompanied it. An example of this was whether respondents considered health care to be 'too expensive'. From the health users' perspective, issues linked to affordability may extend beyond user fees and co-payments to include expenses such as travel costs. It is therefore reasonable to assume that some respondents may have answered the question taking travel costs - for example - into account, while other may not have. This may possibly have added noise to the data.[22]

When analysing the aggregate experiences when consulting at public health facilities for responses linked to 'too expensive', the distribution seems relatively equal across SES quintiles and garnered a share of no more than 4.48 percent per quintile. The results for 'too expensive' therefore support the literature (see 3.3.2 in Chapter Three) that affordability is a relatively minor barrier for individuals accessing public health facilities. These findings, along with more evidence presented later in this chapter, highlight the fact that other issues are more important than affordability when clients evaluate public health care.

Preliminary analysis revealed that the share of ill or injured individuals who paid for services when consulting a health worker (asked only at an individual level) hovered around the 46

[22] This may explain the lack of statistically significant coefficients in the 'not too expensive' LPM in Chapter Six (column I in table 6.1).

percent to 56 percent range from 2002 to 2008. Payment for health services included scenarios where the consult was paid for by the medical aid (for those who were insured). It follows that co-payments (required by some medical aid packages) would be considered as payment, even though this was not explicitly stated in the questionnaire. Again, the lack of qualifying terms may have created confusion when administering the GHS, especially if patients paid upfront for a health service yet received full reimbursement.

The sub-sample of interest for the affordability sub-section is individuals who paid out-of-pocket (OOP) for their health consultations but were uninsured. Individuals who belonged to a medical aid[23] were therefore excluded from the subsequent analyses. Once this exclusion was made, it was reasonable to assume that individuals who paid for their consultations have paid OOP without the possibility of being reimbursed.

Racial decomposition of ill or injured individuals who paid for health services showed that, on average, the share of individuals who paid OOP declined from 2002 to 2008. Despite this, it remained clear that a substantial amount of OOP payments for health services was made by those without medical aid, across all race groups. As expected, a larger percentage of Whites (76.88 percent) paid OOP than any other race group, while Blacks – at 41.82 percent - had the lowest percentage.

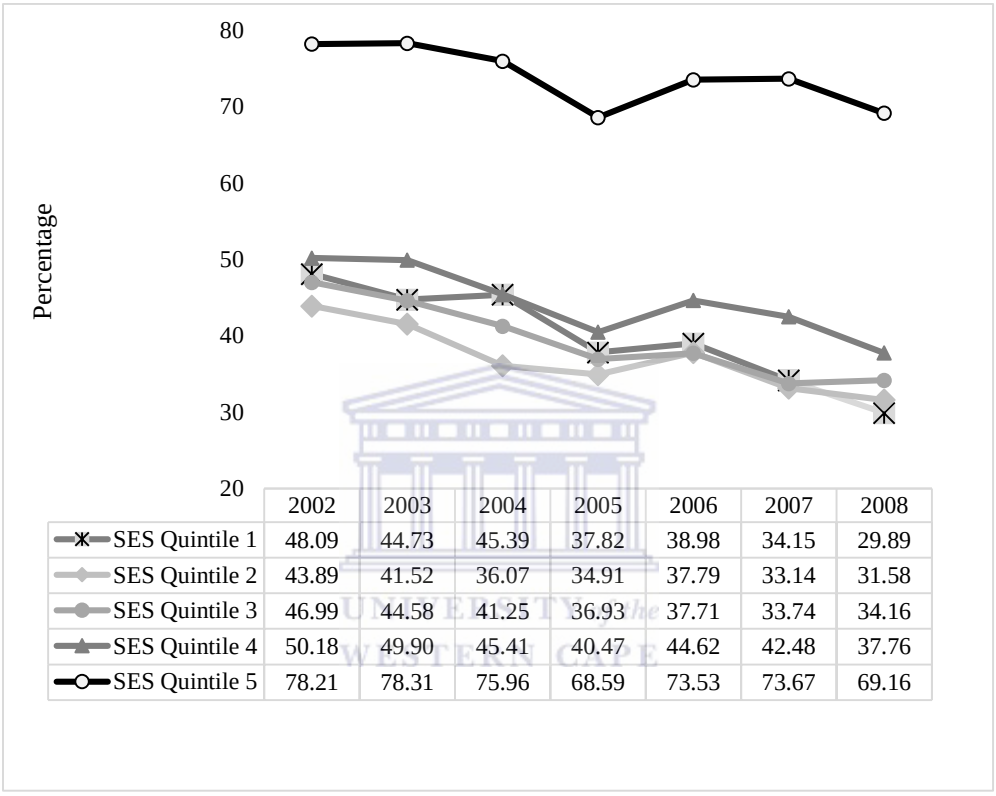
Aggregate analyses mask a potential driver of the observed trends: changes in the use of private health providers versus public health providers. For this reason, the sub-sample was further analysed according to provider choice[24] (at a later stage in this sub-section). It is also worth noting that while more Whites pay OOP than Blacks, the 41.82 percent cited above is still comparatively high. This requires further exploration considering that Blacks are probably most likely not to be insured due to affordability issues.

The assumption that uninsured individuals chose not to join medical aids due to affordability issues was extrapolated from a household level question asked only in the 2009 GHS. Respondents were asked to provide 'reasons for not joining a medical aid'.[25]Affordability ranked as the primary reason for households not joining a medical aid scheme, irrespective of race groups.

[23] I.e. payment for their health consultation was made by the medical aid.
[24] Public versus private provider, as well as type of provider.
[25] See figure B.1 in Appendix B.

Similar to the racial decomposition, analysis by SES quintiles (figure 5.7) revealed a downward trend in the percentage of uninsured ill or injured individuals who paid when consulting a health worker. Quintile 1 showed the sharpest decline in the trend over the 5 year period, starting with a percentage 48.09 in 2002 and ending with the overall lowest percentage of 29.89 in 2008.

Figure 5.7: Share of uninsured ill or injured individuals who paid for services when consulting a health worker, by SES quintile, 2002-2008



	2002	2003	2004	2005	2006	2007	2008
SES Quintile 1	48.09	44.73	45.39	37.82	38.98	34.15	29.89
SES Quintile 2	43.89	41.52	36.07	34.91	37.79	33.14	31.58
SES Quintile 3	46.99	44.58	41.25	36.93	37.71	33.74	34.16
SES Quintile 4	50.18	49.90	45.41	40.47	44.62	42.48	37.76
SES Quintile 5	78.21	78.31	75.96	68.59	73.53	73.67	69.16

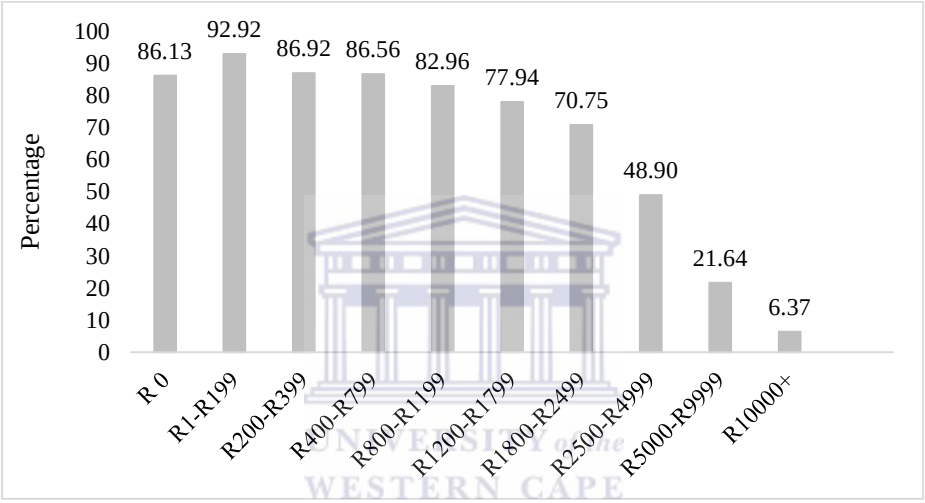
Source: Own calculations using GHS 2002-2008 data.

Despite the downward trend in OOP, the share of individuals paying OOP remained relatively high. The findings in figure 5.7 suggest that even poor individuals were prepared to make OOP payments when consulting a health worker. These findings are further explored later in this sub-section.

In the 2009 GHS, respondents were asked to provide reasons for not joining a medical aid. This was the only year in which this question was posed. Analyses of this data provided insights into the relationship between views and attitudes towards medical aid membership and household expenditure. For households with a monthly expenditure of up to R2499, more than 70 percent stated that they ‘do not have money’ for medical aid. This figure dropped to less than 50 percent when monthly household expenditure exceeded R2500 (figure 5.8).

While ‘don’t have money for it’ was by far the most important reason cited for not being insured, the less-cited reasons - ‘don’t know’, ‘don’t want to spend money’ and ‘seldom/never ill’- were analysed as well. Due to the relatively low number of observations in the cells for these categories[26], the reader should note that these results were less reliable. Again, there were concerns that categories were not mutually exclusive e.g. a household may either ‘not want to spend money’ on medical aid or ‘may not want’ medical aid because both considered household members to be healthy (‘never/seldom become ill’).

Figure 5.8: Households who stated that they ‘don’t have money’ for medical aid, by monthly household expenditure in Rands (R), GHS 2009 only



Source: Own calculations using GHS 2009 data.

As the monthly expenditure bracket increased there was a definite downward trend for households who cited ‘don’t know’ as a reason for not joining a medical aid. This could be interpreted as a lack of information and participation in household financial decisions on the part of the respondent who answered the household survey.

For the category ‘don’t want to spend money’, the results suggested that the more affluent households had greater autonomy in how they chose to allocate their income for health care. Such households may be more risk-loving and consider the opportunity cost of insurance too high; it is likely that they have more favourable alternatives in which to invest their income. It is also probable that the affluent are more likely to perceive OOP payments for health consultations as affordable. Similar results were observed in the ‘don’t want’ category. As noted earlier, the categories were not mutually exclusive. It was thus unsurprising when

[26] A small number of observations is expected since it is an analysis of less-cited reasons in a multi-category breakdown of a sub-question for only one year of survey, 2009.

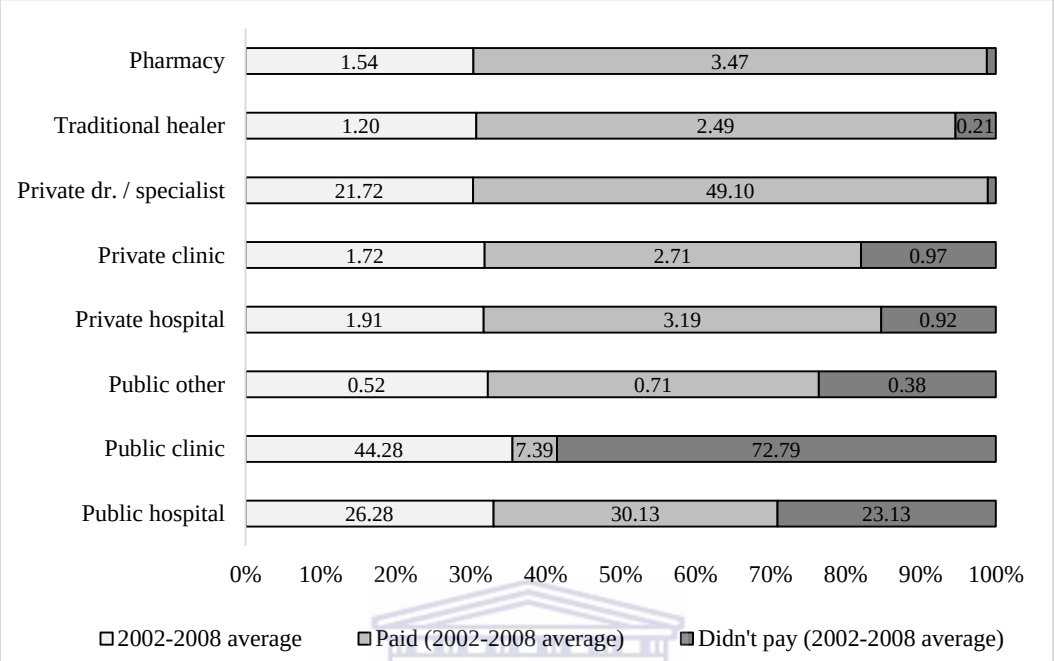
households that cited ‘don’t want’ medical aid revealed a similar trend to households who ‘don’t want to spend’ on medical aid (for the same reasons noted above).

‘Seldom/never ill’ as a reason for not selecting medical aid was cited more frequently in the upper expenditure categories. This observation may be valid considering that higher earning households generally have better access to good nutrition and other co-determinants of health, translating into higher levels of immunity and thus health.

Figure 5.9 analysed the sub-sample of uninsured individuals who consulted when ill or injured, and revealed that those who did not pay mainly accessed public clinics and public hospitals (72.79 and 23.13 percent on average) from 2002 to 2008. This was an expected result. A small proportion of individuals accessing public health facilities paid for their consultation. This would occur in cases where the individual’s income exceeded the limit to qualify for free services. Taking these findings into consideration, it follows that most uninsured individuals who paid for a consultation accessed a health worker in the private sector. This points to a public-private divide along socio-economic lines, shown implicitly in figure 5.7 where SES quintile 5 showed a far higher proportion of OOP payments i.e. greater access to the private health sector. A less expected result was the fact that an average of 49.10 percent of uninsured ill and injured individuals consulted and paid to see a private GP[27] or specialist[28].

[27] General practitioner.
[28] 2002-2008 GHS data show that on average, 78 percent of these individuals consulted GP’s while only 3 percent consulted specialists.

Figure 5.9: Shares of place of consultation for uninsured ill or injured individuals who consulted, by paid averages, didn't pay averages and 2002-2008 averages

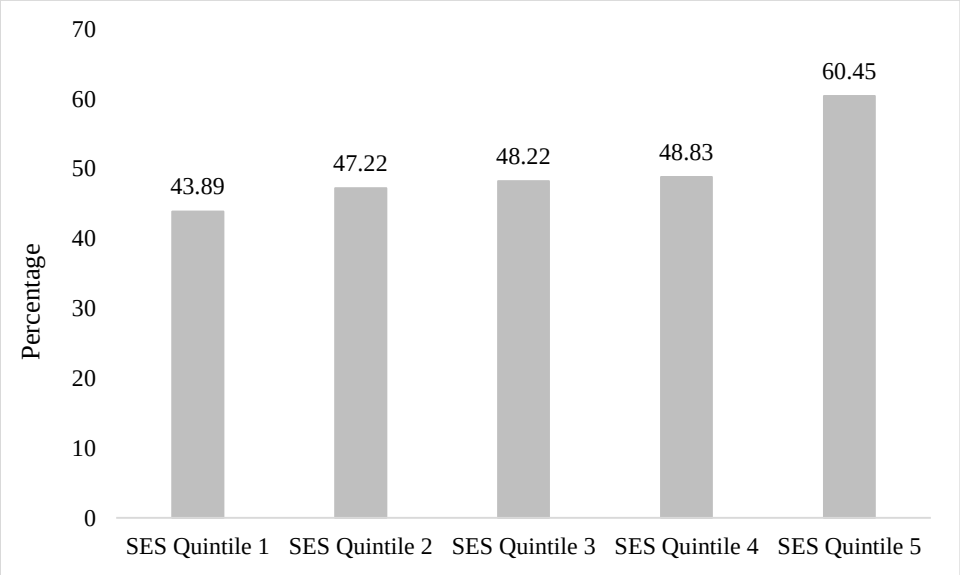


Source: Own calculations using GHS 2002-2008 data.

The percentage of uninsured individuals who consulted and paid to see a private GP or specialist did not differ significantly across race groups. Approximately 50 percent of uninsured individuals, irrespective of race, were prepared to pay OOP to consult a private GP.

When the percentage of uninsured individuals who consulted and paid to see a private GP or specialist was decomposed by SES quintiles (see figure 5.10) a similar pattern emerged: more than 40 percent of individuals in each quintile paid OOP for a private GP or specialist. As expected, 60.45 percent of quintile 5's individuals made OOP payments, the highest percentage of across quintiles. What comes through strongly though is that even the poor were prepared to pay for private health services when ill or injured.

Figure 5.10: Private GP or specialist visits as share of all paid visits of uninsured, by SES quintile, 2002-2008 aggregate



Source: Own calculations using GHS 2002-2008 data.

The results thus far may seem contradictory; the majority of households claimed they do not belong to a medical aid because they 'do not have money', yet upon further analysis, approximately half of the members of these households paid OOP for private GP services when ill or injured. It could be argued that there are different levels and types of health expenditure, which make it plausible for an individual to opt out of insurance yet pay OOP e.g. an individual may consider monthly medical aid premiums too costly but remains willing to pay OOP for health consultations, as needed.

The above results suggest that a preference for private health services exists, even amongst the poor. The analysis of the *acceptability* dimension of access could assist in explaining this revealed preference for private health services.

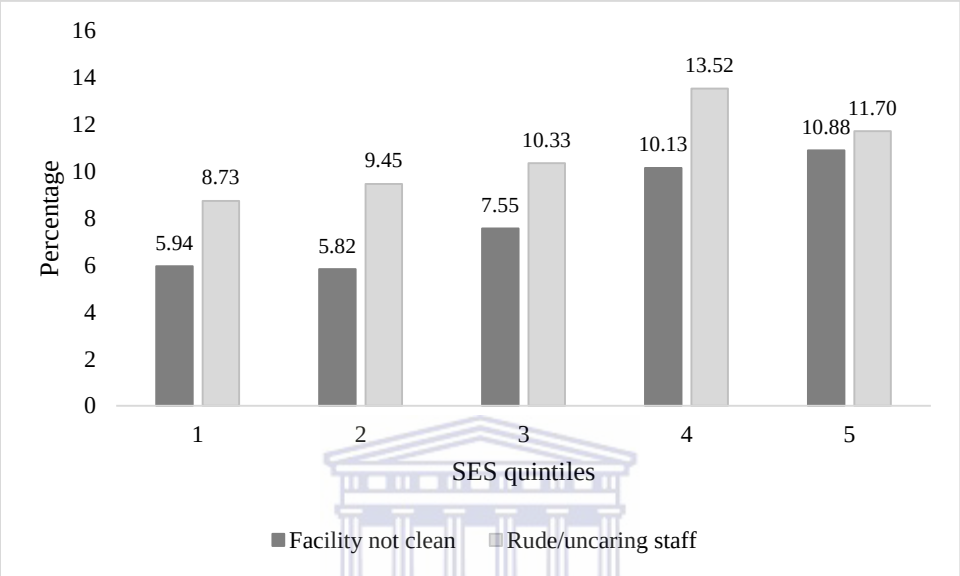
5.2.3 Acceptability

Other factors, besides availability and affordability, may affect the choice of service provider consulted when ill or injured. These factors may include perceptions or experiences of public health facilities. The GHS included questions linked to these aspects, allowing for further exploration of it in relation to health provider choice.

Experiences linked to client *acceptability* when consulting at public health facilities included 'facility not clean' and 'rude/uncaring staff'. Analysis of 'facility not clean' alluded to perception bias. This category revealed a definite higher proportion of respondents from upper

quintiles who reported that public health facilities were 'not clean' when they consulted (see figure 5.11). A similar but less pronounced trend was seen with 'rude/uncaring staff' (see figure 5.11).

Figure 5.11: Experiences linked to *acceptability* at public health facility at last visit, by SES quintile, 2002-2008 aggregates

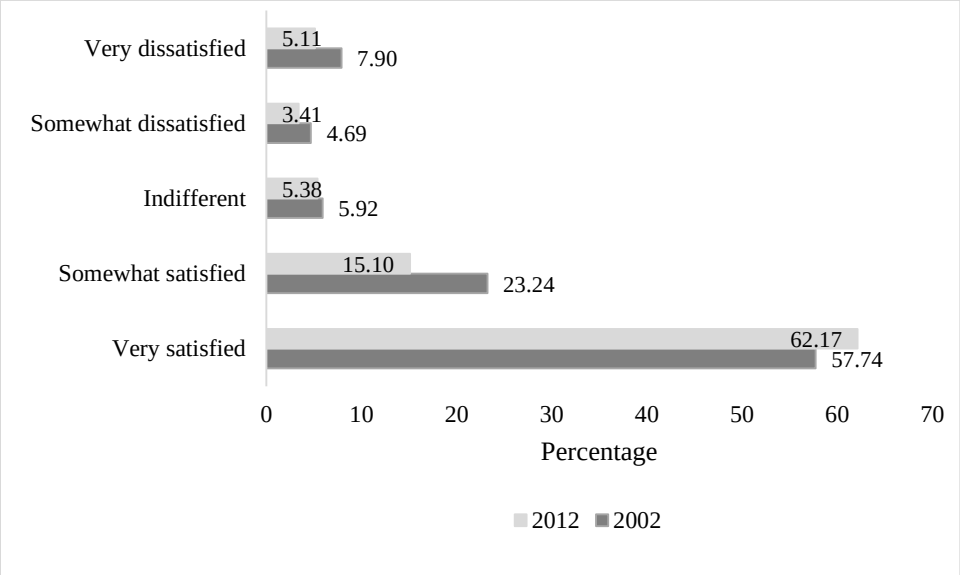


Source: Own calculations using GHS 2002-2008 data.

Figure 5.12 shows the reported levels of satisfaction expressed by those who were ill or injured and consulted at a public health facility. It should be noted that similar to most health-related questions in the GHS, questions was asked at the individual level from 2002 to 2008. From 2009 to 2012 it was only asked at a household level, and the respondent had to answer about the level of satisfaction at the last visit to a public health facility. These differences may render the data shown in figure 5.12 - from the two years, 2002 and 2012 - directly incomparable.

However, the results for 2002 and 2012 were fairly similar. It can therefore be used to highlight the fact that the majority of the population continued to express high levels of satisfaction when consulting public health facilities during the decade reviewed. This result is largely applicable to persons who suffered from acute illnesses or injuries, based on the selection bias discussed in Chapter Four. Different levels of satisfaction may be elicited when analysing a sample that is not biased towards acute illness or injuries i.e. those seeking chronic or preventative health care. It is plausible that users may have lower tolerance levels when visiting clinics for preventative or chronic care since their direct personal benefit may be lower.

Figure 5.12 Level of satisfaction when consulting a public health facility (if ill/injured), 2002 (individual level) and 2012 (household level)



Source: Own calculations using GHS 2002, 2012 data.

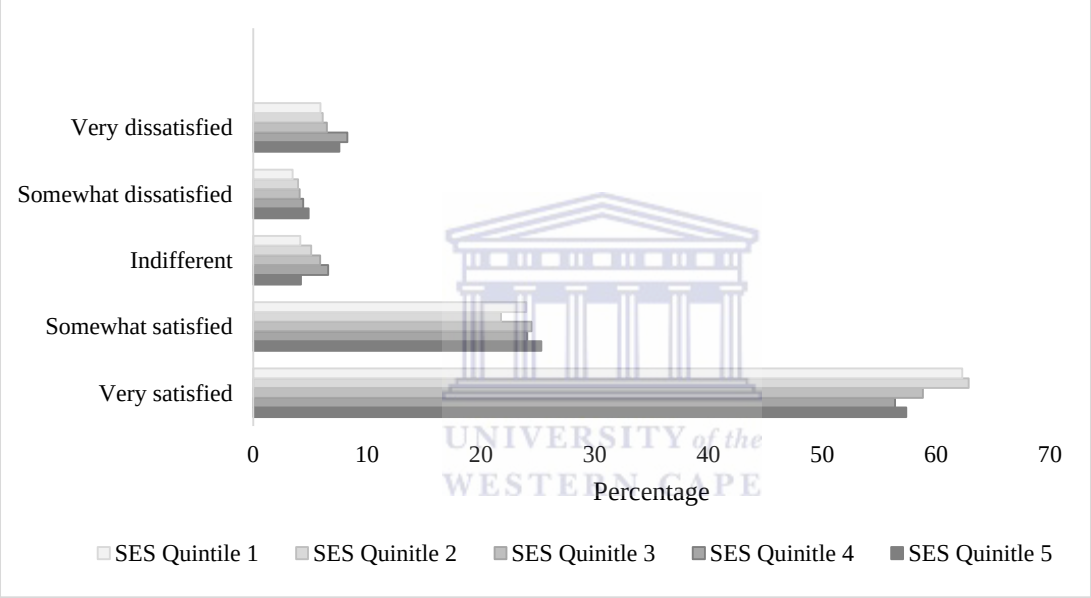
Aggregate analyses may mask a host of important observations which only become clear upon further decomposition. Satisfaction was therefore further investigated by decomposing it by illness type and SES quintile.

Satisfaction was decomposed by three illnesses according to its general categorisation as chronic or acute: flu (acute), TB (semi-acute: treatment for minimum period of 6 months) and diabetes (chronic) using the aggregate data for 2002 to 2008 at an individual level. The results were fairly consistent across illness types, irrespective of chronic or acute status: the majority of respondents, irrespective of illness type, reported high levels of satisfaction i.e. at least 55 percent of individuals in any given illness group reported being 'very satisfied' when consulting at public health facilities.

Analysis of the level of satisfaction as shares of all who consulted at a public health facility, by SES quintile (see figure 5.13), showed that responses were roughly equal across SES quintiles. The majority of individuals reported to be 'very satisfied', followed by 'somewhat satisfied'. The minority reported 'very dissatisfied', 'somewhat dissatisfied' and 'indifferent'. These results seemed contradictory to the literature presented in Chapter Three and the results discussed in sub-section 5.2.2, where it was cited that the uninsured poor were prepared to pay OOP for consultations, an indication of their dissatisfaction. This warrants further investigation.

Most individuals who consulted were ‘very satisfied’ irrespective of quintile. When analysing ‘very satisfied’ across SES quintiles, respondents from lower quintiles seemed more satisfied than those from the upper quintiles. This outcome was expected based on the perception-bias hypothesis. The same trend was observed in ‘somewhat satisfied’. A similar trend, although to a lesser degree, was observed in the ‘very dissatisfied’ and ‘somewhat dissatisfied’ categories: individuals from upper quintiles were more dissatisfied, in general, than those from lower quintiles. These findings further supported the perception-bias hypothesis.

Figure 5.13: Level of satisfaction as share of all who consulted at a public health facility (if ill/injured), by SES quintile, 2002-2008 aggregate



Source: Own calculations using GHS 2002-2008 data.

If respondents reported high levels of satisfaction, it was worth exploring beyond levels of satisfaction by analysing their experiences at public health facilities. Most households’ experiences at public health facilities remained constant or slightly erratic over the period under review. The observations were congruent with the satisfaction results in that there was a higher frequency of reported positive experiences than not, irrespective of the SES quintile.

Disaggregated analyses of 2009 to 2012 data revealed that respondents suffering from TB (or coughing blood) reported ‘fear of stigma’ as a major barrier (21 percent) for not consulting a health worker when ill or injured. TB is associated with HIV/AIDS and hence sufferers may choose not to consult for fear of being stigmatised. Respondents suffering from severe trauma also cited ‘fear of stigma’ as a reason for not consulting (8.71 percent). This may be due to the origin of the severe trauma e.g. domestic violence or gang-related violence, which the

individual may not want to reveal. Although these findings have to be interpreted with caution due to the relatively small number of observations, it highlights how aggregated data may mask the preferences of certain groups, while disaggregated data provide more insight into health-seeking behaviours.

5.3 Conclusion

Results given as aggregated averages should be interpreted with caution since it may mask many important nuances embedded in South Africa's heterogeneous society. This chapter therefore highlighted findings where decomposed results deviated significantly from the aggregated averages. This approach is useful from a policy perspective since it identifies characteristics unique to certain groups or hidden issues that need to be addressed.

From an *availability* perspective of access, distance to the place of consultation was not considered a major barrier, accruing a relatively low percentage of the reasons cited for not consulting when ill or injured[29]. Long waiting times was cited as the main complaint, by far, when consulting at public health facilities. The proportion of complaints related to drug availability was less than half of the proportion of complaints related to long waiting times, while complaints concerning inconvenient opening times garnered less than a quarter of the proportion related to long waiting times. These complaints were distributed relatively equally across SES quintiles[30].

Limited data was available to analyse the rural-urban divide in relation to time taken to reach a public facility. Despite this, the results suggest that urban-rural inequalities persist, with urban households taking less time to reach public health facilities than rural households. It was very clear, however, that rural households took less time to reach public clinics than public hospitals[31]. This alludes to increased access to clinics in rural areas. An analysis of time taken to public facilities across SES quintiles showed that the poor have better access to clinics than hospitals, but the rich always have lower travel times than the poor to both clinics and hospitals[32].

While *affordability* remains an issue in accessing health care, it is not necessarily the main barrier to access. From 2002 to 2008, the second highest reason cited for not consulting when

[29] See table 5.1 and table 5.2.
[30] See figure 5.2.
[31] See figures 5.3 and 5.4.
[32] See figures 5.5 and 5.6.

ill or injured[33] was 'too expensive'. However, this finding should be interpreted with caution since 'too expensive' dropped to the third cited reason[34] from 2009 to 2012 when additional categories were added to that particular GHS question. Encouragingly, the 'too expensive' option exhibited a decreasing trend in both the 2002 to 2008 and 2009 to 2012 surveys. This alludes to a decreasing weight attributed to cost as a barrier to access over the period under review.

As expected, cost as a barrier to access was most prominent amongst Blacks and least prominent amongst Whites. Public health facilities were considered affordable by the majority of the population, irrespective of SES quintile. This was an expected result considering that public health services are invoiced according to one's ability-to-pay while certain services are offered free-of-charge to select groups. Findings also highlighted a clear public-private split along socio-economic lines.

Even though affordability was cited as the main reason for individuals not joining a medical aid, a high proportion of individuals - irrespective of race or socio-economic status - continued to pay OOP for health care. Despite OOP payment for health care remaining relatively high, it is encouraging to note that the trend decreased for all race groups and across all SES quintiles over the period under review.

The revealed preference for consulting private GPs as opposed to public health facilities highlights the clients' preference for what they perceive to be *quality* care. Whether this perception is valid or not is debateable since it could be argued that public health facilitates are better equipped and public medical officers more experienced than private GPs at treating diseases like TB. The scope of the mini-thesis does not allow for a deeper exploration of this matter. The analysis of the acceptability dimension of access could assist in explaining this revealed preference for private health care.

In terms of *acceptability,* reports of unclean facilities and rude staff when consulting at public health facilities were relatively low, not exceeding a proportion of 14 percent in any given SES quintile. Rude staff were deemed to be a greater issue than unclean facilities. Interestingly, the proportion of reports of unclean facilities and rude staff seemed to increase from quintile 1 to quintile 5 i.e. the more affluent had a higher proportion of complaints, on average. As discussed

[33] 'Not necessary' was the main reason cited for not consulting when ill or injured (see table 5.1).
[34] See table 5.1.

in Chapter Three, such findings may be indicative of differing expectations regarding cleanliness or friendliness, or cultural norms concerning the appropriateness of complaining about a 'free' public service.

Individuals consulting at public health facilities reported relatively high levels of satisfaction, irrespective of illness or injury and SES quintile. When disaggregating the 'very satisfied' data, it was interesting to note that lower quintiles seemed more satisfied than upper quintiles. This may be linked to issues of perception bias rooted in cultural or societal norms.

Issues related to stigma were revealed amongst TB sufferers, who cited the fear of stigma as a barrier to seeking health care. Despite the technical issue regarding the small sample size of this analysis, a red flag should be raised to investigate this issue further. The finding is highly relevant considering South Africa's overwhelming burden of HIV/AIDS and TB, as well as the high societal and individual cost of not treating TB.

The descriptive analysis in this chapter was limited since it only evaluated one or two variables at a time. Hence, the next step was to conduct multivariate analyses to investigate the impact of various demographic and socio-economic covariates on the three dimensions of access: availability, affordability and acceptability.

CHAPTER SIX: MULTIVARIATE ANALYSIS

6.1 Introduction

The chapter builds on the empirical analyses presented in Chapter Five. The scope and aim of the study resulted in this chapter focusing exclusively on public health facilities. However, LPMs for the private sector are included in Appendix A[35]. The multivariate analysis aims to establish basic relationships between proxies for availability, affordability and acceptability and a range of demographic, socio-economic and other selected covariates in order to better understand the underlying reasons for the observed trends in access to public health care in South Africa.

Data were analysed using both linear probability models (LPMs) and probit models. The econometric literature supporting these techniques were discussed in-depth in the methodology outline in Chapter Four. As reported in Chapter Four, the findings of the LPMs and the probit models were very similar and therefore the multivariate analysis will only report on the LPM findings. Results for the probit models can be found in Appendix A[36].

6.2 Variables of interest

This sub-section provides an overview of the dependent variables i.e. the dimensions of access - availability, affordability, and acceptability - and the selected explanatory variables. The choice of variables was guided by the current literature on health access (Thiede et al, 2007:115).

Due to inconsistencies[37] in the survey questions over the period under review, all models ran from 2002 to 2008. The models were weighted and specified to exclude individuals younger than eighteen years in age.

Dependent variables: availability, affordability and acceptability

The dependent variables described below were the best proxies for access dimensions that were available to choose from in the data set. All dependent variables were dichotomised. Cross tabulations of the dependent variables are described below and provide a cursory description

[35] Tables A4, A5 and A6.
[36] Tables A1, A2 and A3.
[37] Survey questions related to availability, affordability (excluding insurance) and acceptability were not available at an individual level from 2009 to 2012.

of its distributions. The distribution findings were supported by the results obtained in the empirical analyses of Chapter Five.

Availability, as defined by Penchansky and Thomas (1981), could not be directly extracted from GHS. For this reason, supply-side proxies – access to drugs and prompt service – were used as dependent variables to analyse the availability of access in the South African public health sector. McIntyre et al's (2009) broader description of availability allowed for the inclusion of 'travel time to public facilities' and 'convenience of operating hours' as additional dependent proxies. In total, availability was described using four dependent variables which captured i) access to drugs, ii) prompt service, iii) time take to reach a public health facility and iv) the convenience of opening hours.

Descriptive statistics revealed that the majority of the population (86 percent) claimed that access to drugs was not a problem when consulting at public health facilities. Receiving prompt service when consulting was cited by 59 percent while 41 percent cited long waiting times at public health facilities. The majority, 85 percent, report taking less than one hour to reach a public health facility. This optimistic availability trend continued with 93 percent of the population finding the hours of operation convenient when consulting at public health facilities.

Affordability was described using three dependent variables which captured the following: i) the perception of the cost of public health services, ii) whether OOP payments were made and iii) whether the respondent was insured. The positive results observed in the availability dimension seemed to continue with 96 percent of the population reporting that they did not perceive public health services as expensive when consulting at a public health facility. This was an expected result since public health services are charged using the equity principle of ability-to-pay.

The majority of the population - 76 percent - did not pay OOP for health services when consulting at public health facilities. Again, this is an expected result since public health services are mainly utilised by the poor who have a lower ability-to-pay and may possibly be exempted from co-payments. The vast majority of the population, 83 percent, were uninsured while the minority were insured (17 percent). Only 3 percent of the insured minority consulted a public health facility when ill or injured.

Acceptability was described using three dependent variables which captured a client's experience of public health facilities, namely i) cleanliness, ii) staff attitude and iii) overall satisfaction. These variables aimed to elicit insights into demand-side aspects of health-seeking behaviour. The overwhelming majority (92 percent) reported public health facilities to be clean when consulting. Again, the majority (89 percent) of the population found staff at public health facilities to be civil when consulting, with 11 percent perceiving staff as rude. The majority (89 percent) of the population reported being satisfied when consulting at public health facilities.

Independent variables

The independent variables were mainly socio-economic and demographic in nature. A dichotomous variable was created for SES quintile 5, referred to as *affluent*. Tabulation statistics revealed that 23 percent of the population could be classified as affluent, with 6 percent of the affluent having consulted at a public health facility when ill or injured.

The affluent dummy was preferred to a full range of SES quintile variables since South Africa appears to have a relatively flat socio-economic slope with SES quintile 5 being the exception. Preliminary multivariate analyses using all five SES quintiles revealed the same flat socio-economic curve and the choice was made to utilise a quintile 5 dummy instead.

It is postulated that the high degree of variability amongst the bottom four quintiles may explain the flat socio-economic curve (until quintile 5) found in empirical studies in the South African context. Another explanation could be that human capital, such as health and education, may have some cumulative component, even though this explanation does not pertain to the access scenario. A more likely explanation for the flat socio-economic slope found in the study's preliminary results is that it captured the social polarisation between the middle class and the rest of South African society. The two distinct health markets, public and private, may also explain this finding.

A continuous *real*[38] *per capita expenditure* variable was created by using the mid-point method to derive household expenditure in each interval and then dividing it by the household size. Continuous variables for the *household head's level of education* and *level of education* were included, as well as dummy variables for being *employed* and whether an individual lived in a household where the *household head* was *employed*. The rationale for including the education

[38] August 2012 prices.

and employment status of the household head was to test for intra-household dynamics, if any, in the context of access.

A dummy for the *male* gender was included, as well as continuous variables for *age* in years and *age squared* in years. Approximately 47 percent of the population were male while 37 percent of these males accessed public health facilities when ill or injured. The age squared variable was included to circumvent the non-linearity effects obtained when only including the age variable. The categorical variables for the four *race groups* (Black, Coloured, Indian and White) were included, with Black being the reference (omitted) variable.

Dummies for each year of the GHS[39] were included to improve the reliability[40] of the regressions and dummies for the nine provinces were included as control variables. Unfortunately, the rural-urban settlement question was only asked in the GHS from 2002 to 2004 and again from 2010. As such, data were insufficient to include a rural-urban settlement covariate for the period under review.

The exclusion of a rural-urban settlement covariate raised a concern as to whether the models were significant simply due to correlations with rural locations. To test this hypothesis, a rural dummy[41] was included in LPMs for sub-samples which corresponded with periods where rural-urban settlement data were available. The coefficients of the models *without* rural and *with* rural were compared to check the impact of rural-urban settlement, if any, on the coefficients.

For all models discussed in 6.3 (see below), the results mimicked that of LPMs which included the rural dummy i.e. the vast majority of the coefficients were statistically significant in the LPMs *with* the rural dummy and remained so in the LPMs *without* it. The size of some of the covariate coefficients were slightly smaller when the rural dummy was included in the LPMs while the signs of the majority of coefficients remained the same. This implied that even with the exclusion of a rural-urban settlement covariate, the chosen covariates in the LPMs below still had large and significant associations with the dependent variables. This is considered in more detail in the multivariate analyses of *availability* and *affordability* since certain proxies of these access dimensions were more likely to be influenced by rural-urban location.

[39] 2002 to 2008.
[40] The use of the conventionally computed R^2 is of limited value in the binary response model (Gujarati, 2003:586).
[41] 'rural = 1' if area type was rural; 'rural = 0' if area type was urban.

6.3 Results of Linear Probability Models

The multivariate analyses focused exclusively on factors associated with the dimensions of access to public health facilities. The LPMs were also run for access to private health care and are included in Appendix A. The private sector findings will not be analysed in the main text. The approximate utilisation split between the public/private health sectors was 60/40.

6.3.1 Availability

Results for the first *availability* LMP for the public sector (column I in table 6.1) showed that gender, race, age, level of education and employment were found to have strong and statistically significant relationships with access to drugs in the public sector.

Males were more likely than females, on average, to report that access to drugs was not a problem when consulting at public health facilities. Overall, on average, all race groups were highly likely to report that access to drugs was not a problem when consulting. Blacks, on average, were least likely to report that drug access was acceptable, while Whites were most likely to report that drug access was not a problem when consulting at a public health facility.

Each additional year of education and age was found, on average, to have a slight negative effect on reporting that drug access was not an issue. Age squared was found to have a positive, although statistically insignificant, relationship with drug access. This finding alludes to a non-linear relationship between age and the dependent variable. Employed individuals were more likely, ceteris paribus, than their unemployed counterparts to report that drug access was not a problem.

Results for the second *availability* LMP for the public sector (column II in table 6.1) show that gender, most[42] race groups, age, age squared, level of education, household head's level of education, employment and real per capita expenditure were found to have a statistically significant relationship with prompt service in the public sector.

Similar to drug access - although to a lesser degree - males were more likely than females, on average, to report that they received prompt service at public health facilities when consulting. The race finding observed in the drug access regression was repeated with prompt service, but more convincingly so: Whites - on average - were approximately 20 percent more likely than Blacks to report receiving prompt service.

[42] All race groups except Indian.

In line with drug access, a higher level of education, as well as the household head's education level, were negatively associated with reporting prompt service. Such findings could be indicative of less educated individuals being more likely to accept lower levels of service. Perception bias, as a rationale for some of the findings, will be a repetitive theme in the analyses of demand-side results and highlights the need for further research in this area.

Age was negatively related to reporting prompt service, while age squared was positively related. A non-linear relationship between age and access was starting to emerge more strongly. The employed were more likely to report prompt service, on average, than the unemployed, while real expenditure per capita was positively associated to prompt service.

At this stage of the analyses definitive gender trends start emerging: males seemed to report less availability issues than females. Gender-based norms may explain these findings, as suggested by South African literature in this field (Beck, 2004; Harrison, O'Sullivan, Hoffman, Dolezal & Morrell, 2006). Thus far the analyses also revealed a convex relationship between age and access.

Table 6.1: Linear probability model for *availability*, 2002-2008

Independent variables	Public Sector			
	[I]: access to drugs	**[II]: prompt service**	**[III]: <1 hour to facility**	**[IV]: convenient hours**
Gender: Male	.024***	.010**	.015***	.002
Race: Coloured	.057***	.073***	.076***	.034***
Race: Indian	.037***	-.004	.172***	.015
Race: White	.097***	.196***	.046***	.054***
Age	-.001**	-.003***	.004***	-.001
Age-squared	9.39e	.000***	-.000***	3.39e
Level of education	-.002***	-.002**	.006***	-.001**
Household head's level of education	.000	-.003***	.008***	.000
Employed	.013**	.018**	.001	.004
Household head is employed	.000	-.008	.014**	-.004
Real per capita expenditure	-2.09e	8.49e*	.000***	-7.41e***
Affluent	.009	.023	-.015	.002
Constant	.836***	.613***	.695***	.894***
Sample size	32005	32012	31870	32006
Adjusted R-squared	0.015	0.034	0.084	0.009

Source: Own calculations using GHS 2002-2008 data.

*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for provinces

Results for the third *availability* LMP (column III in table 6.1) showed that gender, race, age, age squared, level of education, household head's level of education, employment of household head and real per capita expenditure were found to have a statistically significant relationship with 'less than 1 hour to public facility'. The real per capita expenditure variable was not robust to the inclusion of a rural dummy i.e. it became statistically insignificant in the 'rural' LPM. This is described in more detail at the end of the discussion of the third availability LPM.

The gender trend persisted, with males being slightly more likely than females to report a travel time of less than one hour. While Blacks were least likely to report travelling less than one hour to a public facility, Indians (rather than Whites) became the most likely to report travelling less than one hour to a public facility when consulting. The latter observation may possibly be a result of small cell sizes.

The signs of the age, and age squared, coefficient differed from previous availability regressions resulting in a concave relationship between 'age' and 'travelling less than one hour'. This could be explained by characteristics unique to the young and the elderly. Individuals only have access to drivers' licences and vehicles at a later stage in life. Younger individuals were therefore more likely to make use of public transport (slower) than private transport (faster) when accessing public health facilities. The elderly are less physically mobile than younger individuals and often need assistance when commuting. It would thus be expected that they take longer to reach a public facility whether using public or private transport.

The age results could also be attributed to the fact that the elderly or very young tend to access public hospitals more than public clinics since they are more prone to serious illnesses. In general, hospitals take longer to reach than clinics. This rationale may still hold even though the models did not differentiate between public hospitals and public clinics. The education level and household head's education level coefficients both took on a positive relationship, on average, with the dependent variable. The reasons for this may be linked to the drivers' licence rationale described above.

Again, real per capita expenditure was found to be positively associated, even if marginally so, with a travel time of less than one hour. Individuals living in a household where the household head was employed were more likely than their counterparts, ceteris paribus, to report a travel time of less than one hour when consulting. This may be due to the link between transport and costs, making the household head's employment status more significant in determining whether an individual was able to access public health services or not.

The addition of a rural dummy to this LPM decreased the sample size from 32006 to 11934. The rural dummy was found to be statistically significant[43] with individuals from rural settlements being less likely than their urban counterparts to report a travel time of less than one hour to a public health facility. In the 'rural' LPM the significance of only two covariates changed[44]: affluence became statistically significant while real per capita expenditure became statistically insignificant. The signs of all covariates in the 'rural' LPM remained the same while the size of the coefficients became slightly smaller[45].

The fourth availability LPM with the dependent variable of 'convenient opening hours'(column IV in table 6.1) only generated results of statistical significance for education level, real per capita expenditure and all race groups except Indian. The level of education and real per capita expenditure variables were not robust to the inclusion of a rural dummy i.e. both became statistically insignificant in the 'rural' LPM. This is described in more detail at the end of the discussion of the fourth *availability* LPM.

In terms of racial decomposition, Blacks, on average, were least likely to report convenient opening hours, while Whites were most likely to report convenient opening hours when consulting at public health facilities. Each additional level of education was found, on average, to have a slight negative effect on reporting convenient hours. Again, the perception-bias rationale cited for earlier availability results would apply here.

Real per capita expenditure was, on average, negatively associated with convenient hours. It is plausible to suggest that higher income earners were more sensitive to time issues such as hours of operation of public health facilities.

When a rural dummy was added to the 'convenient hours' LPM, the sample size decreased from 32005 to 11934. The rural dummy was found to be statistically significant[46], with individuals from rural settlements being more likely than their urban counterparts to report that the opening hours of public health facilities were convenient. The significance of only three covariates changed[47] with the addition of 'rural': the White race group, level of education and

[43] Significant at 1%.
[44] When compared to the significance of the covariates in the LPM without the rural dummy, i.e. column III in table 6.1.
[45] When compared to the coefficients of the covariates in the LPM without the rural dummy, i.e. column III in table 6.1.
[46] Significant at 10%.
[47] When compared to the significance of the covariates in the LPM without the rural dummy, i.e. column IV in table 6.1.

real per capita expenditure became statistically insignificant. The signs of two covariates changed - level of education and real per capita expenditure became positive - while the size of some coefficients became either slightly smaller or slightly larger[48].

Affluence was the only explanatory variable which elicited no statistically significant results across all four dimensions (I, II, III & IV) of availability. This result could be explained by the fact that the affluent generally opt out of the public health sector (Van Der Berg, 2002:18). This rationale is supported by the relatively small sample size of affluent using public health facilities over the survey period: only 1570[49]. The largest coefficient elicited for the affluent covariate, 0.023, was in relation to receiving prompt service and is worth mentioning since it just missed the 10% significant level[50].

6.3.2 Affordability

In general, the more objective dependent variables of affordability (OOP payments, insured) generated a greater number of statistically significant results than the subjective-based dependent variable of affordability (not expensive). This may be indicative of societal norms influencing the manner in which individuals respond to subjective questions related to affordability, creating noise in the data.

The 'not expensive' LPM (column I in table 6.2), generated mainly statistically insignificant results except for age-squared, real per capita expenditure and affluence. The real per capita expenditure variable was not robust to the inclusion of a rural dummy i.e. it became statistically insignificant in the 'rural' LPM. This is described in more detail at the end of the discussion on the 'not expensive' LPM.

Real per capita expenditure showed a negative correlation with 'not expensive' while affluence showed a positive correlation. The results for the latter was expected: expenses are less of a concern for the affluent. The former result may be a perception-bias feature of the middle-class. The age-squared covariate was statistically significant and showed a positive relationship with 'not expensive' which was expected since many of the elderly are state or low-income pensioners and therefore exempt from payment for public health services.

[48] When compared to the coefficients of the covariates in the LPM without the rural dummy, i.e. column IV in table 6.1.
[49] 6 percent of the affluent group (tabulation weighted).
[50] P-value of 0.126.

When a rural dummy was added to this LPM, the sample size decreased from 32000 to 11933. The rural dummy was found to be statistically insignificant. None of the covariates in the 'rural' LPM were statistically significant i.e. the significance of only one covariate changed[51]: real per capita expenditure became statistically insignificant.

Results for the second *affordability* LMP for the public sector (column II in table 6.2) showed that gender, most races[52], age, age squared, level of education, employment and affluence were found to have strong and statistically significant relationships with 'no OOP payments' when consulting at public health facilities. The employment variable was not robust to the inclusion of a rural dummy i.e. it became statistically insignificant in the 'rural' LPM. This is described in more detail at the end of the discussion of the second *affordability* LPM.

Contrary to the availability results, males were less likely than females, on average, to report that they did not pay OOP payments when consulting at public health facilities. However, the possible reason for this result could also be related to gender bias. One could argue that men were less willing to admit that they did not pay for a service, possibly due to non-payment being viewed as a threat to their traditional role as the household provider. It could also be reasoned that men may make more use of public hospitals than females, thus driving male bias. However, the correlation between males and public hospitals was found to be less than 0.2, making this rationale improbable.

Blacks, on average, were most likely to report that no OOP payments were made when consulting at public health facilities, while Whites were least likely to report the same. This is an expected outcome considering the country's demographic and historic profile. Education levels were negatively correlated with not paying OOP, unsurprisingly. While education came through as statistically significant, real per capita expenditure did not. This was an unexpected result, considering that a means test determines a client's OOP contribution.

Age was found to be negatively associated with not paying OOP while the opposite was true of age squared. This infers a convex relationship between age and not paying OOP. The employed and the affluent[53], in particular, were less likely to report not paying OOP than the

[51] When compared to the significance of the covariate in the LPM without the rural dummy, i.e. column I in table 6.2.
[52] All race groups except Coloured.
[53] Quintile 5 SES qualifies as affluent.

unemployed and non-affluent. These are expected results since public health services are charged based on ability-to-pay.

The addition of a rural dummy to the 'no OOP payment' LPM decreased the sample size from 31985 to 11925. The rural dummy was found to be statistically significant[54] with individuals from rural settlements being less likely than their urban counterparts to report not paying OOP when consulting at a public health facility. The significance of only three covariates changed[55]: employment became statistically insignificant while employed household head and real per capita expenditure became statistically significant. The sign of most of the covariates remained the same while the size of most of the coefficients became marginally smaller[56].

The third *affordability* LMP for the public sector (column III in table 6.2) showed that race[57], age and age squared, level of education, employment, real per capita expenditure and affluence were found to have weaker[58] yet statistically significant relationships with the insurance variable.

Blacks were not only less likely to be insured - on average - than all other race groups, but also exhibited a negative correlation with insurance, along with Coloureds. Whites were the only race group to exhibit a positive correlation with being insured. These race results were echoed in the findings in Chapter Five.

Level of education and real per capita expenditure were both found to be positively correlated with insurance to varying degrees. The household head's level of education also revealed a positive relationship with being insured, although statistically insignificant.[59]Age and age squared revealed a concave relationship with insurance, an expected result.

Unsurprisingly, affluence exhibited a positive relationship with insurance, on average, while the non-affluent exhibited a negative relationship. The affluent were also more likely to report being insured than the non-affluent. As expected, the employed were more likely to report being insured than the unemployed.

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[54] Significant at 1%.
[55] When compared to the significance of the covariates in the LPM without the rural dummy, i.e. column II in table 6.2.
[56] When compared to the coefficients of the covariates in the LPM without the rural dummy, i.e. column II in table 6.2.
[57] All race groups except Indian.
[58] When compared to the 'not expensive' and 'no OOP' regressions.
[59] P-value of 0.134.

Table 6.2: Linear probability model for *affordability*, 2002-2008

Independent variables	Public sector		
	[I]: not expensive	**[II]: no OOP payments**	**[III]: insured**
Gender: Male	-.003	-.026***	.002
Race: Coloured	.006	-.007	.008*
Race: Indian	-.008	-.119***	.006
Race: White	-.008	-.227***	.074***
Age	-.000	-.003***	.001***
Age-squared	5.50e*	.000***	-.000***
Level of education	-.000	-.005***	.003***
Household head's level of education	.000	-.001	.001
Employed	-.001	-.032***	.005*
Household head is employed	-.003	-.041	.015
Real per capita expenditure	-.000***	-.000	.000***
Affluent	.010*	-.103***	.077***
Constant	.967***	.850***	-.061***
Sample size	32000	31985	32005
Adjusted R-squared	0.004	0.062	0.090

Source: Own calculations using GHS 2002-2008 data.

*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for provinces

6.3.3 Acceptability

Results for the first *acceptability* LPM for the public sector (column I in table 6.3) showed that race[60], level of education, the household head being employed and affluence were found to have statistically significant relationships with the perception of cleanliness when consulting at public health facilities.

Whites were most likely, on average, to report cleanliness in the public sector while Indians were least likely to do the same. Higher levels of education were found to be negatively related to reporting cleanliness. The affluent were less likely than the non-affluent, on average, to report cleanliness in a public facility when consulting. Similarly, individuals from households where the household head was employed were less likely to report cleanliness than individuals from households where the household head was unemployed. These finding could be due to perception biases, i.e. the affluent and households with higher income levels could be more critical and have different expectations, as well as different bases of comparison.

In the second LPM for *acceptability* (column II in table 6.3) gender, race, age and age squared, education, employment of the household head, real per capita expenditure and affluence were found to have strong and statistically significant relationships with reporting that staff were civil when consulting in the public health sector.

Males were more likely than females, on average, to report that staff were civil at public health facilities. Whites, one average, were by far more likely to report civil staff than Blacks, Coloureds and Indians. Blacks were least likely to report civil staff, on average. Age and age squared results revealed a convex relationship between age and reporting civil staff. Education was found to be negatively correlated with reporting civil staff. The employed were more likely, on average, to report staff being civil than the unemployed, even though the result was statistically insignificant. Employment and individuals from households with employed household heads (both statistically significant) showed a positive relationship with reporting civil staff.

Real per capita expenditure and affluence had a positive correlation with the dependent variable while the affluent were less likely than the non-affluent to report civil staff when consulting at public health facilities. These covariates may be associated with reported rudeness not only via

[60] All race groups except Coloured.

benchmarks but via influencing staff attitudes and behaviours. For example, a nurse may treat clients differently depending on his/her perception of a client's social status.

Results for the third *acceptability* LMP for the public sector (column III in table 6.3) showed that gender, most race groups[61], age squared, education, employment, real per capita expenditure and affluence were found to have strong and statistically significant relationships with perceived satisfaction of health services in the public sector.

Males were more likely than females, on average, to express satisfaction with consulting at public health facilities. Whites, one average, were more likely to be satisfied with public health services than Blacks and Coloureds. Blacks were, on average, least likely to be satisfied. Age squared showed, on average, a positive relationship with satisfaction, inferring that the elderly were more satisfied. A higher level of education was negatively associated with satisfaction while employment and affluence were positively associated with satisfaction. The employed were more likely than the unemployed, on average, to report satisfaction. Affluence showed a positive correlation with satisfaction while the affluent were less likely than the non-affluent, on average, to report satisfaction. The results for real per capita expenditure revealed a positive correlation with satisfaction, although statistically insignificant.[62]

[61] All race groups except Indian.
[62] P-value of 0.198.

Table 6.3: Linear probability model for *acceptability*, 2002-2008

Independent variables	Public sector		
	[I]: cleanliness	[II]: civil staff	[III]: satisfied
Gender: Male	.002	.013***	.008**
Race: Coloured	.005	.040***	.022***
Race: Indian	-.046***	.039***	.004
Race: White	.028***	.074***	.059***
Age	-.000	-.001**	-.001
Age-squared	2.02e	.000**	9.26e*
Level of education	-.002***	-.001***	-.002***
Household head's level of education	.000	-.000	.000
Employed	.005	.007	.010*
Household head is employed	-.008**	.011**	-.006
Real per capita expenditure	-1.16e	5.74e*	4.17e
Affluent	-.014*	-.019**	-.030***
Constant	.878***	.883***	.884***
Sample size	32007	32005	31978
Adjusted R-squared	0.012	0.021	0.011

Source: Own calculations using GHS 2002-2008 data.

*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for provinces

6.4 Conclusion

While the multivariate analysis focused exclusively on access in the public health sector, the results obtained from the analyses of access to private health care (see Appendix A) highlight the polarisation in the South African health sector. Cursory tests proved that even with the exclusion of a rural dummy, the covariates in LPMs still have large and significant associations with the independent variables.

Multivariate analyses revealed that Blacks, females, the unemployed[63] and poorer individuals were least likely to have access to public health care in terms of the *availability* dimension of access. These results imply that vulnerability and inequality persist in terms of physical access to public health care. The real per capita expenditure variable was not robust to the inclusion of a rural dummy in the 'less than one hour to facility' and 'convenient hours' LPMs i.e. it became statistically insignificant in these 'rural' LPMs.

Education was negatively associated with most availability variables i.e. ceteris paribus; higher educated individuals reported less access in terms of availability. This alludes to perception bias on the part of the more educated, since objective results revealed that more educated individuals had greater access in terms of availability. The education variable was not robust to the inclusion of a rural dummy in the 'convenient hours' LPM. Age revealed a non-linear relationship with access.

The *affordability* analyses showed the following: Blacks, the non-affluent and the unemployed were more likely to have access to public health care from an affordability perspective. Men were less likely than women to report not paying OOP. This may be due to gender norms regarding payment by men. Education was negatively associated with most affordability variables i.e. ceteris paribus; higher educated individuals were more concerned with affordability. The non-linear relationship between age and access emerged again.

It was interesting to note that the perception-based affordability variable - 'not expensive' - generated mainly statistically insignificant results. Overall, the results suggested that affordability issues were not a major barrier to public health care, especially amongst that poor. The real per capita expenditure variable was not robust to the inclusion of a rural dummy in the 'not expensive' LPM while the employment variable was not robust in the 'no OOP payments' LPM.

[63] Individual and household head.

Whites were more likely to report their experience at public health facilities as being *acceptable*. The opposite was true of the affluent, who generally found public health facilities to be less acceptable than the non-affluent. These conflicting results may be indicative of underlying perception biases across different cultures and socio-economic classes. Men, on average, found public health facilities to be more acceptable than females. Age and acceptability revealed a non-linear relationship.

Mixed results were obtained for the employment of the individual and the household head. Education was negatively associated with most acceptability variables i.e. ceteris paribus; higher educated individuals found public health facilities to be less acceptable. More research is needed to fully understand the dynamics underlying the demand-side analyses captured under acceptability. It should also be taken into account that individuals may not have accessed the same type of public facilities: some may have self-selected into tertiary or district hospitals rather than clinics. This may have influenced some of the acceptability results.

Overall the findings revealed mixed results. The empirics support the literature that progress has been towards equity given that public health care has become more affordable for the most vulnerable groups of South African society. However, acceptability and availability issues persist.

Chapter Three provided an overview of the abundant South African literature linked to availability issues and efforts made by the government to extend access via supply-side interventions. Evidence of post-apartheid progress in terms of availability - e.g. the poor reporting shorter travelling times to clinics - speaks to the strides that have been made. It is therefore safe to say that supply-side issues are being addressed in the South African context.

Unfortunately the same attention has not been given to issues of acceptability; the lack of research in this dimension threatens to undermine any policy aimed at increasing access to public health care. It is imperative that demand-side aspects of health-seeking behaviour occupy a more prominent role in South African public health debates, research and policy.

CHAPTER SEVEN: CONCLUSION

7.1 Introduction

Access to public health care in South Africa has improved over the past decade but remains sub-optimal for the most vulnerable members of society. Such a scenario is unacceptable at both an individual and societal level and deserves the attention it has received - albeit inadequate - from Government and the public health research community. The poor performance of South Africa's health system could be attributed to issues related to availability, affordability and acceptability within the public health sector.

The empirical investigation has uncovered the following access trends in the South African public health sector from 2002 to 2012:

In terms of *availability*, public health facilities were less accessible, on average, to individuals from the most vulnerable groups: Blacks, females, the unemployed and poorer individuals. This finding should be of concern to policy-makers considering that the vulnerable are the target group of public health policies. Long waiting times, a proxy for availability, was the most reported complaint when consulting at public health facilities. These findings add impetus to the policy focus on health issues linked to availability.

Affordability analyses revealed slightly more optimistic results: Blacks, females, the non-affluent and the unemployed were more likely to have access to public health care. These findings are encouraging when one considers the substantial fiscal redistribution and shifts aimed at eliminating financial barriers to public health care for the poor. However, government policies are not solely responsible for this outcome since the more affluent tend to opt-out of public health services in favour of private health services.

The *acceptability* dimension revealed conflicting results, with Whites, males and the employed being more likely to report their experience at public health facilities as being acceptable. The opposite was true of the affluent and educated, who generally found public health facilities to be less acceptable than the non-affluent and less-educated. These conflicting results may be indicative of underlying perception-bias dynamics stemming from gender, socio-economic and cultural heterogeneity.

The conduct of health care providers (including health auxiliary and support staff such as cleaners, porters etc.) is a crucial element which feeds into the clients' experience and their (non-) acceptance of public health services. This is supported by findings that showed users of

public health care perceiving rude staff to be more unacceptable than unclean facilities. In fact, these users considered rude staff to be as unacceptable as the unavailability of drugs (see figures 5.2 and 5.11).

Promoting a culture of professionalism within the public health sector, as well as ensuring quality training of public health care providers, are a few basic interventions which could have a major impact on the perception of public health services. It may also be feasible to incorporate aspects of user feedback as key performance indicators in public health service contracts. This may enhance the user-responsiveness of public health care, making it more sensitive to users' demands. Problems of social class and notions of hierarchy need to be considered when developing such interventions, or it may hinder the success of it.

Collectively, access seems to be equitable and relatively well-targeted in terms of affordability, while the availability and acceptability dimensions are lagging. Rather than viewing this finding in a negative light, key role-players in public health should see these deficits as scope for further improvement of access (via strengthening the availability and acceptability dimensions of public health services). Failure to address these identified issues, particularly the overlooked and under-researched aspect of acceptability, threatens to weaken public health efforts aimed at improving access.

7.2 Access in perspective

The following sub-sections relates the access findings of Chapter Five and Six to socio-economic status, demographics and education to provide an alternative perspective of the findings.

7.2.1 Access and socio-economic status

While it is true that structural inequalities in the health system will result in skewed utilisation patterns, the converse does not necessarily hold: skewed utilisation patterns cannot solely be blamed on inequality - other underlying reasons may account for the outcomes observed. As such, one should be cautious when interpreting findings: health services may seem pro-poor at first glance when in actual fact low levels of acceptability are driving the better-off away from public health services. This view is supported by the findings that even the poor reveal a preference for private health care.

The evidence presented in this study confirmed that efforts to make public health care more affordable to the most vulnerable have been successful. However, findings in Chapter Five

alluded to a public-private divide along socio-economic lines[64]. Somewhat counter-intuitive, findings also revealed that even the poor were prepared to pay OOP to consult private GPs when ill or injured.

Affordability ranked as the primary reason for not joining a medical aid[65]. Yet, individuals without medical aid continued to pay OOP for health services[66]. The apparent contradiction in these findings lie in the conflict between words and actions: individuals say they cannot afford medical aid yet data showed that they paid OOP for private health services. The research presented may be insufficient to draw any concrete conclusions as yet, but it is worth considering alternative programmes where clients receive the health services they demand at a price they are willing and able to pay. Overall, the South African health system is polarised and fractured, offering few solutions for the middle market.

The issue described above is an area that required further exploration and presents an opportunity for Government and private medical aids to embark on inter-sectoral initiatives with an aim of offering competitive packages for lower income households. Limitations to such suggestions may lie with regulation and PMBs and could deter medical aids from offering more affordable packages.

7.2.2 Access and demographics

In terms of *race*, Blacks seemed to be worse off in every dimension of access, except for affordability. Ceteris paribus, Blacks also perceived public health facilities to be less acceptable when compared to other race groups. Cultural and societal norms may play an underlying role in the observed results.

Gender differences are observed in the multivariate analyses: ceteris paribus, males were less likely to complain of negative experiences at public health facilities. When placed in the context of local and international behavioural studies, the empirics of this study suggest that when men do seek health care, they generally reported more positive experiences than women. Unfortunately, data do not allow us to distinguish whether men receive better treatment, or whether they are merely less critical. The gender bias does not necessarily mean that men get preferential treatment or have superior experiences of public health care than women. It could

[64] See figure 5.7 in Chapter Five.
[65] Figure 5.8 in Chapter Five.
[66] Figure 5.7 in Chapter Five.

be argued that females are more willing or better able to accurately perceive and report their experiences.

Age[67] was found to have a non-linear relationship with most access dimensions. This may be linked to physical or legal constraints faced by the young and the elderly. It may also be indicative of cultural and societal norms regarding the treatment of the young and the elderly.

Heterogeneity of socio-economic and demographic characteristics, while not explored in this mini-thesis, should always be considered in health studies which rely on perception-based questions since it could bias the measurement of health differences. Exploring perception heterogeneity and how it influences results is a topic which requires further research, despite the unavoidable empirical challenges of doing so.

7.2.3 Access and education

Education level, whether of the individual or household head, was mostly negatively associated with all dimensions of access. These results are supported by Penchansky and Thomas' finding that less educated individuals tend to be more satisfied with the acceptability dimension of access. It is possible that more educated individuals tend to be more critical of availability, affordability and acceptability issues. This could occur via the following mechanism: ceteris paribus, individuals with higher education levels probably have greater health knowledge and better access to health information, enabling them to make more informed judgements of health-related issues.

The education findings highlight the need for health champions in a context where the majority of the country's citizens are poorly educated and unskilled. Coming from a position of low education puts the uneducated majority in a precarious position, exacerbated by their lack of networks and means to effectively mobilise Government to provide comprehensively accessible public health care.

7.3 Concluding remarks

A fully accessible public health sector is a prerequisite if the South African government intends to deliver on its promise of universal coverage. This justifies a strong research interest in the health performance indicator of access, particularly the under-researched dimension of acceptability.

[67] Referring to age and age squared covariates.

Supply-side public health issues, while important, have dominated public health debates and research at the expense of demand-side issues. Failure to fully understand the demand-side dimension of access and the role it plays in public health issues threatens to weaken public health policies aimed at improving access.

As highlighted in section 4.4 of the methodology chapter, it is disconcerting that a nationally representative survey like GHS has omitted useful health-related questions since 2010. Health-related questions which were asked at an individual level from 2002 to 2008 were asked at a household level in 2009 and completely omitted from 2010 to 2012. In addition, in the 2009 GHS, some of the health-related questions and categorical options were different to prior years and additional health-related questions were posed e.g. a question regarding the reasons for not joining a medical aid was asked in 2009 only. This made data incomparable across certain periods. If current research, including this mini-thesis, points to research gaps in demand-side aspects of health-seeking behaviour, then it becomes imperative for national surveys to collect such data. Without good health data there can be no reliable research, and this does not bode well for health policies and the marginalised who are meant to benefit from it.

The mini-thesis has supplemented the body of micro-level health economics literature by providing a macro-level overview of the trends in access to public health care in South Africa over a 10 year period. In combination with current literature, it has provided deeper insights into the three dimensions of access – availability, affordability and acceptability. This provides a platform from which to embark on further access research and builds on the current understanding of public health issues. As South Africa stands at the threshold of major health reforms via NHI, a sense of urgency with regard to further research of such public health issues is justified.

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APPENDIX A

Table A.1: Probit model for *availability*, 2002-2008

Independent variables	Public Sector			
	[I]: access to drugs	[II]: prompt service	[III]: < 1 hr to facility	[IV]: convenient hours
Gender: Male	.115***	.027***	.051***	.017***
Race: Coloured	.262***	.194***	.364***	.233***
Race: Indian	.193***	-.010***	1.064***	.108***
Race: White	.538***	.539***	.465***	.398***
Age	-.007***	-.009***	.013***	-.004***
Age-squared	.000***	.000***	-.000***	.000***
Level of education	-.011***	-.006***	.021***	-.008***
Household head's level of education	.002***	-.007***	.027***	.000***
Employed	.061***	.050***	.004***	.027***
Household head is employed	.002**	.022***	.040***	-.026***
Real per capita expenditure	-.000***	.000***	.000***	-.000***
Affluent	.418***	.060***	.068***	.022***
Constant	.991***	.294***	.785***	1.261***
Sample size	12959819	12961776	12918157	12957641
Pseudo R2	0.020	0.027	0.094	0.020

Source: Own calculations using GHS 2002-2008 data.

*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for provinces

Table A.2: Probit model for *affordability*, 2002-2008

Independent variables	Public sector		
	[I]: not expensive	[II]: no OOP payments	[III]: insured
Gender: Male	-.040***	-.090***	.053***
Race: Coloured	.073***	-.023***	.139***
Race: Indian	-.072***	-.336***	.133***
Race: White	-.070***	-.636***	.371***
Age	-.005***	-.010***	.022***
Age-squared	.000***	.000***	-.000***
Level of education	-.002***	-.016***	.054***
Household head's level of education	.003***	-.003***	.017***
Employed	-.008***	-.102***	.042***
Household head is employed	-.043***	-.137***	.300***
Real per capita expenditure	-.000***	-.000***	.000***
Affluent	.099***	-.283***	.373***
Constant	1.847***	1.053***	-3.395***
Sample size	12954583	12948200	12959851
Pseudo R2	0.014	0.055	0.178

Source: Own calculations using GHS 2002-2008 data.

*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for province

Table A.3: Probit model for *acceptability*, 2002-2008

Independent variables	Public sector		
	[I]: cleanliness	[II]: civil staff	[III]: satisfied
Gender: Male	.015***	.074***	.045***
Race: Coloured	.028***	.212***	.130***
Race: Indian	-.285***	.413***	.012***
Race: White	.177***	.074***	.317***
Age	-.000***	-.007***	-.004***
Age-squared	3.62e**	.000***	.000***
Level of education	-.012***	-.010***	-.010***
Household head's level of education	.003***	-.003***	.002***
Employed	.037***	.037***	.056***
Household head is employed	-.055***	.060***	-.030***
Real per capita expenditure	-9.72e***	.000***	.000***
Affluent	-.072***	-.109***	-.147***
Constant	1.200***	1.198***	1.222***
Sample size	12960469	12958382	12949067
Pseudo R2	0.023	0.031	0.017

Source: Own calculations using GHS 2002-2008 data.

*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for provinces

Table A.4: Linear probability model for *availability* (private sector), 2002-2008

Independent variables	Private Sector			
	[I]: access to drugs	[II]: prompt service	[III]: < 1hr to facility	[IV]: convenient hours
Gender: Male	-.003	-.002	.010**	-.003
Race: Coloured	.010	.036***	.058***	.026***
Race: Indian	.005	.033**	.110***	.005
Race: White	.006	.050***	.040***	.019***
Age	-.001***	.000	.000	-.001
Age-squared	.000***	1.53e	-2.33e	5.87e
Level of education	-.001***	.001	.005***	-.001
Household head's level of education	.001	.002**	.007***	.001**
Employed	.005	.031***	.019***	.006
Household head is employed	-.000	-.020***	.011**	-.005
Real per capita expenditure	9.54e	-1.89e	1.69e	-2.53e
Affluent	.008**	.031***	.048***	-.001
Constant	.991***	.840***	.754***	.964***
Sample size	18858	18860	18808	18855
Adjusted R-squared	0.003	0.029	0.126	0.005

Source: Own calculations using GHS 2002-2008 data.

*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for provinces

Table A.5: Linear probability model for *affordability* (private sector), 2002-2008

Independent variables	Private sector		
	[I]: not expensive	[II]: no OOP payments	[III]: insured
Gender: Male	.003	.019***	.003
Race: Coloured	.057***	.008	.123***
Race: Indian	.042***	.018*	.028
Race: White	.028***	.002	.169***
Age	-.001	-.000	.011***
Age-squared	8.63e	-3.86e	-.000***
Level of education	.002**	-.003***	.018***
Household head's level of education	-.001	.001***	.012***
Employed	.013*	.001	.040***
Household head is employed	.008	.005	.048***
Real per capita expenditure	2.69e*	1.89e	.000***
Affluent	.034***	.002	.218***
Constant	.827***	.092***	-.405***
Sample size	18856	18868	18877
Adjusted R-squared	0.022	0.014	0.362

Source: Own calculations using GHS 2002-2008 data.

I: not expensive, II: no OOP payments, III: insured
*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for provinces

Table A.6: Linear probability model for *acceptability* (private sector), 2002-2008

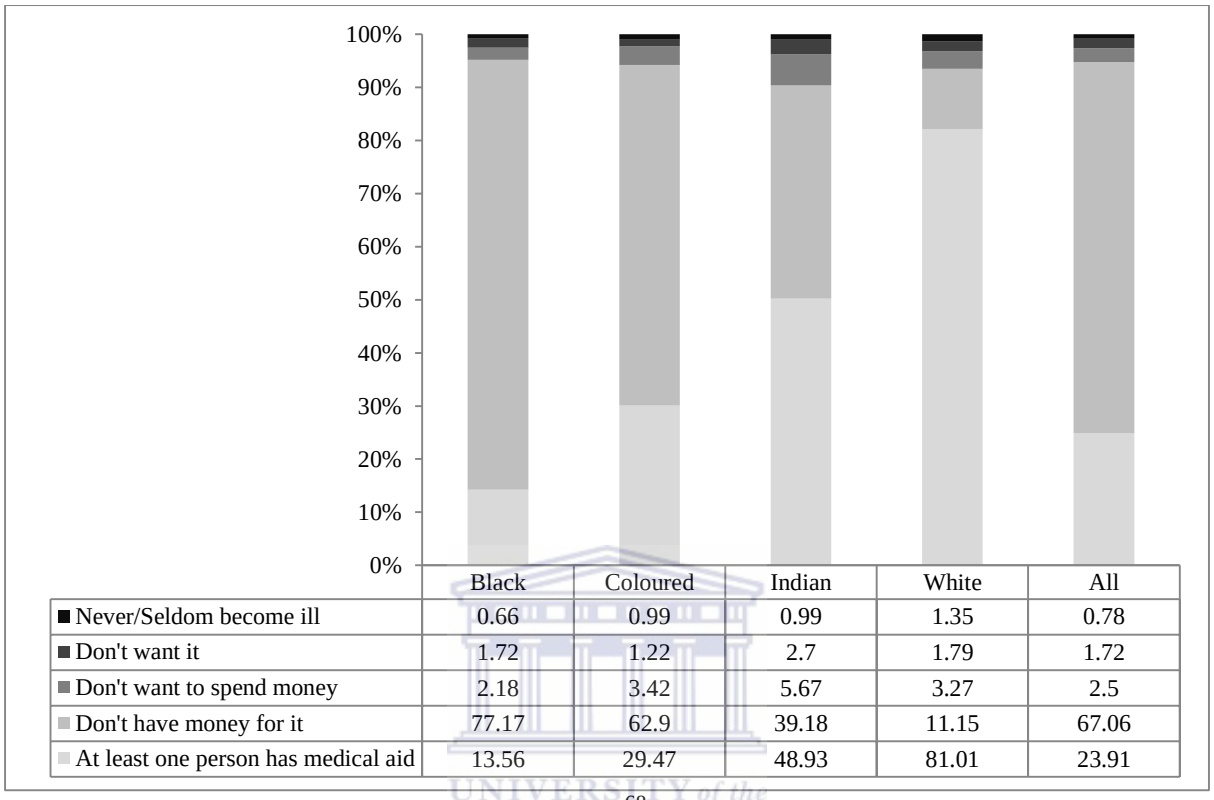
Independent variables	Private sector		
	[I]: cleanliness	[II]: civil staff	[III]: satisfied
Gender: Male	-.011***	-.005**	-.007***
Race: Coloured	.021***	-.004	.006
Race: Indian	.010	.007	.024***
Race: White	.011***	.008***	.010***
Age	-.001	.000	-.000
Age-squared	6.16e	-3.27e	6.05e
Level of education	-.001	-.001	.001
Household head's level of education	.001*	.001***	.000
Employed	.006*	.005*	.008***
Household head is employed	-.007**	-.004	.000
Real per capita expenditure	-6.24e	3.36e	-1.62e
Affluent	.008**	-.007**	.000
Constant	.964***	.975***	.952***
Sample size	18861	18859	18851
Adjusted R-squared	0.006	0.004	0.004

Source: Own calculations using GHS 2002-2008 data.

I: cleanliness, II: civil staff, III: satisfied
*** Significant at 1%, ** Significant at 5%, * Significant at 10%
Reference groups: Gender: Female, Race: Black
GHS dummies included but not shown in table
Controlled for province

APPENDIX B

Figure B.1: Share of reasons for no medical aid membership (household level), 2009 only



	Black	Coloured	Indian	White	All
Never/Seldom become ill	0.66	0.99	0.99	1.35	0.78
Don't want it	1.72	1.22	2.7	1.79	1.72
Don't want to spend money	2.18	3.42	5.67	3.27	2.5
Don't have money for it	77.17	62.9	39.18	11.15	67.06
At least one person has medical aid	13.56	29.47	48.93	81.01	23.91

Source: Own calculations using GHS 2009 data.[68]

[68] Sum of data in columns does not equal 100 since irrelevant and negligible categories excluded.