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UNDERSTANDING THE DEMAND FOR HEALTH SERVICES IN CAPE TOWN, SOUTH AFRICA: IMPLICATIONS FOR HEALTH EQUITY AND EFFECTIVE TB CARE DELIVERY.

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To Lyndon, my rock

DECLARATION BY CANDIDATE

I have read and understood the School's definition of plagiarism and cheating given in the Research Degrees Handbook. I declare that this thesis is my own work, and that I have acknowledged all results and quotations from the published or unpublished work of other people.

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ABSTRACT

This dissertation uses qualitative and quantitative case study data to appraise the application of economic demand models in pluralistic low income settings. Primary data from Cape Town, South Africa, are used to interrogate three elements of the neoclassical paradigm: the budget constraint, utility function and underlying preference-sets, and hyper-rationality and the assumption of full information.

The neoclassical budget constraint may be affected by changes in price or income. This dissertation explains how perceptions of quality, community context and fear of social sanction may affect the perceived price of service access. Community context and support networks also affect an individual's available financial resources although conventional demand models do not capture the income effect of payments made directly to providers by non-household members.

According to ordinal utility theory, consumers must be able to rank various bundles of commodities according to the satisfaction they yield. This dissertation considers how perceived quality, fear of community sanction, illness type, awareness of different providers and the mismatch of supply with perceived need can affect the composition and ranking of those bundles.

Finally, New Institutional Economics (NIE) utilises satisficing and less than full information instead of strict optimisation. This dissertation attempts to formalise the NIE contributions by describing common strategies for satisficing and considering how the household and community context of care seeking may affect service use.

A number of empirical and methodological techniques are used to estimate demand functions and move theory into practice. Longitudinal health diaries are used to collect data on health service use, expenditure and self-rated health. The data are analysed using panel data methods. The findings illustrate that, without a better understanding of demand-side barriers to effective diagnosis and treatment, curtailing the spread and impact of communicable diseases in pluralistic, low income settings will be difficult if not impossible.

TABLE OF CONTENTS

CHAPTER 2: A REVIEW OF THE LITERATURE 30

INDEX OF TABLES

CHAPTER 7:

INDEX OF FIGURES

LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment, Short Course
EA	Enumerator Area
HIV	Human immunodeficiency virus
IMR	Inverse Mills Ratio
LISREL	Linear Structural Relation
M.Tb.	Mycobacterium Tuberculosis
MIMIC	Multiple Causes, Multiple Indicator
NIE	New Institutional Economics
SAH	Self Assessed Health
SAT	Self-Administered Treatment
SBC	Soft Budget Constraint
SES	Social Economic Status
StatsSA	Statistics South Africa
TB	Tuberculosis
TDR	Special Programme for Research and Training in Tropical Diseases
UNICEF	United Nations Children's Fund
WHO	World Health Organisation

CHAPTER ONE:

INTRODUCTION

> *"[A] legacy of health sector reform in practice is the recognition that the reorganisation of the 'supply side' does not necessarily feed through to more accessible and effective health care for poor people. There is now more recognition that the health behaviour of individuals, social networks and community initiatives have an immediate and important impact on health risks and prospects, and that quality, participation, transparency and accountability of services are vital. Matching an effective and efficient 'supply side' to a pro-active 'demand side' is another emerging challenge for health policy in the decade ahead."* Pg 24 (DFID, 2000)

In pluralistic health settings, patients have a choice of providers when seeking treatment for ill health. However, structured treatment protocols such as DOTS for TB, ACT for malaria and ARV treatment for HIV/AIDS are seldom offered by all service providers in a market. In Cape Town, South Africa, private doctors can diagnose TB but cannot treat it. Malaria treatment cannot be obtained from a pharmacy or market but can be obtained from a private doctor, public clinic or even a tertiary hospital (public or private) in severe cases. Antiretroviral treatment for HIV/AIDS is available from any private doctor but is only available at a small number of public clinics. This raises a number of questions about the demand for health services: How do patients know where to go? Is there a risk that they will go to the 'wrong' provider? What are the implications of seeking care from a provider who cannot offer diagnosis or treatment? And of course, can we afford to ignore these demand-side phenomena when designing treatment protocols for communicable diseases in resource poor settings?

These questions are not trivial in a province where the HIV prevalence rate was estimated at 15.7% in 2005 (Department of Health, 2005), TB incidence was recently estimated at 222 per 100,000, and where TB and HIV were among the three highest causes of years of life lost in Cape Town in 2001 (Dudley et al., 2003). Life expectancy in South Africa is now estimated at 47 years for men and 49 years for women (World Health Organisation, 2006), despite the fact that South Africa is now classified as a middle income country with a GDP per capita of

$8,506* that spends approximately 8.4% of GDP on health (World Health Organisation, 2006). Of course South Africa has the second highest level of income inequality in the world, which may go some way towards explaining poorer health outcomes (Budlender et al., 1998). Persistent inter- and intra-racial income inequality, as well as significant rural/urban income inequality may also be exacerbated by unequal health service supply. In the rural Northern Province, a study of health seeking behaviour amongst TB patients by Pronyk et al. concluded that patient delay contributed to a greater proportion of median total delay than did service provider delay (Pronyk et al., 2001). However, while gaps in supply may be to blame for poorer health outcomes in some rural settings, the Cape Metropole has a proliferation of public and private providers offering both primary and tertiary health services (Statistics South Africa, 1998; Western Cape Department of Health, 2006).

To address an empirical challenge such as this, one would normally turn to a body of theory for assistance in structuring, investigating and ultimately designing policy responses to the problem. Economists have been studying the demand for health services for almost half a century. Theoretical models which evolved from these efforts range from simple utility maximising models to more complex specifications that consider the effects of health 'needs' (Heller, 1982; Heller, 1976) and the optimal stock of health 'capital' (Grossman, 1972a) among other factors. If theoretical considerations dominated the period from 1960 through to the early 1980s, then empirical considerations dominated the subsequent period as researchers sought to translate the theoretical tenets into statistical models using real world data. In the study of demand however, there remains a particular disjuncture between the economic theory of demand, and the substantive body of applied work on demand, health service use and treatment seeking. The economic theory does indeed provide more than one potential framework for thinking about the process of health seeking and the demand for health services. Some specific aspects of that framework have also received considerable attention in the empirical literature – the work on willingness to pay is one such case in point. However, as Chapter 2 will illustrate, many empirical studies attempting a more general investigation of demand have tended to outline a body of economic theory before going on to describe an empirical investigation which, if not unrelated, is certainly *prima facie* independent of that theory.

There will always be a tension between the need to construct a conceptual or empirical model of behaviour that accurately reflects reality in all its complex fluidity, and the need to construct one that is tractable, measurable, quantifiable and relatively easily applied. The literature review in Chapter 2 acknowledges that there are more variables predicting human behaviour than can be incorporated in a formal demand model. In addition, many of the

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* 2004 Dollars

variables known to impact the demand for health care are difficult to characterise and measure quantitatively in the way needed for an empirical demand model. This may be proposed as an argument for abandoning further work on demand models with their necessary focus on highly variable individual behaviour. However, focussing instead on health systems and supply side factors exclusively will not ensure the efficient or effective delivery of health services in complex settings where demand side behaviour can pose particular challenges to diagnosis and treatment. And nowhere are efficiency and effective delivery more important than in those developing countries battling high rates of TB, HIV and malaria, diseases that require considerable formal interaction between the individual and supply side mechanisms for treatment to succeed. In this sense then, a model is a conscious abstraction of a complex problem to something simpler that allows the most salient features to be investigated. The tension between richness and complexity on the one hand, and the necessary simplification that comes with modelling can never be entirely resolved but it can be consciously examined, as this text seeks to do.

This dissertation does not attempt to develop a new theory of demand for health services. Instead, this work seeks to understand the determinants of treatment seeking behaviour in a pluralistic low income setting with high communicable disease prevalence. The study then seeks to establish whether the complexity of that behaviour and its determinants can be tractably integrated into economic demand theory, and what the benefits of that integration might yield. This thesis also seeks to assess whether other established and emerging bodies of economic theory, not yet applied to health seeking in comparable settings, might further contribute to our understanding of demand for health services. Particular theories critiqued in the text include the Lancaster Model, used as the basis for willingness to pay models but not general demand analysis, New Institutional Economics, used to explain supplier induced demand but again, not a general model of demand, and the soft budget constraint, used to explain firms' behaviour in socialist states but not yet applied to health seeking in any way despite deriving from the tenets of microeconomics.

The intended empirical contribution of this dissertation follows from this exploration of theory. As Chapter 2 illustrates, the empirical literature on demand is, to some extent, dominated by studies from wealthy country settings. Those studies that are set in developing countries have commonly failed to explore any interplay between illness type and service choice and tend to present barriers to access as a list of mutually exclusive factors. Self assessed health is often measured in the simplest of ways, if at all, and health service providers are generally considered to be homogenous, albeit within broad categories imposed by the researcher. Perhaps due to the influence of work conducted in developed markets, empirical models

generally make little allowance for health seeking as a social phenomenon despite the fact that extended families can play a significant role in the consumption of health services in developing countries. Also likely to be context-sensitive is the measurement of variables such as education, household income and time costs, and the impact of those variables on health seeking. This is pertinent as global interest in inequalities and meeting the needs of the poorest has yet to be translated into adequate local policy knowledge. Research on inequity in South Africa has thus far focused on health outcomes or service utilisation in rural populations, with findings dominated by insufficient health service supply. For these reasons, this research is intended to make both a general contribution to our empirical understanding of demand, but also a very specific contribution to our understanding of demand in the study setting.

In short, by expanding the set of influences on treatment seeking behaviour and improving the way that demand is measured, this study hopes to increase the contribution that demand side analysis can make to our understanding of effective treatment for TB in marginalised urban communities in South Africa. Insofar as those findings are generalisable, the intention is also to improve the understanding of treatment seeking for communicable diseases in other comparable low- and middle-income settings.

2) TUBERCULOSIS AS A CASE STUDY

2.1) INTRODUCTION

TB/HIV co-infection is a global concern and failure to effectively treat TB in poorer countries highlights global inequities in health. Tuberculosis is worse now than at any other time in recorded history, killing more people than any other curable infectious disease. Poverty, malnutrition, poor sanitation, overcrowding and now HIV all contribute to the spread of TB, which in turn exacerbates these factors further. A TB sufferer can be out of work for up to nine months and most TB cases occur in countries where there is little or no income support for the unemployed (World Health Organisation, 2003).

Twenty-two high burden countries account for 80% of TB cases globally. TB kills approximately 2 million people every year and infects a further 8 million. Of the 2 million deaths attributed to TB each year around the world, 98% occur in developing countries – often robbing households of their primary income earner (World Health Organisation, 2003). Although contagious, TB is a curable disease for which cost effective treatment is available even in the poorer regions of the world. In spite of this, both the incidence and the death rate are growing and the WHO attributes this trend to multiple factors including the breakdown of health service provision, the spread of HIV/AIDS and the emergence of multi-drug strain resistant TB (World Health Organisation, 2002).

As mentioned earlier, South Africa experiences some of the highest prevalence rates of TB and HIV in the world. In the Western Cape, TB prevalence is rising faster than the rest of the country while cure rates are falling despite widespread and free provision of DOTS for TB. Literature from other settings ascribes poor cure rates to delays in seeking treatment, delays in diagnosis and failure to adhere to the treatment regime i.e. poor health seeking behaviour (see for example Arora and Sarin, 2000; Barker, 1994; Edginton et al., 2002). The causes of these failures require further exploration. A rural South African study revealed TB was seen as a punishment for transgressing cultural rules regarding sex. Respondents also believed that there should be abstinence from sex while on treatment (Edginton et al., 2002). The stigma associated with TB in India is also widely documented (Balasubramanian et al., 2004; Rajeswari et al., 2005). A study in Vietnam observed patients paying for private (non-DOTS) TB treatment rather than accessing free DOTS through the public system, because of the reduced threat to privacy posed by private providers (Lonnroth et al., 2001). Research in Thailand warns "...*increased awareness and stigmatisation of AIDS and inadequate knowledge of TB can result in delay in seeking TB care and in treatment non-adherence.*" (Ngamvithayapong et al., 2001)

Focussing the analysis on a curable disease such as TB, which affects mainly the poorest groups in the Western Cape i.e. the so-called 'African' and 'Coloured' populations[†], enables the evaluation of social context on individual decision-making while controlling for supply factors. Health service supply in urban areas is relatively high, enabling detailed analysis of barriers posed by gender, stigma, socio-economic factors and poor service quality, while still considering service utilization and health outcomes. The high HIV prevalence in the African population and relatively low prevalence in the Coloured population also allows the impact of HIV-TB 'cross-stigmatisation' to be explored. Access to TB care will thus be studied to identify any mismatch of community preferences and public supply.

2.2)   A GLOBAL REVIEW

Tuberculosis (TB) is a contagious disease caused by Mycobacterium tuberculosis (M.Tb.), a bacterium transmitted through sputum expelled during coughing, sneezing, talking or spitting (AIDSmap, 1997; World Health Organisation, 2002). One in ten people infected by the bacteria are affected by it i.e. develop active, symptomatic TB (World Health Organisation, 2004). There is often a significant delay between exposure to, and activation of, the illness with exposure often occurring in childhood and activation during adulthood. Illness occurring shortly after exposure is commonly referred to as primary TB, while illness occurring after a period of dormant infection is known as reactivation TB (AIDSmap, 1997). Individuals suffering from active TB (either primary or reactivation) are commonly known as TB affected.

Only TB affected individuals are contagious and if left untreated, each affected person can infect a further 10-15 people a year (World Health Organisation, 2002). In TB endemic areas, this contagion parameter can rise to 20-28 secondary infections per infectious case (Pronyk et al., 2001). For every 12-20 of these secondary infections, TB will affect approximately 2-4 people. One third of the world's population is currently infected with TB and a further 1% of the world's population is newly infected each year (World Health Organisation, 2002).

Both the incidence of TB and its rate of increase are highest in the WHO African region, where TB incidence for 2000 was estimated at 290/100000 and the annual rate of increase in the number of cases was estimated at 6% per annum. TB caused an estimated 1.8 million deaths

[†] Given South Africa's political history it is no longer widely acceptable to make explicit reference to a person's race or ethnicity as a defining individual characteristic. That said, communities largely continue to reside in homogenous ethnic groups and wealth, health risk and many other factors vary systematically between the country's different population groups. As such, it is impossible to avoid referring to race or ethnic group entirely if these lingering inequalities are to be addressed. In this thesis then, the terms 'race', 'ethnicity' and 'population group' are used interchangeably. Study participants are not however allocated to these groups by an external observer, instead, they are asked to classify themselves. Of course they are able to refuse any such classification or to classify themselves according to any description they choose. Most respondents did not object and selected the category descriptors applied in South Africa in the past. As such, the labels 'Black/African', 'Coloured', 'White' and 'Indian or Asian' are applied. These are not intended to confer any racial or other stereotypes, or to be derogatory in any way.

around the world in 2000, of which approximately 226,000 (12%) were attributable to HIV. According to Corbett et al, 31% of new adult TB cases in the WHO African Region were attributable to HIV, thus emphasising the significant role of HIV in prolonging and promoting the TB epidemic in the region. In areas with high HIV prevalence such as sub-Saharan Africa, this effect is particularly marked (Corbett et al., 2003).

2.3) THE SOUTH AFRICAN TB EPIDEMIC

In 1996, TB was classified as a national priority in South Africa and directly observed treatment, short-course (DOTS) was adopted by the Department of Health (Sinanovic et al., 2003). This approach has continued and, at present, control strategies rely on passive detection and directly observed therapy for affected individuals (Pronyk et al., 2001). Despite the availability of TB treatment and past success in treating the disease, incidence is rising and cure rates are falling (Western Cape Provincial Administration, 1999/2000). It is likely that the coincidence of HIV and TB is a contributing factor to this phenomenon.

The HIV prevalence rate for South Africa is estimated at 22.4% (Dudley et al., 2003). In 2000 it was estimated that the country had 2 million co-infected adults, the largest number in the world. At 509 per 100,000‡, the incidence of TB in South Africa is also amongst the highest, while the death rate stands at 139 per 100,000. South Africa's TB incidence rate increased by 8.7% between 1997 and 2000, with an estimated 50% of adult TB cases and 59% of adult TB deaths attributable to HIV (Corbett et al., 2003).

> *"In sub-Saharan Africa, about 30% of HIV-positive patients die within 12 months of treatment. HIV-positive patients with smear-negative TB... fare even worse." page 1519 (Harries et al., 2001)*

Survival rates for HIV-positive, TB affected individuals undergoing DOTS is lower than for those affected only by TB. The nature of HIV can result in false-negative sputum tests for those co-infected individuals that do seek care. However, the social stigma attached to HIV, and the debilitating nature of many opportunistic infections can prevent or delay treatment seeking at the outset (Harries et al., 2001). Delayed diagnosis adversely affects treatment outcomes for TB. Another factor adversely affecting treatment outcomes is treatment adherence. Many of the factors that delay treatment seeking, such as social stigma or debilitation by opportunistic infections, can also reduce adherence to the DOTS treatment regime.

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‡ This data is for the year 2000.

2.4) TB AND TB TREATMENT IN CAPE TOWN

The Western Cape is highly urbanised with 89% of its population living in urban areas, the majority of whom live in greater Cape Town, the provincial capital city (Statistics South Africa, 1998). TB incidence in the City of Cape Town is estimated at 222 per 100,000. Most TB treatment in the city is ambulatory care provided by primary health clinics situated within a 5km walk of any TB patient. These clinics tend to be nurse driven, with access to a medical support officer. Drug supplies are regular and clinics have access to an extensive secondary support network including a large TB laboratory and nearby TB and general tertiary hospitals, all of which are well equipped and well staffed. However, despite this established and extensive system, adherence rates and treatment outcomes have been sub-optimal (Dudley et al., 2003).

In all sub-districts of Cape Town (excluding the South Peninsular), TB is one of the top 10 causes of death. The areas worst affected are Khayelitsha where TB accounts for 14% of deaths, Nyanga (9.8%), Helderberg (6.4%) and Oostenburg (5.9%). After homicide and HIV/AIDS, TB is the third highest cause of years of life lost, accounting for 7.7% of life years lost in Cape Town in 2001 (Groenewald et al., 2003). Between 1997 and 2002, the number of reported TB patients in Cape Town rose by 50%, with 87% of all TB cases diagnosed at public primary health care facilities and the remainder diagnosed at hospitals and private practitioners (Toms and Vallabhjee, 2003). The following table summarises the total number of TB cases registered in Cape Town between 1997 and 2002, while the graph details the case load per district:

Table 1.1: Total Number of TB Cases Registered 1997-2002 (Toms and Vallabhjee, 2003)

YEAR	TOTAL TB REGISTERED	% INCREASE PER YEAR	TB 'NOT TRANSFERRED IN'	% INCREASE PER YEAR	CURE RATE
1997	16,112	-	13,870	-	65%
1998	17,472	8%	14,970	8%	66%
1999	18,340	5%	15,769	5%	64%
2000	20,830	14%	17,244	9%	70%
2001	21,394	3%	18,361	6%	73%
2002	24,075	13%	20,950	14%	N/A

Figure 1.1: Case Load per District (Toms and Vallabhjee, 2003)
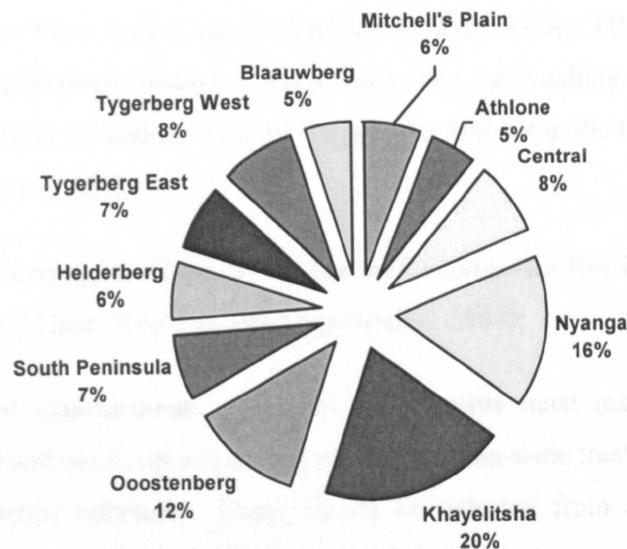
In the Western Cape, HIV prevalence is estimated at between 7.1% and 10.5%, although some areas have prevalence rates as high as 18.3%. HIV prevalence is expected to plateau at 25%-30% for the general population of Cape Town (Dudley et al., 2003), suggesting that any negative effects of co-prevalence will increase in coming years. As is the case elsewhere, HIV is considered a contributing factor to the poor performance of the TB control programme. In this context particularly, the added burden to the health service infrastructure caused by HIV is expected to overstretch the capacity of the system and undermine the TB control programme even further (Dudley et al., 2003; Helbling, 2003; Sinanovic et al., 2003).

A number of studies have considered ways to boost service capacity by introducing community support initiatives to supplement clinic based TB care (Dudley et al., 2003; Sinanovic et al., 2003). These studies have shown favourable results which suggest that HIV status is not the only factor undermining effective TB control. Generally, community support initiatives improve system effectiveness by improving treatment adherence. However, these initiatives may not be the only way to improves adherence and studies around the world have begun to investigate other means of improving both adherence and early case identification by exploring how patients interact with the health systems around them (Auer et al., 2000; Borgdorff and Maher, 2001; Edginton et al., 2002; Johansson et al., 2000; Khan et al., 2000; Miti et al., 2003; Ngamvithayapong et al., 2001).

2.5) DOTS, DOT AND SAT

By 2005, the WHO aims to ensure that 70% of all infectious TB cases are detected and 85% of those cases effectively treated. The primary tool for reaching these targets is DOTS and $9.1billion has been set aside to achieve the goals as laid out in the Global Plan for 2005 (World Health Organisation, 2003).

The DOTS strategy as advocated by the WHO comprises five key elements (World Health Organisation, 2002 and; World Health Organisation, 2004):

1) **Political commitment:** National governments must make TB treatment a priority and must commit the resources for nation-wide treatment coverage.

2) **Microscopy services:** Cases should be detected from among people with persistent cough, using primarily sputum smear microscopy in a country-wide laboratory network.

3) **Drug supplies:** Drug supply to health centres should be uninterrupted and treatment available to all TB patients.

4) **Use of effective regimes and direct observation of treatment:** Short-course chemotherapy should be provided and patients and heath workers should commit both to completing the full course of treatment and ensuring that all doses are taken.

5) **Surveillance and monitoring systems:** Governments should implement a recording and reporting system that monitors treatment outcomes, with the aim of achieving an 85% cure-rate. Staff should be given the necessary support to realise this aim.

All 22 of the highest burden countries have adopted DOTS and, by 2000, 55% of the global population had access to DOTS. Even in the poorest countries, DOTS produces cure rates of up to 95% thus saving lives, preventing new infections and preventing the development of multi-drug resistant TB. A six month supply of drugs for DOTS can cost as little as $10 per patient, making TB treatment under DOTS "one of the most cost effective of all health interventions" (World Health Organisation, 2002).

Despite the obvious success of DOTS, TB is not yet under control and the direct observation of treatment has come in for considerable criticism (Garner and Volmink, 2003; Macq et al., 2003; Pope and Chaisson, 2003).

Although direct observation (DOT) remains core to the WHO strategy for TB control, there is considerable debate over whether it is essential to the success of DOTS (Garner and Volmink,

26

2003). Proponents of direct observation argue that extreme measures are necessary to maintain case-holding and prevent the spread of multi-drug resistant TB. Opponents of the strategy argue that its rigidity raises ethical concerns and that there is no evidence to prove it more effective than self-administered treatment (SAT) (Macq et al., 2003).

Randomised controlled trials conducted in South Africa, Pakistan and Thailand between 1999 and 2001 aimed to measure the effectiveness of DOT relative to SAT. These studies showed little or no benefit of DOT (Garner and Volmink, 2003). While the results from South Africa and Pakistan concluded that DOT had a neutral (or negative) effect on treatment, the results from Thailand concluded that DOT had a small positive effect. Pope and Chaisson (2003) argue that these findings are spurious. In the South African case, they state that over-worked nurses deliberately biased the selection of participants and that the investigators were negatively predisposed towards DOT. The investigators in the Pakistan study are similarly accused of a negative predisposition towards the practise. Only the investigators in the Thai study were considered "sanguine" about DOT. The trials are also accused of failing to operationalise DOT in a manner consistent with the study's definition (Pope and Chaisson, 2003). While Garner and Volmink (2003) call for more scientific evidence regarding the effectiveness of DOT, Pope and Chaisson (2003) remind us that treatment adherence is a multi-factorial phenomenon that cannot be explained by randomised controlled trials of this nature.

Despite the apparently inflexible definition of DOT, there is considerable variation in its implementation. DOT providers may be supporters or supervisors and a diverse range of people (including health care professionals, lay community health workers or even close relatives of the patient) can act as the DOT provider. As the provider varies, so too does the site of delivery, which can include clinics, hostels, hospitals, health centres or patient's homes. Although DOT can be offered in isolation, it is often implemented as part of a broader package of food-aid, social support or skills-training, which act as patient 'incentives'. The original picture of the heath professional watching the patient take their medication as part of an institutionalised health service is evolving, raising new questions and challenges to effective TB control (Macq et al., 2003).

> "This calls for more reflection about how DOT is developed and organised
> as part of a complex and lengthy set of interventions, the choice of DOT
> provider, and the role of incentives and enablers...lessons should not only
> come from TB care, but also from management experience of other chronic
> diseases." (Macq et al., 2003 pg 108)

3) STUDY OBJECTIVES

3.1) PRIMARY AIM

The primary aim of this thesis is to understand the determinants of treatment seeking behaviour in Cape Town, South Africa, and examine whether the complex and dynamic determinants observed through empirical research can be incorporated into existing economic demand models. A secondary aim of the research is to inform debates about how to improve the effective use of health care services with a particular focus on tuberculosis.

3.2) OBJECTIVES

The objectives of this study are to:

1) Understand how individuals assess their need for health care and identify the primary factors that impact that perceived need.

2) Explore how individuals formulate their choice set when seeking healthcare and which service providers are likely to be included or excluded from the choice set under different conditions.

3) Understand the composition and role of the budget constraint by investigating price and income constraints to health seeking generally, and health seeking from particular providers.

4) Probe the potential influence of the household, community and broader social setting in the individual assessment of need, the formation of the choice set and the impact of price and income constraints on health seeking.

5) Develop an econometric model of health seeking behaviour which:
   a. Measures the impact of perceived health need on the demand for health services
   b. Examines the determinants of provider choice and allows for multiple care seeking/care seeking from more than one provider if appropriate
   c. Models the impact of price and income constraints on care seeking and allows for the explicit measurement and interaction of other barriers to care seeking
   d. Explores how social context affects health seeking behaviour
   e. Is able to inform policy decisions aimed at; i) improving the delivery of TB services and ii) potentially combining TB and HIV services.

3.3) METHODS

The objectives of the study are addressed using a combination of qualitative and

quantitative data collection and analysis methods. Qualitative data collection was conducted using a focus group methodology and analysed using modified grounded theory techniques. The quantitative data collection employed survey data methods in the form of a weekly diary over the course of eight weeks. The quantitative data was analysed using descriptive statistics and regression analysis using Stata Version 9. The methods are described in detail in Chapter 3 of the thesis.

3.4) INFORMING POLICY DECISIONS

As global thinking begins to favour joint programs to address TB and HIV, health seeking behaviour for TB needs to be evaluated in an urban setting where geographic access i.e. distance to services does not pose a significant barrier to care seeking, TB treatment is free at the point of use, the DOTS protocol is applied and where care seeking for TB can be contrasted with care seeking for other illnesses. This analysis will aim to explain (in part at least) why cure rates are falling in the Western Cape despite consistent TB service supply. The results will also provide insights into issues around the uptake of TB services in other contexts and may inform the planned roll-out of antiretroviral treatment for HIV.

4) STRUCTURE OF THE THESIS

This thesis begins with an overview of the demand literature, followed by a thorough exposition of the research and analytical methods employed to achieve the study's aims. The findings are then presented over four chapters: health need is analysed first in Chapter 4, followed by the formation of the choice set in Chapter 5 and constraints to health seeking in Chapter 6. Finally a comprehensive model of demand is presented in Chapter 7. Chapter 8 contains a discussion of the findings drawing relevant conclusions, while Chapter 9 outlines appropriate policy recommendations.

CHAPTER TWO:

A REVIEW OF THE LITERATURE

1)   STRUCTURE OF THE LITERATURE REVIEW

A study of this nature covers a broad scope of literature. After defining the key concepts referenced throughout this document, the following review groups articles by their relevance to the research topic and identifies three key theoretical foundations pertinent to the field of study, namely:

1. Psychosocial models for explaining health-seeking behaviour e.g. the Andersen Model.

2. Economic models for explaining health-seeking behaviour e.g. the Human Capital Model.

3. Models or concepts that enable us to link health seeking behaviour to the equity of service supply.

Following a synopsis of the theory, this review draws on a wide range of empirical research, focussing particularly on studies that have attempted to assess patient demand for health services. The applied literature is largely characterised by studies from more developed countries aimed at quantifying financial risk to health insurers and other third-party payers including the state. The relevance of these findings to the setting of this study is questionable. However, the extent to which these studies dominate the demand literature prohibits their universal exclusion from the review. That said, where possible, emphasis is placed on demand studies set in less developed countries.

The review concludes with a synopsis of the literature on care seeking for TB particularly, identifying the gaps in the literature which this study aims to address.

2)   DEFINING KEY CONCEPTS

Although this dissertation draws primarily on the tenets of economics, other disciplines have contributed significantly to our understanding of the demand for health services. In interdisciplinary work of this nature then, it is necessary to explain the terms used commonly throughout this document, terms that may have different meanings in different fields of study.

2.1) WHAT IS HEALTH?

Definitions of health vary from the negatively oriented 'absence of disease' (Jones, 1994) to the World Health Organisation's positively oriented *"...state of complete physical, mental, spiritual and social well being"*. Jones classifies the former definition as a product of the medical model and the latter as a product of the social model (Jones, 1994). The social model is expounded by Appleton and Cowley (Cowley and Appleton, 2000) who define health as a function of social, personal and physical resources which may be internalised or manifested externally. An alternative to the more extreme positive and negative definitions is Lalonde's 'health field' concept, which defines health as a function of human biology, lifestyle factors, environment and healthcare organisation (Lalonde, 1974).

While definitions of health may be highly subjective at the patient level, economists prefer to work with the 'absence of disease' concept that is more easily quantified. In this view, health's only economic value lies in its use and health is not limited to discrete time periods i.e. one can accumulate a 'stock' of health (Grossman, 2000; Lockett, 1996). Mooney (Mooney, 1992) is concerned that health economists desire easy quantification, which shapes assumptions regarding the individual's utility function[*].

2.2) DEMAND FOR HEALTH SERVICES

The Dictionary of Health Economics defines demand as a *"request for a healthcare product"* (pg 32 Earl-Slater, 1999) while Wittor et al. define demand as *"the quantity of a good purchased at any given price"* (pg 273 Wittor et al., 2003). Wittor's definition is derived from Neoclassical economic theory, which dictates that demand will equal supply in equilibrium. Out of equilibrium there is either excess demand or supply. Where there is excess demand, the price will rise until supply meets demand. Where there is excess supply, the price falls until demand and supply are equal. However, when the price mechanism does not operate freely, markets may remain out of equilibrium. This is the case in many health markets where the state and other agencies subsidise or regulate delivery.

Conventional demand models have 'actual use' as the dependent variable, which assumes that markets are in equilibrium and there is no unmet demand. 'Demand,' as used in the majority of health economic analysis, should read 'use' (McPake et al., 2002). In this discussion however, 'demand' is used in the sense of the Dictionary of Health Economics' 'request for a healthcare product', which may not result in consumption if there is a mismatch of supply and demand and the 'request' is unmet.

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[*] See the later discussion of utility functions and utility maximizing.

Demand for health care is derived from the demand for health as an outcome. Consumers demand the outcome (health) rather than the input (health care) and are partially responsible for the production of that outcome. Demand is dependent on the perceived effectiveness of the input, the value of the outcome relative to the cost, and the consumer's budget constraint. The value of the outcome is a subjective individual measure that may outweigh both the cost and the budget constraint, raising complex ethical and moral issues[†] (Earl-Slater, 1999; McPake et al., 2002; Mooney, 1992).

2.3) THE ASSESSMENT OF HEALTH NEEDS

2.3.1) NEED

When defining health needs a number of conflicting concepts arise, particularly individual versus clinical notions of need. Individual and population-based measures of need may also differ but population level need falls outside the bounds of this study (Culyer, 1976).

The literature on health seeking commonly applies a clinical/biomedical concept of need (Raine et al., 2003; Stone, 2002; Veenstra, 2002). However, a lay-person may not recognise a clinical need if it does not generate an identifiable symptomology. Conversely, individuals may perceive themselves to have a health need that would not be considered a clinical need. Perceived health need is commonly measured by wellness scales or multi-attribute indices such as the SF36 that collect data on perceived wellness/ill-health (Balasubramanian et al., 2004; Bowden and Fox-Rushby, 2003; O'Keefe and Wood, 1996). Ill health is thus frequently treated as synonymous with health need.

Another alternative to the biomedical concept of need is the 'capacity to benefit framework' proposed by Matthew (Matthew, 1971). McGuire integrates this framework into the chapter on Physician Agency in the Handbook of Health Economics. He argues that the patient's capacity to benefit from medical care is a fixed construct which approximates a demand curve and that, in the absence of full information, supplier induced demand may cause patients to consume above their capacity to benefit curve. Although this construct is used by McGuire to explain supplier induced demand, one could similarly argue that the absence of full information about their capacity to benefit may also result in patients consuming below their capacity to benefit curve (McGuire, 2000).

2.3.2) FROM NEED TO DEMAND

A perceived need may not result in health seeking behaviour if sufferers are unaware that treatment is available, or if available treatment is perceived to be too expensive, painful, risky or

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[†] Detailed consideration of these issues falls outside the bounds of this discussion.

time consuming. As such, 'need' may not exactly correlate with demand for health services and it is thus important to compare individual perceptions of health need with reported demand for health services and measures of health service utilisation. This is clarified further in the analytical framework presented in Chapter 3.

3) PSYCHOSOCIAL MODELS OF HEALTH SEEKING BEHAVIOUR

A number of psychosocial models have been devised to explain health seeking behaviour. These models can significantly enhance our understanding of the economic theories described subsequently and can also help to identify shortcomings in the economic framework by seeking to explain phenomena that are either omitted or not fully explained by the economic models of demand. Three of the most commonly cited psychosocial models are the Health Beliefs Model, the Theory of Reasoned Action and the Anderson Behaviour Model. These are described in some detail below because of their frequent application to problems of health service demand and the extent to which they impact on our understanding of similar economic models. Other psychosocial models such as the Organisational Constraints Model, the Diffusion of Innovations Model and the PRECEDE Model impact only on particular facets of the economic models and as such, are listed briefly below for purposes of completeness.

3.1) HEALTH BELIEFS MODEL

This model proposes that health behaviour is determined by the <u>perceived</u>:

- susceptibility to an illness,
- severity of the illness
- benefits of preventing or treating the illness, and
- barriers to prevention/treatment

Risk and severity of illness are weighed against benefits of treatment or prevention and the cost in terms of time, money and other factors (Scrimshaw, 2001). This process is implicit in the Neoclassical Economic notion of demand outlined above.

Despite its widespread use, a number of criticisms have been levelled against the Health Beliefs Model. Patients with chronic illness may learn to 'manage' the system and thus not behave in the expected manner. The model is difficult to quantify and fails to account for organisational, environmental and social factors impacting on behaviour (Scrimshaw, 2001). The model also assumes that consumers strictly maximise their utility in the objectively rational sense i.e. that they use full information to formulate a preference set that is complete, reflexive, and transitive – which may be misleading (Lane, 1991).

3.2) THEORY OF REASONED ACTION

The Theory of Reasoned Action attempts to *"predict an individual's intention to engage in a behaviour in a specific time and place"* (Scrimshaw, 2001). According to this theory, behaviour is preceded by intent, attitudes, beliefs regarding outcomes, subjective norms; and normative beliefs.

This extends the Health Beliefs Model by incorporating an individual belief structure and acknowledging the influence of external environmental and social factors (Hubley, 1993). However, behavioural intent is the immediate predictor of behaviour in this theory, not environmental or social context. Failure to consider action, target, context, and time when considering intent will thus undermine the predictive value of the model (Scrimshaw, 2001). Empirical application of this theory suggests that past behaviour is the best predictor of intention and future behaviour (Sutton et al., 1999), this justifies the collection of a service use history and investigation of 'failure' to use health services during past illness episodes. It also suggests that 'demand' is not formed in isolation but within a dynamic social context.

3.3) ANDERSEN BEHAVIOUR MODEL

This model overlaps significantly with the Health Beliefs Model and the Theory of Reasoned Action. It incorporates environmental and social factors as well as the notion of a personal predisposition towards certain behavioural traits, attributing health seeking behaviour to (Andersen, 1995; Andersen and Newman, 1973);

a) Personal or population characteristics that might predispose individuals to seek or not seek care,

b) Enabling resources, and

c) Perceived need for care as determined by either/both subjective and objective heath status determinants.

3.4) OTHER PSYCHO-SOCIAL MODELS

The Organisational Constraints Model focuses on the incentives of both the patient and provider. The model proposes that market competition, the existence of cost-effective alternatives for care and personal factors, account for variations in service use (Pickin et al., 2002). This informs a dimension of the manner in which patients compile their preference sets.

The Diffusion of Innovations Model is concerned with the filtering of health information or learning through a community, over time, via certain channels. This model fails to explain the maintenance of behaviour change or the nature of behaviour itself, as it represents a manifestation of multiple communications (Scrimshaw, 2001). However, the model might

explain why some health service options are incorporated into a preference set and others not.

The PRECEDE model is prominent in the field of health promotion. Also known as the precede-proceed model the theory emphasises two central propositions; firstly, that health and health risks are caused by multiple factors and secondly, that this multiple-cause phenomenon necessitates a multidimensional communications effort to affect behavioural, environmental and/or social change (Green, 2003). This suggests that the determinants of demand are more complex than the Neoclassical model considers.

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4) ECONOMIC MODELS OF HEALTH-SEEKING BEHAVIOUR

Economic models that assist in operationalising, measuring and understanding health demand include utility maximisation models, human capital models and household production models. To this list, one should also add the contribution of New Institutional Economics (Leonard, 2000b).

4.1) UTILITY MAXIMISING MODELS

4.1.1) SIMPLE UTILITY MAXIMISING MODELS

In this model, consumers optimise their utility subject to some constraint (usually budgetary) (Chiang, 1984). It is assumed that consumers have homothetic preferences represented by a function homogenous of degree one. If we are interested in the demand for a good such as health, Hicksian separability[†] requires that we consider the alternative i.e. 'all other goods' (Varian, 1992).

This model explains that the demand for medical services depends on the price of those services, the price of other goods, total income and preferences or tastes. For health services to be normal goods in the economic sense, own-price elasticity should be negative, cross price elasticity should be positive and income elasticity should be positive (Akin et al., 1985a; Heller, 1982; Rosen, 1995).

4.1.2) ADAPTATIONS OF THE UTILITY MAXIMISING MODEL

4.1.2.a) A model that solves if the price of care is zero

The simple utility maximising model will not solve if health services are free. Acton and Becker therefore assume that services without user fees still incur a 'time cost'. Their model can therefore be solved even if $p=0$ (Acton, 1975).

This adaptation predicts that:

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† See pages 148-149 of Varian (Varian, H.R., 1992, Microeconomic Analysis. W.W. Norton & Company, London and New York.)

- As the price of medical services falls to zero, demand becomes more sensitive to time costs.

- The effect of wage income and non-wage income on the demand for health services differs. Increases in non-wage income have a consistently positive effect on demand. However, increases in wage income have an ambiguous, often negative effect.

This adaptation does not permit the incorporation of indicators of health 'need' or demographic variables that may influence demand. In addition, time price does not have a conceptual place if one is assumed only to be at work or at leisure. By this assumption, the time spent seeking health services is considered leisure time. Specifying the value of time is complex and often value laden (Akin et al., 1985a).

4.1.2.b) Differentiating between preventive versus curative care seeking behaviour

Heller differentiates between the consumption of preventive and curative health services. He argues that preventive services are only consumed if perceived to be significantly less expensive than curative services. Curative services are associated with a particular illness experience and an expectation that the service will alleviate the illness (or its symptoms) (Heller, 1982).

The cost of curative care is the expected price of a cure multiplied by the perceived probability of contracting the illness. The perceived probability of illness is incorporated into a holistic 'perceived state of health[§]' determined by:

a) The nature of the external environment, particularly the 'virulence and prevalence' of pathogenic agents.

b) The level of consumption of clothing, shelter, food, safe water and other products which can protect the individual against the external environment.

c) The consumption of preventive health services.

Age also inhibits one's ability to resist disease, with higher risk periods occurring during early and later years in less developed countries.

Conclusions from this model suggest that the consumption of preventive services and other commodities reduces the need for curative services. As such, the net price of preventive services and other commodities is the cash and time price of the goods respectively, less the effective savings in expenditure on curative services.

[§] Health status is not the only determinant of demand for health services in Heller's model. The demand for health services is likely to be dependent on both this perceived state of health and economic factors such as income and market prices. However, health

- The price elasticity of demand for preventive services and other commodities is negative.

- The price elasticity of demand for curative services is indeterminate, as is the cross-price elasticity of demand for curative services and preventive services, or curative services and other goods.

- Although the cross price elasticity of total demand for medical services and the demand for necessary medical services cannot be categorically signed, Heller argues that it is negative.

- The direction of the income effect on the total demand for medical services is indeterminate as an increase in income may have multiple effects. It may increase the demand for excess care (i.e. total demand for medical services less demand for 'necessary' medical services), it may reduce illness and it may increase the demand for preventive services and other goods.

- *"The effect of a change in the amount of time required to consume any good is equivalent to the effect of an increase in the cash price of that good multiplied by [the wage rate]...."* (pg 269 Heller, 1982)

4.1.2.c) The Lancaster Model of Demand

Lancaster provides an alternative to traditional utility theory that is potentially determinate and able to cope with the particular traits of health seeking behaviour. According to his theory, preference sets are comprised of ranked characteristics rather than ranked goods. Goods are only ranked indirectly as a function of the characteristics they possess. As such, a good itself does not give utility to the consumer rather, this is conveyed through the characteristics of the good. Lancaster also proposes that a good will have more than one characteristic, many characteristics may be shared by more than one good, and that combinations of goods may possess difference characteristics from each of those goods individually (Lancaster, 1966). The simple form of his model is formalised as follows:

$$\text{Maximize} \quad U(z)$$

$$\text{Subject to} \quad px \leq k$$

$$\text{With} \quad z = Bx$$

$$z, x \geq 0$$

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status and economic factors are to some extent interdependent and this can complicate the analysis of health service demand. (Heller, P. S., 1982. A model of the demand for medical and health services in Peninsular Malaysia. Soc Sci Med, 16(3), 267-284.)

In this specification, z denotes the characteristics of goods while x denotes the goods. The maximand U*(z)* thus denotes the utility derived from the consumption of the characteristics. Lancaster describes this utility as being *"defined on characteristics space (C-space)"*(pg136). Of course the characteristics in themselves cannot be purchased; instead the goods must be purchased to enjoy their characteristics. As such, $px \leq k$ is the budget constraint, which is described as being *"defined on goods space (G-space)"*(pg136). The term $z = Bx$ relates the characteristics (z) to the collection of goods available (x) through the consumption technology B, which is assumed to be fixed. The final term is a simple non-negativity constraint that may not always apply. In order to relate the budget constraint to the utility curve, both must be moved into the same 'space'. Whether they both move into the goods or characteristics space is determined by the structure of the matrix B (Lancaster, 1966)

Applying this structure to a hypothetical case of health seeking then, patients would rank provider characteristics such as drug availability, staff attitudes etc rather than ranking providers. This ranking would be required to have the properties of completeness, transitivity and reflexivity. Providers would then be ranked indirectly as a function of the characteristics with which they are associated. Lancaster's model can cope with r characteristics, m activities and n goods. As such, it can accommodate multiple providers, with multiple characteristics and health seeking for multiple illnesses. It does however require that the characteristics possessed by a good are the same, and in the same quantity for all consumers. The only element of personal choice is thus the choice and ranking of characteristics and not the allocation of characteristics to goods.

This model, as with the traditional model, is also a utility maximising model with no explicit accommodation of alternatives to strict maximisation. While it is conceivable that patients would have more information about the characteristics they would prefer from a provider than their preference for the provider itself, it is less conceivable that they may be able to assign those characteristics accurately to a provider and hence to consume the bundle of goods that would yield the utility maximising collection of characteristics. This model has not yet been applied empirically to health seeking.

4.1.2.d) The soft budget constraint

When an individual has access to extended family resources or holds a reasonable expectation that the State will facilitate health seeking – either through the reduction of prices or the augmenting of income through grants – a softer budget constraint may apply. Application of a soft budget constraint moves the discussion away from neoclassical economic theory, towards a game theoretic approach.

The soft budget constraint is commonly used to describe or explain the behaviour of firms in transition and socialist economies (Kornai, 1998). In these markets, subsidies, credits, price-supports and the unenforceability of bankruptcy all subject state firms to a soft budget constraint (Li and Liang, 1998). According to Kornai et al., the features of the soft budget constraint (SBC) are empirically observable and measurable. A characteristic set of motives, with predictable effects on actors' expectations and behaviour, work through a characteristic set of means (Kornai et al., 2003). The SBC uses a game theoretic framework rather than a neoclassical framework and as such, the emphasis is placed on the interaction between economic agents rather than the behaviour of a single economic actor (Lindbeck and Weibull, 1988).

By convention, SBC syndrome refers to the case where both parties in the relationship are organisations. However, this is more a function of the theory's application to date than any limitation of its structure. In fact, Kornai et al. readily explain that the theory evolved from microeconomic theory and particularly the budget constraint of the individual (Kornai et al., 2003). It is therefore not implausible that SBC syndrome can be used to explain the behaviour of individuals in health markets. The concept is particularly useful for explaining how (and why) economic agents may interact to facilitate any 'out of budget' health spending i.e. health spending that exceeds household resources, by a given individual.

In conventional SBC theory, budget constraints are usually softened through fiscal tools, the extension of excessive credit and other indirect methods such as tariff barriers to deter competition (Kornai et al., 2003). Individuals in health markets may face similar 'softening'. For example, to facilitate the purchase of health services above the budget line, individuals are often extended credit which they cannot (or will not) be expected to repay. Indirect methods of support take a different form in the individual case but are no less relevant – a patient's relatives may provide transport, childcare or free accommodation to facilitate the purchase of health services above the budget line. There is also an equivalent to the fiscal support incorporated in SBC syndrome; individuals may be exempt from their usual contributions to a communal or familial financial pot in order to facilitate health spending over their budget constraint i.e. in excess of household resources.

SBC syndrome is credited with three key behavioural effects. Firstly, management efforts to maximise profits or reduce costs are reduced. Secondly, organisations facing SBCs become less responsive to changes in prices (of inputs and outputs). Finally, organisations with SBCs may be able to obtain inputs to production without paying for those inputs. This may inflate demand for these inputs and lead to shortages (Kornai et al., 2003). We can translate these effects into the language of individual health seeking. In the first instance individuals may have

a reduced incentive to minimise the costs of health seeking and may, for example, seek fee for service private care over free public care. In the second, individuals may be less responsive to the price of health services. Finally, if we assume that health services are an input to health production (as the model below describes), the SBC may augment demand for health services and lead to shortages. A SBC on the demand for health may also thus crowd out other individual or household spending.

The formal theory of the soft budget constraint has not yet been applied to the problem of health seeking but it is evident that this theory can accommodate many of the potential characteristics of health seeking in a way that the neoclassical theory of the hard budget constraint cannot.

4.2) HOUSEHOLD PRODUCTION MODELS.

This model formalises the actions of an individual who uses two inputs (market goods and time) to maximise the utility of two commodities produced in the home. This replaces the notion of direct utility derived from health services with one of indirect utility i.e. one does not gain positive utility from the health service but from the effects of the service. This corresponds with the notion of derived demand explained above and, to some extent, also with the Lancaster Model. By introducing household relationships into the production (and consumption) function one can model the economic effects of household level demographic variables (Akin et al., 1985a) and begin to see impact of an individual's social environment on their health seeking behaviour. However, this does not allow the exploration of community level factors that may facilitate or prevent health service usage.

The household production model also introduces the concept of a shadow price such that the price of a commodity is determined by the cost of its inputs and the efficiency of the production function, rather than the market. If the market is not determining price, we can no longer assume that price will regulate supply and demand and maintain market equilibrium. This reinforces concern that health service consumption occurs out of equilibrium and demand does not equal use.

Again, this model is not without its own drawbacks. Firstly, the comparative statics do not differ from a simple utility maximising model with time costs, such as that developed by Acton (Acton, 1975). The model also fails to incorporate any concept of health need or health status (Akin et al., 1985a).

4.3)   HUMAN CAPITAL MODELS

The Grossman human capital model is a version of the household production model in which health is a 'commodity' produced using own time and market inputs. Health is viewed as a *"durable capital stock that depreciates with age and can be increased by investment"* (pg 348 Grossman, 2000).

The production of health stock (or health capital) is modelled by a household production function in which medical care is one input of many. Accordingly, the shadow price of health is determined by more than the cost of health services. This model shows that the shadow price of health rises with age as the rate of depreciation of the health stock increases; and falls with education as more educated persons are assumed to be more efficient producers of health. Furthermore, *"an increase in the shadow price may simultaneously reduce the quantity of health demanded and increase the quantity of health inputs demanded."* (pg 348 Grossman, 2000).

The individual simply chooses whether or not to invest in health or other commodities that yield positive utility, knowing that the discounted value of lifetime consumption cannot exceed the discounted value of lifetime income. Thus the model is consistent with economic theory, as the marginal cost of investments in health must equal the marginal rate of return to those investments (Akin et al., 1985a),

This model can be presented in two distinct forms i.e. as a pure investment model and as a pure consumption model. Analysis of the pure investment model suggests that positive relationships exist between:

- health capital and the wage rate,
- health capital and education,
- the demand for market-produced health services and age,
- the demand for market-produced health services and the wage rate,
- the demand for market-produced health services and education.

A negative relationship exists between health capital and age (Grossman, 2000).

Analysis of the consumption model is more ambiguous due to wealth effects. With the standard assumptions of the model it is not possible to state the direction of the relationship between age, the wage rate or education and either the demand for health services or the demand for market-produced health services (Akin et al., 1985a; Grossman, 2000).

Akin et al. identify two benefits of this model; the inclusion of some concept of health need, and the ability to sign demographic variables in the investment model. However,

'need' is not optimally modelled as health stocks are assumed to depreciate linearly with age and the effects of 'health shocks' are not considered (Akin et al., 1985a)

A further concern regards the use of education as a proxy for human capital, when economic theory provides little impetus to do so. Finally, the Grossman model assumes that individuals have complete certainty about their stock of health, how to increase (or decrease) that stock and at what price (Akin et al., 1985a). This hyper-rationality underpins Neoclassical notions of demand.

4.4) NEW INSTITUTIONAL ECONOMICS

While Neoclassical theory is characterised by perfect information, New Institutional Economic (NIE) theory identifies the following characteristics of the market for health services (Akin et al., 1985a; Leonard et al., 1999; Leonard, 2000b):

- Asymmetries of information i.e. information is not shared equally between patient and health service provider.
- Bounded rationality, characterised by less than perfect information about choices and decision sets which may not include all possible options.
- Transitivity may not hold as preferences vary according to the context and nature of the perceived health need.

The process of health seeking is characterised by uncertainty, infrequency and asset specificity.

In most health systems asymmetries of information between the doctor (or provider) and patient, manager and owner, or payer and payee can lead to conflicts of interest (Arrow, 1963). Constrained optimization models were an early attempt to resolve this conflict but they failed to explicitly analyse the role of information and ownership rights. This failure led to the development of the principal agent model (or agency theory) (Varian, 1992).

A principal-agent problem occurs when a less-informed principal (e.g. the patient) wants to induce a better-informed agent (e.g. the doctor), to take an action which is costly to that agent. The challenge is to construct an incentive scheme that will induce the agent to act in the best interests of the principal and not override the patient's goal, perpetuating the conflict (Hart, 1996; Varian, 1992). In the context of health, the utility function of the principal and agent are interdependent, information is asymmetrical and transaction costs exist.

The agency model has been usefully applied in the study of alternative payment mechanisms and the role of imperfect agency in mediating provider incentives (Ellis and McGuire, 1986). Transaction cost analysis has helped to devise complex incentive

compatibility constraints to reduce inefficiency and optimise remuneration. Despite this, the structure of payments in health systems remains relatively simple and is seldom devised after due consideration of both the patient and provider's utility functions (Mooney and Ryan, 1993).

In the absence of formal incentive compatibility constraints, Mooney questions the capacity of a patient to monitor a health service provider. Patients may not be aware of this responsibility and if they are, information asymmetry may prohibit monitoring. If the patient is able to monitor the provider, what is their recourse if they identify a failure to perform? If there are multiple providers the patient could always seek a second opinion but in resource poor settings this is seldom the case. Even if multiple providers do exist, second opinions are seldom encouraged in publicly funded health systems (Mooney, 1992).

Agency theory has been criticized for its simplicity as the principal may be any number of patients with divergent needs. Which one incentive scheme will ensure that the agent acts on behalf of them all? How patients or communities might organise themselves is the subject of some collective bargaining analysis but is seldom considered in context of demand for health services, which tends to have a very individual basis. The model needs to accommodate multiple relationships and allow for indirect forms of sanction by patients who might 'vote with their feet' if alternative providers exist.

4.4.1) OPTIMISING VERSUS SATISFICING

NIE rejects the hard core of the Neoclassical paradigm, which focuses exclusively on optimization. Instead, it is assumed that bounded rationality forces individuals to adopt satisficing strategies i.e. to achieve acceptable aspiration levels with less than full information rather than strictly maximising utility. Thus objective rationality is replaced by subjective rationality as individuals are assumed to:

1) Limit the alternatives in their feasible set
2) Value their information processing costs more highly than assumed by traditional rational choice theory, and
3) Settle for a process of satisficing.

Lane similarly proposes that the assumptions about rationality do not advance our understanding of utility maximising behaviour. Instead it is the assumptions about goals and how people characterise the choice situation, that can be useful in understanding and measuring utility maximisation (Lane, 1991).

While criticisms of rationality have validity, they are not insurmountable. Economic rational choice theory is useful provided that one is: aware of its shortcomings, does not use it as

a gospel of human behaviour, and remembers to supplement it with common sense, intuitive thinking about human nature and the context of the situation being analysed (Sen, 1982).

In the context of health seeking behaviour, bounded rationality has direct implications. One needs to consider which alternatives fall within the patient's feasible set. If information processing is considered costly, then one also needs to investigate the proliferation and nature of possible 'short-cuts' to decision making such as the use of reference groups or opinion leaders to guide service choice. This necessitates a community or social orientation to the analysis of health seeking behaviour in so far as reference groups and opinion leaders are drawn from the individual's community or society.

5) THE EMPIRICAL ANALYSIS OF DEMAND FOR HEALTH SERVICES

5.1) PSYCHO-SOCIAL VERSUS ECONOMIC MODELS OF DEMAND.

The psycho-social and economic models of demand detailed above provide alternate conceptual frameworks for empirical analysis. These conceptual frameworks help to identify the independent variables affecting the demand for, or use of, health services. Although the frameworks stem from different intellectual traditions, the substantive analysis derived from the two schools of thought does not differ significantly. The main difference between the two lies in the treatment of community-level variables, which tend to be considered in psycho-social models and not in economic ones. For clarity then, the next section focuses solely on the application of economic models of demand – with reference to community level variables where relevant.

5.2) EMPIRICAL APPLICATION OF THE ECONOMIC TENETS

Most economic studies of demand address the implications of introducing user fees for health services (Conteh and Hanson, 2003). These studies tend to take either a disease-specific approach (Dalal et al., 2002; Dyer et al., 2002; Ogborne and DeWit, 2001) or a facility-specific approach (Olsson and Hansagi, 2001; Olsson, 2001) to understanding health service utilisation and demand. Data sources are generally quantitative survey-based sources varying from longitudinal surveys (Chakraborty et al., 2002) to ad hoc cross-sectional surveys (Gaitatzis et al., 2002; Ngalula et al., 2002; Saxena et al., 2002; Welch et al., 1984). Wiseman et al. have also recently utilised diary data collection methods to inform treatment seeking behaviour and this method holds some promise for future studies of this kind (Wiseman et al., 2005; Wiseman et al., 2006).

As mentioned previously, there is a proliferation of empirical literature on demand from

wealthy countries settings. These studies cannot be omitted entirely due to their influence on our overall understanding of demand for health services however, where possible, the following section will focus solely on studies set in less developed countries.

5.2.1) APPLYING UTILITY MAXIMISING MODELS

Heller was among the first to investigate the use of health services in a developing country context and particularly (Heller, 1982);

- the sensitivity of service use to costs of care both in terms of time and financial resources (including income),
- the correlation between the consumption of medical care and rates of illness,
- the choice between traditional versus modern facilities,
- the choice between public versus private facilities, and
- whether patterns of use varied across ethnic groups.

These areas have since been investigated by other authors including Akin et al. (1985a), Sauerborn et al. (1994), Gertler and van der Gaag (1990), Mwabu (1986) and van der Ven and van der Gaag (1982).

Heller found that the demand[**] for medical services was highly inelastic to changes in income, price and the time taken to seek services. He also found that demand was responsive to changes in the relative prices of different medical services and to changes in the composition of the time spent accessing care (i.e. travelling time versus waiting time etc). This implies that different providers are substitutes rather than compliments. He also identified greater shifts away from traditional medicine amongst higher income earners (Heller, 1982).

Sauerborn et al. concluded that the price elasticity of demand[††] varies across age groups and income groups and is highest for infants and the lowest income quartile. Elasticity may be greater in the poorest income quintile because they only seek care when illness becomes more severe (and thus the use of health services less discretionary) (Sauerborn et al., 1995). This emphasises the importance of a 'health need' measure in empirical analysis.

Mwabu focussed on a single illness episode and found that patients utilised multiple providers during the episode (Mwabu et al., 1993) Many studies have investigated the use of particular service facilities including emergency departments (such as Bazargan et al., 1998) and community pharmacies (for example Sepehri et al., 2003). Others have analysed the use of services for particular health needs such as postnatal care (Chakraborty et al., 2002), paediatric

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[**] Although Heller refers to his dependant variable as 'demand', he is in fact measuring use as defined in this document.
[††] Again, while the authors refers to their dependant variable as 'demand', they are in fact measuring use

care for children exposed to family violence (Onyskiw, 2002), care for patients in the terminal stages of AIDS (Ngalula et al., 2002) and care for those afflicted with epilepsy (Gaitatzis et al., 2002). However, these studies failed to explore the interplay between illness type and health service use. Illness type (rather than illness severity) may determine elasticity of demand for various health services. These findings also tend to present the barriers to access as a list of mutually exclusive factors rather than an interdependent whole, where the relative importance of each barrier varies between individuals, communities and illness-experiences (Brach and Fraser, 2000; Muller, 1986; Ojanuga and Gilbert, 1992).

Sahn used a nested multinomial logit model to analyse the effect of demographic variables and duration of illness on the use of health services (Sahn, 2000), while Saxena et al. examined socio-economic and ethnic differences in service use by children and young people in England (Saxena et al., 2002). Their respective findings identify differences in usage but do not explain why those differences might exist. They make little allowance for health seeking as a social phenomenon, influenced by cultural norms and established familial or community habits (Pearce and Smith, 2003; Wallerstein, 2002).

5.2.2) APPLYING HOUSEHOLD PRODUCTION AND HUMAN CAPITAL MODELS

Few studies have applied the household production function, possibly due to the complexity of translating the theory into a workable statistical model. However, Ellis et al. analyse household-level demand determinants in their study of demand for inpatient and outpatient care in Cairo. Unsurprisingly, they conclude that wealthier consumers prefer to purchase higher cost and quality services; and that age, gender, education and coverage by health insurance all impact on demand for services. They are unable to estimate price responsiveness because of the interrelation between price and quality in Cairo and the absence of a suitable variable to control for quality in their multi-stage, discreet choice model (Ellis et al., 1994).

Yen et al. claim to be *"motivated by a household production model"* in their study of the demand for traditional medicine in Taiwan. They conclude that the elasticity of demand for traditional services is more sensitive to changes in the time and money price than to changes in income. They also conclude that Western medicine is a *'gross substitute'* for traditional Chinese medicine and that insurance, lifestyle factors and demographic factors impact on the demand for health services (Yen et al., 2001).

Gerdtham and Johannesson use a Swedish micro-dataset to estimate an ordered probit model of demand for health in which health capital is captured with a categorical measure of overall health status. They conclude that the demand for health increases with income and

education and decreases with age, obesity, urbanisation and marital status (i.e. single people have a higher demand for health services) (Gerdtham and Johannesson, 1997).

5.2.3)   APPLYING THE TENETS OF NEW INSTITUTIONAL ECONOMICS

Using elements of New Institutional Economics, Zweifel and Manning explore moral hazard and consumer incentives in health care. They utilise empirical evidence from natural experiments, observational comparisons of individuals and the Health Insurance Experiment. Their study concludes that the demand for medical care is responsive to changes in the net-price (i.e. is price-elastic) and that there may be a moral hazard effect as consumer choice is biased in favour of newer, more expensive technology (Zweifel and Manning, 2000). These findings have not been tested in impoverished settings, where out of pocket health service payments compete directly with payments for food and fuel.

Leonard uses the concepts of physician agency and information asymmetry to explore why both states and markets are failing in parts of Africa. His analysis reveals that NGO's have the institutional capacity to deliver high quality services while private GPs, and government organisations that charge fees, are unlikely to succeed. He contends that markets characterised by asymmetric information require more than a price mechanism to function optimally. He does not believe that such necessary additional mechanisms exist in many African states as practitioners engage in a 'race for the bottom', spending money on observables such as drugs, x-rays and other tangible diagnostic tests. The presence of asymmetric information makes patients risk averse and these private doctors lack the reputation to overcome patient concerns. It is this 'reputation' which NGOs have succeeded in generating over years of service in African countries and which inevitably facilitates their success (Leonard, 2003).

Alternatively, traditional healers are not concerned with reputation as they apply outcome contingent contracts (i.e. they only expect payment if the treatment is successful). Outcome contingent contracts generally raise the question of enforcement, i.e. how does the healer ensure that patients will pay and not claim untruthfully that the treatment was unsuccessful? However, traditional healers have superstition, a unique tool of enforcement, on their side. The healer knows that if a patient lies they may avoid payment for a time but will eventually get sick again. The patient will believe this next sickness is a curse brought upon them because of their non-payment. The result is that sooner or later, patients pay up and the system functions effectively (Leonard, 2003).

Leonard's findings reinforce concern that health markets operate out of equilibrium and that the price mechanism does not regulate supply and demand. Instead, public supply appears to be

operated on a command basis with strong information asymmetries between market and state undermining optimal delivery. At the level of the consumer, information asymmetry shapes the preference set of the user and impacts 'optimal' service selection. These asymmetries are not incorporated into the neoclassical models above and, as Leonard did not set out to understand or measure the demand for health services, their impact remains to be explored. These findings also emphasise the fact that service use cannot be reliably and consistently equated with demand.

5.3)   CHALLENGES TO THE ESTIMATION OF DEMAND FOR HEALTH SERVICES.

> *"Perhaps the oddest aspect of the work is the extraordinary effort expended by Acton and Miners, on the one hand, and the household production theorists, on the other, to develop theoretical models that are clearly distinguishable from one another in several important respects, but then to estimate the models as if they were virtually identical" (Chapter 4, pg 128 Akin et al., 1985a)*

There appears to be a disjuncture between the theoretical foundations and the empirical work conducted on the demand for health services. Most empirical papers either ignore the theory or outline a set of theoretical tenants before specifying an entirely separate (and often barely related) statistical model. Economic theory has been criticized for offering little guidance on specifying statistical models. What the theory does offer however, is a number of *"rigid points"* including the following (Akin et al., 1985a):

- Quantity must be an endogenous variable in Marshallian demand equations.
- Price must be an exogenous variable in Marshallian demand equations.
- In the household production model, medical services are one input in the production of health and being ill is not a prerequisite for the production of health.

Notably, the theory does not specify:

- Which medical goods should be grouped together in a demand equation.
- Whether inpatient and outpatient visits should appear together in a system of demand equations.

This latitude allowed by the theory and, in some cases, simple violation of the "rigid points" has resulted in misspecification of price and quantity by Grossman, failure to treat time as endogenous by household production theorists, the use of inappropriate samples and the inappropriate inclusion of both inpatient and outpatient visits in a single model (Akin et al.,

1985a).

As a general point, demand theory is challenging to apply in an empirical context and even if the model is tractable mathematically, collecting appropriate data may not be possible. However, aside from this general concern, there are a number of specific challenges faced by researchers trying to apply demand models including the incorporation of health needs, allowing for the potential heterogeneity of health services, the impact of demographic variables and the correct methods for quantifying input variables without introducing bias into the models. Each of these challenges is briefly discussed below.

5.3.1) HOMOGENOUS VERSUS HETEROGENEOUS HEALTH SERVICES

Original theoretical demand models tend to treat health services as homogenous (Acton, 1975; Akin et al., 1985a; Akin et al., 1985b; Becker, 1964; Becker and Maiman, 1975). Goldman and Grossman incorporate service heterogeneity into their model of paediatric care visits by treating the quantity and quality of visits as endogenous variables (Goldman and Grossman, 1978; Goldman and Heuveline, 2000). Alternately, Heller incorporates service heterogeneity by discriminating between necessary and discretionary medical care (Heller, 1982).

Empirical applications of these models have sought to include indicators of variable service quality (Akin et al., 1985a; Leonard, 2000a). However, few models allow for a choice between services of equivalent quality that may differ on some other basis such as perceptions of propriety for different treatments. For example, traditional healers offer a very different service to the local general practitioner but both might be considered high-quality care options when suffering from a headache in rural South Africa.

The theoretical structure of a demand model, and its subsequent empirical application, should incorporate this and other forms of heterogeneity in health services.

5.3.2) THE IMPACT OF DEMOGRAPHIC VARIABLES

It is understood that health needs vary at different ages but theorists seem unable to fully account for this staggered variation in demand. Grossman assumes this problem away by treating health needs as a continuous function of age (Akin et al., 1985a; Grossman, 2000). While it is complex to incorporate staggered, age-related needs into a theoretical model, new statistical packages have made it relatively easy to incorporate this phenomenon into empirical applications of the theory. The use of age-splines and age-gender interactive dummy variables could greatly enhance our understanding of the relationship between age and the demand for

health services.

The complex impact of education and income on demand for health services is more difficult to unpack. Grossman finds education to be positively related to demand for medical services in his investment model, while in his consumption model the relationship between education and the demand for health services is unpredictable (Akin et al., 1985a; Grossman, 2000). Education is also correlated with income, introducing multicollinearity into statistical applications of theoretical models. Even if we could separate out the effects of these different variables (and labour economics does give us some clues as to how this might be done), we do not yet fully understand the income or price elasticity of demand for health services. Heller concluded that the demand for care was price inelastic (Heller, 1982) while Gertler concluded that demand was price elastic at lower levels of income (Gertler and Van der Gaag, 1990). Sauerborn et al. similarly found demand to be inelastic overall but highest for infants and children and the lowest income quartile (Sauerborn et al., 1994).

A number of empirical studies deal with the socio-economic determinants of demand, addressing the equity of access to health services and linking health and poverty or health and wealth. However, few studies have sufficient variation in their income data to allow extensive analysis of socio-economic determinants of demand. Even fewer studies speak to the manner in which demand reflects the equity or inequity of health service supply as service use is considered analogous to demand and markets are therefore assumed to be in equilibrium. This interaction needs to be explored with the view that preference sets shape demand and supply shapes use in the market for health. If use determines health outcomes (to any significant degree) and population level measures of these health outcomes determines supply, then inequality can become entrenched in a system that is not responding to demand. Factors that shape preference sets, such as individual perceptions of health need, may differ systematically across individuals thus 'biasing' the shape of the demand function and the point at which supply and demand meet. As such, failing to address divergence in supply and demand (rather than supply and use) potentially overlooks systematic inequalities in a health system not regulated by the price mechanism and fraught with problems of asymmetric information (Arrow, 1963).

5.3.3) QUANTIFYING INPUT VARIABLES

Measuring the demand for health services necessitates specifying and quantifying variables, the measurement of which may be subjective and dependent on the research context. These variables primarily include:

- Prices of, and expenditure on, healthcare
- Time costs

- Quality of health services
- Definition of socio-economic status
- Classifications of health problems

Each of theses will now be discussed briefly, drawing on the main conclusions and recommendations from the literature.

5.3.3.a) Prices of, and expenditure on, health care

The most correct variable to use for the price of health services is the *ex ante* price that consumers expect to pay. When prices differ substantially between service providers or service providers vary the asking price by the socio-economic status of the patient, there may be a significant difference between the price the patient expects to pay and that which they end up paying and it is the expectation that shapes behaviour. Divergence between *ex ante* and *ex post* prices may also occur in cases where the patient has little or no experience of a particular provider type and as such, has little information on which to base a pricing expectation (Bitran, unpublished draft).

That said, collecting *ex ante* pricing expectations can be difficult when expectation is rationalised by the actual payment amount after a treatment seeking event. A common alternative to the collection of *ex ante* pricing expectations is the collection of total expenditure on health as reported by the patient (Shepard and Cooper, 1987). However, as the number of visits (a common proxy for the quantity of health care consumed) is considered endogenous to a demand model, total expenditure measures may introduce multicollinearity into the demand equation (Akin et al., 1985a). Actual expenditure may also suffer from selectivity bias as the distribution of prices faced by those who actually used a service will differ from those faced by the general population (Bitran, unpublished draft).

Collecting prices from providers rather than patients is also potentially misleading if prices differ on the basis of patient characteristics (including whether or not they have health insurance and what form that health insurance may take), the provider may simply not be able to give an accurate measure of price.

Apart from the challenge of correctly measuring price, other methodological considerations arise including (Bitran, unpublished draft):
- The fact that prices may not vary significantly in the developing country context, complicating econometric analysis of the demand-response to chances in price. .
- The price level may be so low compared to consumer's overall income and wealth that any variations which do occur may not be material to the consumer.

Similar problems arise with the measurement of quality, and whether to collect data from providers or from patient evaluations. While the patient's evaluation of quality may be endogenous to a demand function, the provider's estimation of quality - while exogenous - may not reflect the dimensions of quality that matter to patients. Furthermore, the price and quality of the option not chosen is rarely collected in household surveys.

5.3.3.b) Travel and time costs

Economic theory necessitates accounting for direct and indirect costs of health seeking (McNamara, 1999a, 1999b; Sauerborn et al., 1994). However, care should be taken when valuing the opportunity cost of time, particularly in agrarian societies, communities with low employment rates and those were few women work in the formal marketplace. The cost of time spent travelling to health services can be quantified using a number of methods. The two most common methods are as follows:

1. The distance covered to reach services is multiplied by the cost of transport per kilometre (Akin et al., 1985a; Cowley and Appleton, 2000; de Bartolome and Vosti, 1995; Leonard, 2000b).

2. The time to travel to the facility is multiplied by an appropriate opportunity cost (Asenso-Okyere and Dzator, 1997; Dor et al., 1987; Gertler and Van der Gaag, 1990; Hotchkiss, 1998; McNamara, 1999a, 1999b; Sauerborn et al., 1994).

The key problem with the first method is that it takes no account of the quality, permanence or existence of the roads to reach the health service provider. The same can be said for the quality, availability or existence of public transport. The first method also fails to satisfy the economic definition of cost. By accounting only for direct costs, indirect opportunity costs such as the opportunity cost of the time spent travelling, are ignored (Bitran, unpublished draft). Furthermore, direct costs may in fact be zero at the point on use, thus complicating analysis of the impact of prices.

Conversely, the second method fails to take into account the direct costs of travel. In addition, a significant challenge is posed by the accurate estimation of opportunity costs. For example, high unemployment rates and difficulties in valuing work done in the home complicate the valuation of time (Bitran, unpublished draft). One possible solution is to leave time in minutes or hours as either a categorical or continuous variable, rather than converting the time to a cost value (Abraham et al., 1992; Heller, 1982). However, this does not address the fact that the value of this time will vary across individuals in systematic ways.

Finally, it is important to note that travel time is not the only time spent seeking health services. Waiting time and time spent in consultation also needs to be accounted for (Schneider

and Palmer, 2002). Measuring the opportunity cost of time spent waiting, in consultation and travelling is subject to the same challenges as those mentioned above.

5.3.3.c) Quality of health services

There is little consensus regarding the appropriate way to measure service quality when estimating demand empirically. Some authors elect to ignore the issue of quality entirely (Dor et al., 1987; Grootendorst, 1995) or assume quality is uniform across all services (Sauerborn et al., 1994). Other authors use one or more of the following indicators; expenditure on care per person covered (Akin et al., 1995; Vogel, 1994), drug availability (Akin et al., 1995; Asenso-Okyere and Dzator, 1997; Hotchkiss, 1998; Mariko, 2003; Mwabu, 1986; Schwartz, 1993; Vogel, 1994), physical condition of facilities (Akin et al., 1995; Vogel, 1994), community dummy variables to capture differences between communities (Bolduc et al., 1996), quality as a function of the initial state of health or household characteristics (Ching, 1995; Gertler and Van der Gaag, 1990), facilities perceived most suitable for particular illnesses (Ellis et al., 1994; Leonard, 2000a; Mariam, 2003), whether consultation took place with a doctor (Heller, 1982; Hotchkiss, 1998; Leonard et al., 2002; Schwartz, 1993), level of staff training (Heller, 1982; Hotchkiss, 1998; Leonard et al., 2002; Schwartz, 1993), crowding (Hotchkiss, 1998; Propper, 2000), facility size (Hotchkiss, 1998; McNamara, 1999a, 1999b), range of services (Hotchkiss, 1998; Propper, 2000), process quality (Leonard et al., 2002), attentiveness and politeness of clinician (Leonard et al., 2002), appropriateness of the prescription (Leonard et al., 2002), drugs prescribed per patient (Leonard et al., 2002), laboratory testing (Mariko, 2003), patient response to a quality rating scale (Mariko, 2003; Sahn, 2000), number of beds (McNamara, 1999a, 1999b), opening hours (Schwartz, 1993).

As with prices, Bitran (unpublished draft) proposes that perceived rather than actual quality affects the consumption decision. However, Akin et al(1985a) argue that perceived quality is endogenous to the consumer and is thus unsuitable for use in the econometric specification of demand. Gertler and van der Gaag therefore developed a quasi-production function that models quality as a function of the individual's characteristics, severity of illness and education on the one hand; and the provider's geographic location on the other hand. This production function could then be used as a constraint in a constrained optimisation exercise (Gertler and Van der Gaag, 1990).

5.3.3.d) Definition of socio-economic status

Socio-economic status can be difficult to measure in countries (or contexts) where wealth is not held in monetary form and income is neither regular nor enumerated in any formal sense. For example, many rural communities store wealth in livestock and have significant seasonal variations in income. As a result, some authors have employed wealth indicators which take

into account the type of roofing on a person's home, the number of rooms in their house, the type of sanitation and electrical or white goods contained in the home (King, 2002). Of course this has raised a second set of challenges regarding comparability across settings and even the appropriate asset indicators to include in a single setting.

5.3.3.e) Classifications of health problems

Understanding how a person's illness or disease impacts on their selection of health service provider is an important part of understanding the demand for health services. Unfortunately, this raises the question of how you define that illness or disease. More obvious options might include: defining the disease according to the health care provider's diagnosis, defining the disease according to the patient's self-diagnosis or collecting only the set of symptoms from the patient without trying to identify a particular disease or diagnosis (i.e. defining the disease or diagnosis post-hoc) (Mwabu, 1986).

With the former options one must consider that people will only know their diagnosis if they have sought formal care and one may have difficulty differentiating the diagnosis of a traditional healer from that of a Western style doctor. Self-diagnosis may be subjective and culturally dependent. As such, collecting a set of symptoms may be the most objective means of classifying health problems.

5.4) QUALITATIVE EMPIRICAL EVIDENCE FROM THE DEVELOPING COUNTRY CONTEXT

There are a number of areas where the qualitative sociological or anthropological literature significantly expands the domain of the empirical economic literature on demand presented earlier in this chapter. The complexity and dynamism of care seeking behaviour, quality of care issues and social contextual factors constitute particular cross-contextual themes that generate additional insights into care seeking behaviour. After describing the qualitative insights regarding the medical domain in South Africa, this section briefly summarises the contribution of these three themes to our understanding of health seeking behaviour.

Descriptions of the medical domain and cultural constructions of illness are shown by the qualitative empirical literature to impact materially on care seeking behaviour (see for example Jaramillo, 1998; and Russell, 2005). In South Africa, the medical domain is highly pluralistic with treatment options ranging from western medicine offered either privately or through the public system, to traditional medicine and spiritual healers as described in Chapter 1. Importantly, South Africa's health system has undergone considerable complex restructuring since 1994 aimed at decentralising the delivery of services and removing systemic inequities (Kane-Berman, 2000). Gibson describes how that process of transformation frequently failed to

coincide with the day to day reality of health service use. Confusion over the new structure and the correct entry-point for treatment, and a growing disillusionment with the quality of curative services at the public primary care level were key themes emerging from Gibson's investigation (Gibson, 2001). These perceptions may go some way towards explaining the use of the private health sector by approximately 30% of people without medical insurance in South Africa (Schneider and Palmer, 2002). Aside from private sector use, the use of traditional and spiritual healers is also widespread in South Africa although Abrahams et al. conclude that, at least for pregnant women in Cape Town, these services are seen as complementary to biomedical services rather than substitutes and that self-medication plays a similar supplementary role (Abrahams et al., 2002).

Although there is considerable overlap in the empirical literature, quantitative economic models are arguably less successful at capturing the complexity of treatment seeking behaviour than comparable qualitative studies on the subject. Although treatment seeking for TB is summarised in considerable detail in the next section it is worth noting here how that literature has contributed to our understanding of the complex nature of care seeking generally. In the Gambia, gender differences in provider choice, a lack of knowledge about TB, TB stigma and high transport costs all contributed to complex treatment seeking patterns (Eastwood and Hill, 2004). Similarly in Cali, Colombia, TB diagnostic delay was attributed to stigma, cultural explanations for TB symptoms and poor interpersonal quality in the health system (Jaramillo, 1998). A Kenyan study found that TB treatment in the formal sector was seen to be agonising and lengthy, especially when compared with traditional alternatives. In this setting as in others, prolonged self treatment and consulting traditional healers increased the complexity of treatment seeking and significantly delayed diagnosis (Liefooghe et al., 1997). Thus information shortages, gender, stigma, cultural explanations for disease manifestation, the communal context of care seeking and the poor quality of patient/provider interactions all act as determinants of care seeking behaviour frequently omitted by, or poorly integrated into, the more quantitative empirical economic literature on demand.

In the same way that the empirical economic literature on demand may be accused of over-simplifying treatment seeking behaviour, that literature might also be accused of over-emphasising the technical domains of service quality relative to interpersonal aspects of quality. Two studies from Tanzania highlight some of the mechanisms through which the patient/provider relationship can materially impact treatment seeking behaviour. Most recently, Tibandebage and Mackintosh demonstrated how the breakdown of patient/provider relationships affected service access, highlighting systemic patterns of exclusion and abuse (Tibandebage and Mackintosh, 2005). In an earlier study in Tanzania, Gilson et al illustrated

how patient satisfaction influenced the willingness to adhere to treatment and the effectiveness of care (Gilson et al., 1994). There is a growing qualitative literature investigating the complex facets of interpersonal quality and particularly dimensions of trust between patient and provider. Gilson describes effective health care as a relational activity requiring relationships of trust and 'mutual understanding' between patient and provider (Gilson, 2003). Using data from primary care providers in South Africa, Gilson et al explain how patient/provider trust is rooted in both interpersonal and institutional trust. They conclude that respectful treatment is the central demand of primary care users (Gilson et al., 2005). Thiede similarly describes how the patient/provider relationship is based on the exchange of information. He observes that culturally diverse societies such as South Africa's are often low-trust environments thus undermining that exchange (Thiede, 2005).

Of course themes of trust and interpersonal notions of quality portray health seeking as a social phenomenon necessitating human interaction and communication. This review has already mentioned the general failing of economic demand studies to contextualise health seeking within a social or community context. While this is a weakness of the empirical economic literature, it a particular strength of the sociological/anthropological literature on health seeking. The qualitative literature provides the lens of social relations including the constructs of social support, social networks, social evaluation, social capital, social cohesion, social inclusion and exclusion and, within the health domain, therapy management groups to integrate the behaviour of the individual into their wider social environment and understand the reciprocal impact that the individual and their society have on one another (see for example Gartrell, 1987; House, 1987; Janzen, 1987; and Sen, 1999). In the study of TB these facets of social relations have been shown to materially affect adherence to treatment and even the timely uptake and diagnosis of TB. Common social-enablers include aspects of financial, material and emotional support at the patient, household, community and health system level with significant gender-based differences in support in many settings (see for example Johansson and Winkvist, 2002; Sengupta et al., 2006; Sumartojo, 1993; and Zachariah et al., 2006).

However, social relations commonly have a negative dimension in the context of TB, as with many other diseases. Stigma, or the fear of losing social connectedness with all its associated value can delay treatment seeking, reduce adherence and adversely affect treatment outcomes. TB affected patients fear censure from relatives and neighbours and even decreased chances of finding a marital partner (Karyadi et al., 2002). In their review of the literature on TB stigma, Macq et al differentiate between enacted stigma and perceived or internalised stigma and conclude that cultural beliefs about transmission are the primary determinant of TB stigma. They also note that TB stigma is frequently associated with other 'stigmatised' patient

characteristics such as gender or poverty (Macq et al., 2006). Importantly, a recent study from Northern Thailand also reported that AIDS stigma might increase TB transmission risk because of resultant delays in TB treatment seeking and/or treatment non-adherence (Ngamvithayapong-Yanai et al., 2005). This has particular relevance to the proposed study.

5.5) WHAT DO WE KNOW ABOUT CARE SEEKING FOR TB?

Understanding care seeking for TB can inform care seeking for other chronic and acute illness. However, the role of demand for health services is particularly pertinent in the case of TB as cost-effective treatment is available in most countries but recovery from the disease relies on the prompt and compliant accessing of that treatment. Applied studies in both developing and developed countries have pointed to significant variations in the timing and nature of health seeking for tuberculosis. As mentioned earlier, a disease of this nature, that predominantly affects the poor, may also go some way towards aiding our understanding of those determinants that affect the relative inequality of health outcomes and informing Wagstaff's identified future research requirements. Of course there are limits on the extent to which findings regarding TB can be generalised to other cases and this is discussed in the next chapter, which outlines the methodology of the proposed study. What follows here is simply a review of the pertinent literature on the disease, outlining the state of the art on care seeking for TB and identifying the gaps in existing knowledge on the topic.

5.5.1) DEMOGRAPHIC DIFFERENCES IN HEALTH SEEKING BEHAVIOUR

Approximately two thirds of all identified persons with active TB are male. It remains unclear whether this is due to a higher prevalence of the disease amongst men or lower notification of the disease amongst women (Ngamvithayapong et al., 2001; Thorson et al., 2000). Generally, women tend to seek more healthcare from lower qualified providers and to spend less money per visit. In the case of TB this can result in delayed diagnosis for women, adversely affecting their chances of survival (Thorson et al., 2000).

A qualitative study conducted among TB patients from both urban and rural areas of Vietnam, identified distinct gender differences in the factors contributing to delays in; a) treatment seeking, and b) the pattern of treatment seeking behaviour. Generally, patients attributed delays to "fear of social isolation, economic constraints and inadequate staff attitudes". However, the fear of social isolation and concern about staff attitudes was more marked amongst women than men, while men were more affected by economic constraints. Men tended to delay treatment seeking longer than women and to go to public providers (the most effective provider in this context) when they did seek care. Women would start seeking care earlier but would practise self medication or visit private providers before going to public

providers (Johansson et al., 2000). This appears to reinforce the findings of another study, that women are more likely to choose providers based on the proximity to home (Thorson et al., 2000).

An urban study in Zambia also identified longer diagnostic delays for women. These delays were attributed to the fact that women tended to have lower levels of education, heavier work loads and less mobility than their male counterparts. Women in the Zambian context also had less independence and fewer financial resources. It is hypothesised that the high rates of TB-HIV co-infection have stigmatised care seeking for TB in the Zambian context and the authors recommended combining TB services with existing paediatric services already attended by women, both to cut the cost and to increase the anonymity of care seeking (Needham et al., 2001).

5.5.2)   SEEKING PRIVACY AS WELL AS CARE

A study in Ho Chi Minh City, Vietnam, where TB care is "excellent" and free at the point of delivery in the public sector, identified another interesting phenomenon. Some patients prefer to pay for treatment in the private sector where there are no administrative procedures to test eligibility, no tracing of treatment defaulters, no official registration of TB and no DOT. The flexibility in diagnostic procedures and drug regimens were also attractive to patients. These characteristics protect patient integrity but also threaten system attempts at TB surveillance and disease control. These findings led investigators to conclude that; *"the use of rigid approaches to TB control that do not encompass a strong component of responsiveness towards the needs of individuals may be counterproductive for public health"* (page 935 Lonnroth et al., 2001).

Studies in Pakistan (Khan et al., 2000) and Manila in the Phillipines (Auer et al., 2000), identified the same behaviour; despite effective (and free) public sector provision of TB services, patients opted to visit private providers first. In both contexts, private providers were less adept than their public counterparts at correctly diagnosing the disease during the first consultation – resulting in significant delays in diagnosis. Private providers also tended to give patients less information about TB, leaving patients with their own pre-conceived notions that TB is incurable and that completion (or non-completion) of the treatment regime is immaterial to the outcome.

5.5.3)   MULTIPLE CARE SEEKING

Recent studies in rural South Africa (Edginton et al., 2002) and Thailand (Ngamvithayapong et al., 2001) identified community perceptions of two types of TB – a

'Western TB' that can only be cured by western medicines, and a 'Traditional TB' which can only be cured by traditional healers. Ignorance of the symptoms of TB and perceptions of TB as retribution for contravening cultural rules has led patients to seek care from multiple providers, often beginning with traditional healers or self-medication (Dalal et al., 2002; Edginton et al., 2002; Harries et al., 2003; Ngamvithayapong et al., 2001).

The Zambian study mentioned previously identified patients who made six visits and more before their TB was diagnosed. These patients tended to be visiting private providers (and fee-for service traditional healers) who were less aware of the symptoms of TB and failed to correctly diagnose the problem. Besides being ineffective, visiting private providers eroded patients' income further with each additional visit (Needham et al., 2001).

Once diagnosed, adherence is often further affected by perceptions that TB is incurable (Khan et al., 2000), that patients must abstain from sex during treatment, by fear of stigma, difficulty accessing services and even the negative attitudes of health workers (Edginton et al., 2002).

5.5.4) WHERE ARE THE GAPS IN OUR KNOWLEDGE?

Harries et al. call for research that considers whether delays in treatment seeking vary between social groups and are in any way determined by factors such as gender and poverty. They suggest that priority be given to the groups with the longest delays and greatest difficulty accessing care. As such, the proposed study targeted the poorest, most marginalised groups in the setting.

Access to income and education, social status and legal rights all impact on women's ability to access health care in the case of TB and other illnesses, particularly where there is some risk of social exclusion as a result of infection (Pope and Chaisson, 2003). The impact of these variables needs to be explored in the urban, South African context. This investigation should inform not only TB care strategies, but care strategies for other chronic illness in particular and acute illness in general.

No South African study has yet explored the proportion and motivation of TB affected people seeking care in the private sector. Although the private sector is well regulated and highly sophisticated in South Africa, TB may not be a disease with which private practitioners are immediately familiar and this too needs to be explored. Many studies have identified proximity to providers as a key constraint to women seeking care – does this constraint hold in urban Cape Town where a TB clinic is within 5km from home or do other factors prevent

women (and men) from seeking care?

6.1)   HEALTH EQUITY VERSUS EQUALITY

The difference between health inequity and equality is the subject of some debate. Asada and Hedemann define inequity as inequality caused by an unfair social system. Alternately, the WHO defines inequity as an inequality that is *"susceptible to human intervention"* (Asada and Hedemann, 2002). The International Society for Equity in Health combine these two concepts somewhat, defining health equity as; *"the absence of potentially remediable, systematic differences in one or more aspects of health across socially, economically, demographically, or geographically defined population groups or subgroups"* (Macinko and Starfield, 2002).

Sen argues that health equity is interwoven with a broader notion of social justice. According to this hypothesis, the following aspects of health equity should be considered:

- One needs to distinguish between health achievement and the <u>capacity</u> to achieve health, a capacity which may or may not be exercised.

- Health equity concerns not only health and health service delivery but also the ways in which resource allocation and social arrangements tie health into other contexts.

- 'Levels' of health equity (or inequity) are dependent on both super-structural allocation in society, e.g. what resources are allocated to health rather than education etc; and sub-structural allocation of resources e.g. what resources are allocated to primary care as opposed to tertiary care. ?" (Sen, 2002)

The WHO-UNICEF Alma-Ata Conference is frequently credited as the founding point of the 'health for all' movement. This conference shifted the global health focus onto primary health care, believing that this would improve access to healthcare and positively impact health equity. Despite this effort, the disparity between rich and poor (both within and between countries) is growing such that *"...in no known country study produced to date does the poorest 20% of the population receive as much as 25% of the financial benefit of government expenditure."* (pg 720 Wagstaff, 2001).

6.2)   SOCIO-ECONOMIC STATUS AND EQUALITY

Wagstaff describes a dichotomous relationship between health and poverty. Poorer communities are sicker and sicker communities are poorer, as poverty exacerbates illness and illness perpetuates poverty. He identifies four key findings from the empirical literature on socioeconomic inequalities in health:

1. Inequalities generally disadvantage the poor who die earlier and have higher morbidity.

2. Inequalities tend to be more pronounced for objective rather than subjective indicators of ill-health.

3. The extent of health inequality varies greatly across countries and this variation changes with the measurement indicators used.

4. Socio-economic inequalities in health appear to be growing in both the developing and industrialised worlds.

Figure 2.1 illustrates Wagstaff's concept of the routes through which unequal health outcomes are determined.

Figure 2.1: Conceptual framework linking policies to health sector outcomes
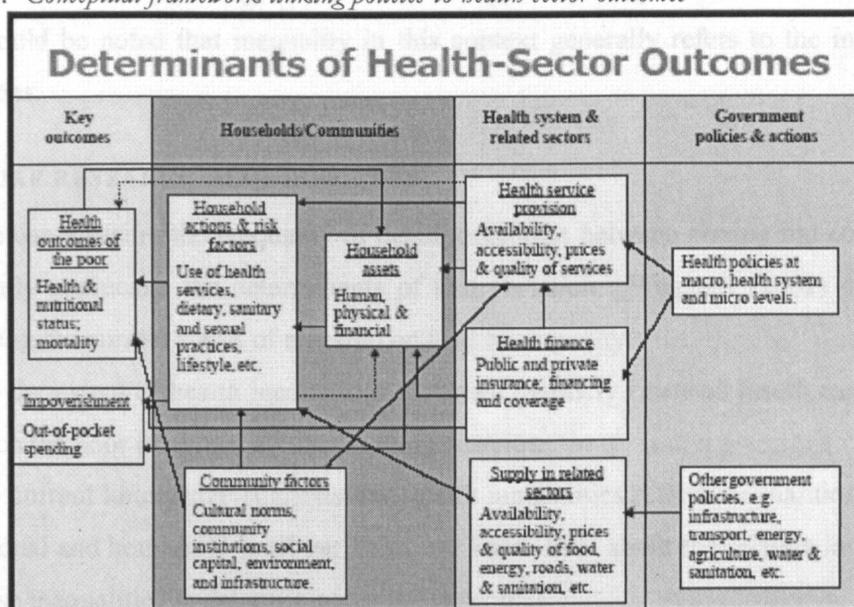
Source: (Wagstaff, 2002)

Wagstaff differentiates between <u>proximate determinants</u> of ill-health such as smoking, alcohol consumption and poor diet, and <u>underlying determinants</u> of ill-health such as household resources, community factors, and health system determinants (Wagstaff, 2002). He uses the examples of higher health service utilisation by the poor in OECD countries and the higher incidence of smoking among wealthy black South Africans to illustrate how proximate determinants of ill-health do not always disadvantage the poor. He argues that the contribution of underlying determinants should be analysed using tools such as decomposition analysis i.e. regressing inequalities in the various determinants of health onto a measure of inequalities in health outcomes.

> *"The contribution to inequality in health by a particular proximate determinant depends partly on its distribution across socio-economic groups and partly on its impact on health" (pg 99 Wagstaff, 2002)*

Gakidou and King developed and applied a measure of total health inequality that encompasses all inequalities among people in a society, including variation between and within groups (Gakidou and King, 2002). They conclude that reporting total health inequality alongside average levels of population health is particularly revealing, informing health policy, and enabling cross-country comparisons of inequity and the analyses of the determinants of inequity. The World Health Organisation has subsequently adopted this method (Wagstaff, 2001). It should be noted that inequality in this context generally refers to the inequality of health outcomes.

6.3) FUTURE RESEARCH REQUIREMENTS

While we can measure the inequality of health outcomes between groups and countries, we do not yet fully appreciate the determinants of that variation. Wagstaff (2002) makes three points regarding the current status of research on health inequality:

1. While the extent of health inequalities is known, publicly financed health care still fails to reach the poor in almost all developing countries.

2. While current knowledge suggests that health inequalities reflect inequalities in other individual and household level variables, we know little about the relative importance of these inequalities in determining health outcomes.

3. We need more information on the impact of programmes and policies on health sector inequalities.

In the final section of this chapter we consider how these research questions might be partially addressed by focussing on a disease such as tuberculosis, which predominantly affects the poor and for which a well developed public sector treatment programme has been in place for some time.

6.4) THE INCORPORATION OF HEALTH NEEDS

The unequal individual and household variables mentioned above may play into unequal health outcomes by creating unequal health needs. Grossman attempts to incorporate health needs into his Human Capital Model by conceptualising a stock of health that depreciates over the duration of the human life. Grossman's model assumes that needs depreciate constantly over the course of a life span (Grossman, 2000). Maternal health is one example where this is not the case and Akin argues that the depreciation of health capital (or the increase in health

needs) is more likely to be U-shaped (Akin et al., 1985a; Akin et al., 1985b). Muurinen, in an expansion of the Grossman model, allows depreciation to vary with age and other individual factors including behaviour such as smoking (Muurinen, 1982).

Mwabu uses illness as a proxy for need in a model that explores the interrelationship between illness and service choice (Mwabu, 1986). Akin et al. use a similar strategy in their attempt to control for the bias caused by treating illness as exogenous to the service selection process (Akin et al., 1998). The illness-proxy method warrants further investigation but neither this technique, nor the Grossman Human Capital Model, have been fully tested.

7)   CONCEPTUAL AND ANALYTICAL FRAMEWORK

The conceptual framework adopted in this study draws from the literature previously discussed, particularly Wagstaff's framework for understanding health inequalities (Wagstaff, 2002). The full conceptual framework is laid out in detail in Figure 2.3 showing all points of interaction, while the discussion below details the discrete elements individually and identifies how this conceptual framework constitutes an extension of conventional demand analysis.

7.1)   HEALTH SERVICE SUPPLY

The broader context of health service supply is treated as exogenous, affected by market structure, regulation, provider knowledge, ownership, perceptions of patient preferences and the behaviour of drug and instrument distributors (Conteh and Hanson, 2003). These variables are treated as fixed in the conceptual framework and this element of the framework does not constitute a significant extension of a conventional demand model.

7.2)   THE HOUSEHOLD, INDIVIDUAL AND COMMUNITY

Wagstaff (2002) explores the effect of household and community factors on health outcomes. However, he does not explicitly consider the effect of these factors on individual health seeking behaviour. The conceptual framework presented in Figure 2.3 details how the household and community may not only affect the individual's health status but also their health seeking behaviour. While the individual is the primary unit of analysis we explicitly account for the fact that all individual action takes place within a facilitating or debilitating social context. While individual socio-demographic characteristics and household economic status are typically modelled in demand studies, the departure here is to include community level variables such as inter-household relations, cultural norms and social capital.

These household, individual and community level variables closely resemble Wagstaff's proximal and underlying determinants of ill health. In the context of this study however, they

are considered both determinants of 'need' and determinants of appropriate and/or feasible health seeking behaviour as suggested by the review of the literature presented in this chapter. The qualitative data analysis in Chapters 4-6 identify further variables from 'reality' that should be integrated into the demand model as it is depicted in the conceptual framework.

7.3)   HEALTH NEED AND HEALTH OUTCOME

This tier of the framework begs the question 'what is need?' As explained in the previous chapter, health need encompasses both a clinical/biomedical concept of need and a subjective, self-assessed need based on perceptions of ill health. Subjective, self-assessed need or outcome is, by definition, always identified by the individual in question. However, a clinical need or outcome may not be identified or acknowledged by the sufferer. Health needs, both clinical and self-assessed, can be affected by the household and community environment where financial resources, cultural norms, human capital and physical infrastructure such as sanitation can pose health risks or benefits (Wagstaff, 2001 and ; Wagstaff, 2002). Typically, where health status is included in demand models it uses the response to a single question measured on a Likert scale. This analysis proposes the use of a normalised multi-attribute measure of self assessed need that is comparable between research settings and has been validated for use in this context.

7.4)   HEALTH SEEKING BEHAVIOUR

In cases of self-assessed need or observed clinical need, the individual has a number of options, they may (Mwabu et al., 1993):

- Try to treat the problem with home remedies,
- Seek care from private or public care providers,
- Turn to a traditional or spiritual healer for assistance,
- Choose to do nothing at all, or
- Do more than one of the above, in parallel or in sequence.

This behaviour may be facilitated or constrained by the household and community context of the individual. As outlined above, this is perhaps the most innovative element of this framework, that the social context of both individual health and health seeking behaviour is considered explicitly and treated as endogenous to the model. In addition, the demand model is specified iteratively to allow the exploration of the number of visits and the range of different providers consulted.

7.5)   HEALTH OUTCOME

Assessment of health outcome suffers from the same duality as the assessment of health need. Health outcomes may be assessed in a clinical sense or in a subjective sense. The outcome may not always be determined with any certainty however, it is assumed that

individuals have enough information at this point to decide whether or not to seek further health care. If an individual believes they have an unmet need, the framework assumes that they will revert to the "Health Seeking Behaviour" tier. Unmet clinical needs may not be identified by the individual, if this is the case they would only be identified by this model if the unmet need resulted in a negative health outcome.

The analysis in this study places little emphasis on health outcomes. Instead, the focus is on the process through which positive or negative health outcomes may be measured by the patient. The broad assumption is that effective health seeking generally defined, coupled with effective, appropriate and available supply, will maximise positive health outcomes.

7.6)   DEMAND

Although demand as such is not presented in Figure 2.3, it is implicit throughout the framework. The role of demand can thus best be illustrated by the analytical framework presented in Figure 2.2 below. The analytical framework identifies need and utilisation, which interact through the process of demand. Needs and utilisation are also clearly identified in the conceptual framework over the page.

Figure 2.2: Analytical Framework
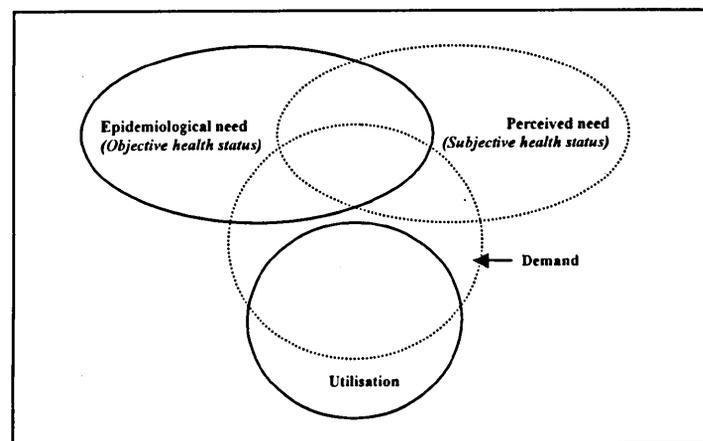
The final important innovation in the conceptual framework of this study is that health seeking behaviour is represented as a complex and dynamic process over the course of an illness episode rather than a single visit to one provider. Maximising the extent to which that dynamism is captured within a formal quantitative model is a key challenge of this study.

...individual's health seeking behaviour and why certain strategies meet with less success than others. The impact of illness type on health seeking behaviour, and service choice, will be explored using TB as a case study, as will the impact of demographic and socio-economic variables on care seeking behaviour. There will be a particular emphasis on care seeking for tuberculosis.

TB is a major public health issue over 37 500 people die of the disease every day. Strategies for combating TB need to consider this fact and that TB is common and should not be stigmatised because of its... contribution to mortality and death. In Cape Town, effective DOTS treatment is available... and in making distance from patients homes and public providers are well versed in the symptoms of TB. Despite this... performance of the TB control programme is suboptimal (Dudley et al., 2003).

> ...research is the key to reducing the system-related barriers to care access... through an analysis of the operation of tuberculosis diagnosis and the implementation of appropriate quality assurance systems (pp.150, Barnes et al., 2001).

Dick and Lombard used... qualitative research to understand the phenomena "explore their illness experience and to establish what the patient-provider encounter means for both parties" (Dick and Lombard, 2997). Research of this nature should... aim to improve case identification and case holding, thus promoting effective TB control.

This study thus aimed to explore how individuals in high TB prevalence... used the health services available to them (both TB specific and general) and what socio-economic... researcher... households investigated how people interacted with these services and what factors may have facilitated or shaped that interaction. Given this data, treatment seeking was studied individuals drawn from the townships of Khayelitsha, Nyanga, Mitchells Plain and other townships of the City of Cape Town. Research was conducted among TB sufferers, suspects and individuals... aim was to establish whether the... of TB patients experienced or simply... experience... perceived... the system as an acute or chronic patient.

The aim of the qualitative research was to understand the drivers of health service interaction, then the aim of the quantitative phase of research was to measure that...

Figure 2.3: Overview of the conceptual framework

There may be inequalities in supply

There may be inequalities in the determinants of health need and the capacity to meet that need. *(This equates to Wagstaff's proximate and underlying determinants of ill health)*

There may be unequal health outcomes

Broader Context of Health Service Supply

The Community
- Group savings schemes
- Inter-household relations
- Cultural norms
- Social capital
- Environ/Infrastructure

The Individual
- Age
- Gender
- Income
- Education
- Occupational Status
- Lifestyle factors
- Nutrition

The Household
- Size
- Income
- Expenditure
- Assets/debt
- Human capital
- Sanitation
- Household norms

Identified clinical and/or self assessed need

Unidentified clinical need

Health Seeking Behaviour

Traditional Healers

Private Care

Public Care

No treatment

Self treatment

Outcome:
- Clinical/epidemiological, objective outcome
- Self assessed, subjective outcome

The proposed project thus seeks to explore systematic differences between demand and utilisation, and 'need' and demand. The role of the community as a facilitating or sanctioning agent will be explored to understand how individuals arrive at a preference set, how individuals develop optimal health seeking strategies and why certain strategies meet with more success than others. The impact of illness type on health seeking behaviour (and service choice) will be explored using TB as a case study, as will the impact of demographic and socio-economic variables on service use and demand. There will be a particular emphasis on care seeking for Tuberculosis.

TB is considered a curable disease, yet 37 South Africans die of the disease every day. Strategies are already in place to disseminate the message that TB is curable and should not be stigmatised because of its link with HIV (Unattributed, 2003). In Cape Town, effective DOTS treatment is available for free in walking distance from patients homes and public providers are well versed on the symptoms of TB. Despite this however, outcomes of the TB control programme are suboptimal (Dudley et al., 2003).

> "Research is the key to reducing the system-related barriers to care access through an analysis of the operation of tuberculosis diagnosis and the promotion of a responsive quality assurance system" (pg 1521 Harries et al., 2001)

Dick and Buskens called for more qualitative research to understand how patients "experience their illnesses and treatments" and what the patient-provider interaction means for both players (Dick and Buskens, 2003). Research of this nature should inform strategies to improve case identification and case holding, thus promoting effective TB control.

This study thus aimed to explore how individuals from high (TB) prevalence areas viewed the health services available to them (both TB specific services and other services). Qualitative research methods investigated how people interacted with those services and what factors might have impacted or shaped that interaction. Given the data presented above, the targeted individuals hailed from the Khayelitsha, Nyanga, Mitchell's Plain and Oostenburg sub-districts of the City of Cape Town. Research was conducted among TB affected and unaffected individuals from these areas to establish whether the views of TB patients were atypical or simply representative of any person interacting with the system as an acute or chronic patient.

If the aim of the proposed qualitative research was to <u>understand</u> the drivers of health service interaction, then the aim of the quantitative phase of research was to <u>measure</u> that

behaviour. The quantitative phase of the research was conducted in high prevalence areas but not targeted specifically at TB affected households. This was an attempt to gain a broader view of health seeking behaviour which could inform both TB service delivery and the delivery of other services in these communities.

The empirical findings were used to critically analyse existing economic models of demand rather than imposing a model onto the study at the outset and risking the omission of key variables or failing to consider pertinent interactions. That said, the conceptual framework described in this Chapter was imposed at the outset. Chapter 3 then describes both the research and analytical methods used in the study.

CHAPTER THREE:

RESEARCH PROTOCOL AND

METHODOLOGY

1) INTRODUCTION

While Chapter 1 outlined the aims, hypotheses and objectives of this study, Chapter 2 examined the literature pertinent to our understanding of demand for health services. The theory traversed both psycho-social models and economic models of demand, highlighting the strengths and weaknesses of each model or body of theory. The empirical review focussed only on the application of economic models, attempting to place emphasis on research from developing countries where possible. Due to the observed disjuncture between the theory and the empirical work on the subject, the intention of this study is not to impose any one model of demand but rather to critically analyse conventional demand theory, with an emphasis on Neoclassical Demand Theory, using the empirical findings of this study. A relevant conceptual framework is described at the start of this chapter, which also details the research methods employed to collect data and the analytical methods used to interpret that data.

2) RESEARCH METHODS

This project used both qualitative and quantitative data to address the objectives in the urban research setting of Cape Town, South Africa. Quantitative data were used to describe the population of interest including detailed income and expenditure data, measure levels of ill health i.e. perceived health need, track concomitant health service utilisation and apply accepted empirical techniques to build a model of service utilisation.

However, quantitative data allow only limited investigation of the social context of health seeking behaviour, the process of health care seeking or the role of, and linkages between, barriers to service access. Qualitative data were thus needed to explain the process of health seeking underlying observed utilisation and health outcomes and to try and describe the latent demand process underlying observed use or non-use. The complexity of care seeking and the importance of policy-relevant findings further emphasised the need to triangulate findings where possible. The primary qualitative data thus served to triangulate the quantitative findings where possible.

Existing quantitative datasets tend only to collect data regarding the last visit – or a single visit to a heath service provider, prohibiting any analysis of the pattern of health seeking behaviour over the course of an illness episode. These datasets also tend to contain limited measures of health need, offering at best a five-point likert scale of self-reported general health. These types of scale risk being culturally sensitive to cut-point shift and other forms of bias which would prohibit comparisons between culturally heterogeneous communities. Qualitative data does not tend to be available in the public domain in any form. The qualitative and quantitative datasets also needed to be derived from the same source communities to facilitate triangulation.

Although the data collection instruments were designed according to the precepts of the conceptual framework outlined in Figure 2.1, the mode of this research was primarily inductive and exploratory - aiming to critically analyse existing demand theory from the bottom up using primary empirical data rather than imposing strict hypotheses about the potential benefits and limitations of that theory in the study setting at the outset. For these and other reasons, primary qualitative and quantitative data were designed and collected for the specific purpose of this study. The data collection methods are discussed in more detail below after a description of the research setting.

2.1)   DETAILS OF THE RESEARCH SITE

The Cape Metropole is home to 65% of the residents of the Western Cape Province. The Western Cape has the highest Human Development Index in South Africa (Statistics South Africa, 1996) but the average wealth disguises significant ethnic and gender disparities. The province is also facing considerable public health challenges. In 1995 the crude mortality rate for the province was 8.3 per 1000 compared to a national rate of 6.1 per 1000. At 699/100 000, TB prevalence in the Western Cape is more than double the national average and causes 8% of deaths amongst women aged 15-44 and 10% of deaths among men of the same age. The poorest socio-economic groups are the most adversely affected and the age group most at risk is the economically active 20-39 year old cohort. Prevalence of TB has steadily increased in the Western Cape since 1997 while the cure rate of 65% remains below the national target of 85%. Between 1997 and 1998, treatment failure in the Western Cape doubled and cure rates in the Cape Metropole declined more than any other region in the province, where interruption rates are approximately 28% (Western Cape Provincial Administration, 1999/2000).

As mentioned in the literature review, the four sub-districts of Cape Metropole with the highest incidence of TB are Khayelitsha, Nyanga, Mitchell's Plain and Oostenberg. Due to South Africa's history, sub-districts tend to be populated by ethnically homogenous communities. As such, the former two districts are populated predominantly by 'Black/African'

South Africans and the latter two by so called 'Coloured' South African respondents. These two groups are culturally and ethnically distinct from one another, speaking different languages and observing different social norms. These four sub-districts of Cape Town were purposively sampled as 'high TB prevalence communities'.

2.2) PRIMARY QUALITATIVE DATA COLLECTION

Qualitative data was collected using the focus group/group discussion methodology. The potential value of the group dynamic was thought to be greater than any potential loss of information from the fear of speaking in a group. The topics under discussion were not considered to be invasive or in need of a more private methodology such as individual in-depth interviews, although discussions amongst TB-affected respondents were run separately from discussions amongst unaffected respondents. Male and female groups were also run separately.

Recruiting for the group discussions commenced on the 30th of January 2004. Recruiters were equipped with a standardised Recruiting Questionnaire and asked to recruit respondents from Khayelitsha, Mitchell's Plain, Oostenberg and Nyanga. Criteria for recruitment classified respondents according to ethnicity, TB status and gender. All respondents were required to be between the ages of 20 and 39 years, the age group most affected by TB.

Recruiting for the non-TB groups progressed smoothly although recruiters appeared to determine the eligibility (and even willingness) of respondents before commencing with the formal recruitment interview. As such there are few instances of failed recruitment for these groups. This is despite repeated attempts to train recruiters to fill out recruitment questionnaires for all individuals approached and not to ascertain individual's willingness to participate before approaching for recruitment purposes. It is also possible however, that the high success rate is accurate as potential respondents were curious to participate and keen to receive the participation incentive. Although small, the cash gift of thanks may have been attractive to potential participants who were drawn from these relatively poor communities. The positive response to the groups does not seem to have biased the nature of participants in any way. For example, the first group contained a mix of employed and unemployed respondents, older and younger respondents within the specified age band, more and less educated, married and single respondents from Oostenberg and Mitchell's Plain.

As mentioned previously, the groups were stratified by TB status. For the TB groups i.e. the groups of TB affected individuals, all efforts were made to obtain an even spread of respondents on clinic DOTS, community DOTS and respondents who had either defaulted or completed treatment. Clinic DOTS patients were approached through the TB District Managers for Khayelitsha, Mitchell's Plain, Oostenberg and Nyanga respectively. Community DOTS

patients were approached through the TB Foundation, an NGO organizing community DOTS programs in the areas in question. Recruitment of defaulters and those who had completed treatment commenced on the 30th of January using snowballing techniques and purposive enquiry within targeted high-prevalence communities.

During February 2004, eight group discussions were conducted with participants from the high TB prevalence communities listed above. Table 3.1 below shows how these groups were stratified by gender, ethnicity and TB status. The groups were moderated in the first language of the respondents, and followed a detailed discussion guide attached in Appendix 1. Researchers were able to view and hear the discussion with simultaneous translation from behind a one-way glass. This reduced any possible research effect that may have resulted from having a researcher in the room taking notes. The researchers were given an opportunity to interact with the moderator once during the group to suggest additional probes, lines of enquiry or points for clarification. After each group discussion, the moderator and principle investigator on the project had a detailed debriefing. The discussions were audio taped, translated and transcribed into English. All translations and transcripts were independently validated.

Table 3.1: Selection criteria for focus group discussions

	Gender	Ethnicity/Population Group	Sub-district of Cape Town	Age	TB Affected
GROUP STRUCTURE					
Group 1	Female	Coloured	Mitchells Plain/ Oostenburg	20 – 39 yrs	No
Group 2	Female	African	Khayelisha/Nyanga	20 – 39 yrs	No
Group 3	Male	Coloured	Mitchells Plain/ Oostenburg	20 – 39 yrs	No
Group 4	Male	African	Khayelisha/Nyanga	20 – 39 yrs	No
Group 5	Female	Coloured	Mitchells Plain/ Oostenburg	20 – 39 yrs	Yes
Group 6	Female	African	Khayelisha/Nyanga	20 – 39 yrs	Yes
Group 7	Male	Coloured	Mitchells Plain/ Oostenburg	20 – 39 yrs	Yes
Group 8	Male	African	Khayelisha/Nyanga	20 – 39 yrs	Yes

The discussions aimed to draw out the language used to describe health services and common illnesses, and the basis on which services and illness where differentiated e.g. which illnesses respondents feared and which they did not. Participants were probed for influences on health seeking behaviour in general and TB care seeking in particular. The discussion also explored potential barriers to access, the relative importance of different barriers and how barriers to care may interact. The discussions provided an overview of the services known to be available for general use and for the treatment of TB particularly.

In an attempt to ensure consistency between groups and between the two moderators working on the project, a discussion guide was provided. The moderators were trained in the use of this guide, the aim of which was not to restrict the discussion but simply to guide the flow and to ensure that the moderator provided the same prompts to all groups. Participants were free to discuss any relevant topics in any order and the guide simply ensured that a core body of investigation was covered at some point in each discussion. The moderators were also provided with flip charts and marker pens to facilitate the discussion. These were particularly useful when respondents listed diseases and health services, grouped services into public and private providers, and carried out the personification exercise described below.

Two particular methods were employed to assist respondents in expressing their feelings and in prioritising their needs. The first was a personification exercise and the second a budget game. The personification exercise asked respondents to describe an individual with suspected TB. The process explored why the person suspected TB, what they would do about their suspicion (if anything), who would be told about the suspicions (if anyone) and how that person was perceived in – and interacted with – their community. This allowed respondents to discuss

TB from a 'third person distance' without needing to refer to their own experiences or personal views.

The budget game by comparison was a relatively simple role-play and allocation exercise. Respondents were divided into two groups and told that they had been elected as the Minister of Health and that they must now decide how the health budget was spent. They were given a fixed number of tokens and asked to distribute the tokens between the health services available in their community and any other services they felt should be offered in their community. The intention of this exercise was to gain a sense of the priority of the services. By giving a limited number of tokens, the notion of budgetary constraints/scarcity was upheld in the game.

A copy of the discussion guide, recruitment and screening interviews is provided in Appendix 1. Analysis of the focus group data is discussed later in this Chapter.

2.3) PRIMARY QUANTITATIVE DATA COLLECTION

2.3.1) DATA COLLECTION INSTRUMENTS

This project required detailed income, expenditure and health seeking data. The project also aimed to track perceived need over time and how that perceived need may shape health seeking behaviour. A Gates Malaria Project in the Gambia identified diaries as an effective method for the collection of detailed income and expenditure data over time (Wiseman et al., 2005). This methodology was thus expanded to collect detailed physical and mental health data and information on health seeking behaviour in addition to individual, household and extra-household income and expenditure. The health diaries were completed on a weekly basis for a period of eight weeks. The diaries were self-completion instruments although all respondents were assisted by trained fieldworkers in the first week and any respondents requiring assistance in future weeks were assisted on an ongoing basis. Fieldworkers also checked the diaries on collection each week to ensure that all questions had been fully completed.

Information from the diaries was supplemented by a household survey and an individual health survey which respectively provided household level data and baseline data on awareness, perceptions and usage of health service providers. These surveys were only conducted once at the start of the study by trained fieldworkers. Copies of all quantitative instruments are attached in Appendix 2.

2.3.2) SAMPLING

Chapter 1 identified Khayelitsha, Nyanga, Helderberg and Oostenburg as the sub-districts of Cape Town worst affected by TB. Khayelitsha, Nyanga and Oostenburg are all predominantly

urban or peri-urban districts, while the Helderberg includes large tracts of farming land and a disproportionately large community living in rural or semi-rural conditions. As the intended focus of this study was on urban health seeking behaviour, Khayelitsha, Nyanga and Oostenburg were included in the study while the Helderberg was replaced with Mitchell's Plain, a predominantly urban area experiencing the same TB case load as the Helderberg district (6%) (Toms and Vallabhjee, 2003).

For historical reasons[*], the sub-districts of Cape Town are largely populated by ethnically homogenous communities with Khayelitsha and Nyanga primarily populated by 'Black/African' South Africans, while Mitchell's Plain and Oostenberg are primarily populated by so called 'Coloured' South Africans. Some integration of communities resulted in a very small number of 'White' and 'Indian' respondents being included in the sample. These respondents were not rejected on the basis of their ethnicity, however their numbers are too small for any analysis of these respondents as a distinct group.

2.3.2.a) Household Selection

The physical selection of households proceeded according to a multi-stage cluster design. At the first stage, four sub-districts of Cape Town were purposively selected based on their TB case load as detailed in Chapter 2 and further discussed above. At the second stage, enumerator areas were selected within each sub-district and finally, households in each EA were selected into the sample. Enumerator areas are neighbourhoods of approximately 50-200 households and are drawn up by the Chief Directorate of Demography at Statistics South Africa (StatsSA) (Statistics South Africa, 2000/2001).

The Central Limit Theorum indicates that after 30 data points the mean of a sample will equal that of the population or parent sample and will be approximately normally distributed and stable (Annis, 2006). As such, a minimum of 30 households was required in each area under study i.e. each primary cluster. The household sample was then boosted to compensate for anticipated attrition. A study using health diaries in the Gambia experienced an attrition rate of less than 2% in year one (Wiseman, 2003) therefore an over-sample of 20% was deemed to be sufficient. This constituted 6 additional households per primary cluster. Four primary clusters of 36 households added to a total sample of 144 households.

The primary clusters were stratified to ensure a spread within each of the four study areas. This was achieved by dividing the primary cluster over three EAs resulting in three secondary

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[*] This phenomenon is largely a result of the Group Areas Act, Act No 41 of 1950, that enforced the separation of different population groups by creating different residential areas for different racial groups and forcibly relocating individuals to these areas where necessary. The act was re-pealed in 1991 (Western, J., 1997, Outcast Cape Town. University of California Press.)

clusters of 12 households in each area under study. The pre-Census sampling frame released by StatsSA contains the estimated number of dwelling units per EA. Three sampling frames were created based on the 'main place' names i.e. Khayelitsha, Nyanga and Mitchell's Plain. The Oostenburg sampling frame consisted of Kuilsriver, Kraaifontein and Brackenfell, areas consequently designated as 'main places'. From each sampling frame, a sample of three EAs was drawn with probability proportional to the measure of size of the EAs. The measure of size should ideally have been the number of adults over the age of 18 in the EA. However, since no EA-level data beyond the estimated number of dwelling units will be released by StatsSA for confidentiality purposes, the estimated number of dwelling units was used as the proxy measure of size.

Once the sample of EAs had been drawn, the EA maps were obtained from StatsSA. The field team went into each EA and identified landmarks such as schools, telephone booths, numbered electricity poles, double storey houses etc. These landmarks were recorded on a mapping record (see Appendix 3). Using the last digit of the EA number and the grid presented on the mapping record, one of the landmarks was randomly selected as the starting point for the sampling process. The interval between the start point and each successive sampling point was determined by dividing the number of dwelling units by the target number of interviews, i.e. twelve per EA. Using the random starting point and this interval, dwelling units within the EA boundaries were selected moving in a spiral from the starting point to the centre of the EA.

Each of the selected households was invited to participate in the study. Households that were unavailable after three return visits, or which had refused to participate, were substituted with the household on the left. There was a 13.2% non-response rate at the household level resulting in 19 substitutions in total. Refusals were more common in higher income areas and the most common reasons given for refusal were that the potential respondent lacked time or interest in the study.

This sample of households was devised to be representative of the four areas under study and not of the South African population as a whole.

2.3.2.b) Individual Selection

Although the household was the primary sampling unit and a household survey was conducted for each household sampled, the study's main unit of interest was the individual. Once the household interview was completed, all adults over the age of 18 were invited to participate in the diary study. Respondents were not recruited on the basis of their TB status and all members of selected households over the age of 18 were eligible and actively encouraged to participate in the study. This sample was meant to be representative only of these

high TB prevalence communities and not of TB-affected patients nationally or the population of the province as a whole.

Participating individuals completed two survey instruments, an Individual Health Survey and a Weekly Health Diary. The Individual Health Survey was considered the precursor to the Health Diary and all respondents agreeing to complete the former were aware that they were agreeing to participate in the latter. In 38.9% of households all eligible adults participated in the Individual Health Survey. Every effort was made to ensure as many eligible adults participated as possible, with field managers visiting households with field workers to try to persuade eligible household members to take part.

Table 3.2 below shows the difference between the number of adults who were eligible and the number who completed the Individual Health Survey in the 144 sampled households. Table 3.3 gives an overview of the total numbers of participating households and individuals.

Table 3.2: Recruitment Statistics

RESPONSE RATE*	FREQUENCY	PERCENTAGE
0	56	38.9%
1	42	29.2%
2	32	22.2%
3	10	6.9%
4	2	1.4%
5	1	0.7%
6	1	0.7%
Total:	144	100%

* Calculated as the number of age eligible respondents less the number of respondents who completed the Individual Health Survey

Table 3.3: Sample Overview

SURVEY INSTRUMENT	N
Household Survey	144
Introductory Health Survey	250
Weekly Health Diary	238*

*This is the figure for participation in the first week. See Table 3.4 for an overview of the sample in each week of the panel.

2.3.2.c) Quality Control

Throughout the study, field managers conducted call backs to ensure quality control. One or two households per EA were selected for call back each week. Initially the call backs were used to check the correct household had been identified for inclusion in the study. Later the call backs were used to verify, among other things, that the correct individuals were being followed up and that households had received their incentives. Field managers also spent a significant amount of time trying to convert refusals and persuading respondents not to drop out of the study. These efforts are reflected in the very low attrition rate, with at least one respondent in

all recruited households participating for the full duration of the study.

The sample was not modified for non-response, the effects of which are accommodated at the data analytic phase through the explicit analysis of non-response and the use of unbalanced panel data analysis methods.

2.3.2.d) Critique of the Methodology

The primary drawback of this methodology is that it introduces a clustering effect into the study. The design effect is used in multi-stage sample designs to correct for the difference between the chosen design and a simple random sampling design. At the sampling stage of a study, the design effect may be interpreted as the factor by which the sample size for a multi-stage cluster sample would have to be increased to produce survey estimates with the same precision as a simple random sample. However, little can be done to ameliorate the design effect once the data has been collected and its effects will observed in the larger confidence intervals around survey estimates.

STATA has a series of *svy* commands that would normally compensate for any clustering effect in survey data. Unfortunately the use of these commands for panel data analysis is severely limited. As such, the clustering effect was accounted for in *STATA* through the use of 'cluster' suffixes on analytic commands where possible. Analytical methods are discussed further later in this chapter.

2.4) TIMELINE FOR DATA COLLECTION AND ANALYSIS

Data collection and analysis proceeded according to the following timeline. This timeline also incorporates the preparation of an interim and final research report prepared for WHO/TDR, the primary funder of the research.

Primary Qualitative Data Collection and Analysis (Focus Groups)

1)	Discussion guide development	Jan. 2004 – Feb. 2004
2)	Piloting and recruitment	Feb. 2004 – March 2004
3)	Run groups	March 2004
4)	Transcription and data analysis	April 2004 – June 2004
5)	Preparation of interim report	May 2004 – July 2004

Primary Quantitative Data Collection and Analysis (Diaries)

1)	Sample Design	Feb. 2004 – March 2004
2)	Instrument Design	April 2004
3)	Training and pilots	May 2004 – June 2004
4)	Revision of instrument second pilots	June 2004 – July 2004

5)	Final revisions and training	**July 2004**
6)	Diaries in field	**Aug 2004 – Sept. 2004**
7)	Data Capture	**Sept. 2004 – Dec. 2004**
8)	Data analysis	**Dec. 2004 – Jan. 2005**
9)	Preparation of interim report	**Jan. 2005 – March 2005**

Integration of Data Collection and Analysis

1)	Integration of secondary analysis, focus groups and diaries	**April. 2005 – July 2005**
2)	Develop a final model of health seeking behaviour	**June 2005 – Sept. 2005**
3)	Preparation of final research report	**Aug. 2005 – Dec. 2005**
4)	Compilation of dissertation	**Aug. 2005 – July 2006**

2.5) ETHICS COMMITTEE APPROVAL

Ethics approval was and granted by the LSHTM Ethics Committee. Local approval was sought from the Western Cape Department of Health, who approved the project, provided access to clinic staff for focus group recruitment and asked to be kept abreast of the project's development and findings.

3) ANALYTICAL METHODS

3.1) METHODS OF QUALITATIVE DATA ANALYSIS

The data from the focus group discussions were analysed using modified grounded theory analysis to draw out findings inductively rather than deductively. This process was done twice, once manually and once using AltasTi software designed expressly for the purpose of identifying repeated themes, phrases and words (Muhr, 1997). Once this superficial level of analysis was completed, the data were organised into thematic content categories and re-analysed in greater detail using the constant comparison method i.e. iteratively comparing new findings with existing findings and constantly testing emergent hypotheses with new findings from the data. Findings from the manual and electronic processes were compared and any areas of divergence resolved with further manual iterations/re-visitations of the dataset (Glaser and Strauss, 1968; Strauss and Corbin, 1990).

Once a complete set of themes had been extracted from the data, these were used to construct detailed matrices and sub-matrices for groups of respondents i.e. TB affected versus unaffected respondents, respondents from different ethnic/population groups, and males versus females. Responses were then compared across groups with all hypotheses retested against the primary data. These themes and hypotheses were used to construct a set of findings that were

tested and challenged by an independent researcher with a detailed knowledge of the research setting who was not directly involved with the project (Coast, 2001).

Overall findings were then organised into homogenous themes that were used to inform the objectives of the study in a more deductive manner. Aside from providing a unique set of insights into health seeking behaviour in the research setting, qualitative data also served as a source of triangulation for the quantitative study findings (Coast, 2001; Gibbs, 1997).

3.2) METHODS OF QUANTITATIVE DATA ANALYSIS

The quantitative data were analysed using a range of descriptive statistical methods and panel data regression techniques as detailed below. All analysis was conducted using *STATA Version 9*, a statistical package appropriate to the methods used. The discussion below first outlines the general estimation strategies used throughout the thesis, before detailing the methods used in Chapters 4, 6 and 7, the three chapters that use a set of quantitative methods requiring some introduction and discussion. These three chapters deal with the estimation of health need, expenditure on health and the modelling of demand respectively.

3.2.1) ESTIMATION STRATEGIES

The selected estimation methods are based on two primary considerations, namely the theoretical models underpinning the estimation and the empirical distribution of the data. As discussed in the previous chapters, the theoretical model underpinning these analyses is the Neoclassical demand model wherein individuals are strict utility maximisers who derive utility from consumption, but whose consumption is constrained by a limited budget. When empirically estimating this theory, demand is considered to be an unobservable latent variable. Utilisation or consumption is considered to be an observable proxy for demand or an observable component of demand.

The empirical distribution of utilisation then will differ depending on the measure of utilisation employed in the model. For example, the distribution of a binary 'use versus non-use' measure will differ significantly from the distribution of a variable measuring the number of visits to any provider. As such, different estimation strategies are employed for each of these specifications. The following discussion provides a brief overview of the generic methods used in this thesis.

3.2.1.1) *Non-linear estimation and latent variables*

Analysis of health and related behaviour often necessitates the inclusion of unobservable or latent variables such as quality of life or health need. These variables generally have to be

proxied by indicator variables (Jones, 2000). Multiple causes-multiple indicator (MIMIC) models, estimated as linear structural relationships (LISREL) are often used for this purpose (Erbsland et al., 1995; Jones, 2000; van der Gaag and Wolfe, 1991; Wagstaff, 1993) as is the case with the physical and mental health variables used as indicators of perceived health need in this chapter and thus as predictors of health service use, service provider choice and the number of visits to any provider in this study.

As discussed earlier, the demand for health is also a latent, unobservable variable proxied by health service use. In this study, health service use is measured by qualitative or categorical dependent variables that equal one if the respondent used any health service provider during the week under analysis. The dependent variable is equal to zero if the respondent did not use any health service provider during that week. Usage status will thus vary from week to week over the course of the eight week panel. Similarly, in the model of service provider choice, the dependent variable is again a binary categorical variable. Demand for health services, the variable of interest, underlies the distribution between zero and one in the observed use model and the model of provider choice. This suggests the appropriateness of non-linear models for limited and categorical dependent variables for these specifications (Jones, 2000).

3.2.1.2) Count models

The number of visits to any provider has a different empirical distribution from the use/non-use and provider choice variables. The analysis of the number of visits requires the use of a count model such as the Poisson or the negative binomial model. Count models are appropriate when the dependent variable can only take on non-negative integer values. However, their application needs to accommodate the fact that the data from this study used to model health care visits have a non-ignorable "spike" of zero values and a skewed distribution with a heavy right-hand tail. This raises the further challenge of identifying a stochastic model that is appropriate when estimators lose their desired properties and become biased, inconsistent or inefficient (Buntin and Zaslavsky, 2004; Jones, 2000).

In this dataset, the non-ignorable spike of zero values is caused by a phenomenon known as zero inflation. A model is considered to be zero inflated if some of the observed zero values of the dependent variable are generated by a different process to the remaining observations or counts. In this case, both Poisson and negative binomial models will tend to overestimate the standard errors and increase the likelihood of accepting a variable as significant when it is not. Methods exist to correct for this zero inflation using cross-sectional estimation procedures which will be discussed further in the later methods section.

3.2.1.3)   Longitudinal estimation with panel data

As explained in Section 3.3, the quantitative data in this study are panel data. While most standard analyses of demand either collect only data on usage of a single provider or a single visit to more than one provider, the longitudinal nature of this dataset enables the observation of multiple health seeking episodes to multiple providers for any one respondent. As such, provider choice can span more than one category as respondents may have used a combination of public and private services. The fact that these usage categories will not be mutually exclusive as a result, prohibits the use of multinomial regression techniques commonly applied to models of demand for health.

3.2.2)   THE ANALYSIS OF NEED

Chapter 4 of this thesis analyses health need. In this thesis, the analysis of need comprises two constituent parts, the first is the use of concentration indices to measure health inequality, and the second is the use of regression analysis to analyse the predictors of health need.

In this instance, health need refers to self assessed health as measured using the SF-8[†] Health Survey, a reduced form of the widely used SF36 tool. The SF-8 Health Survey is a generic, multipurpose short form survey of health status that combines eight health domains to provide single summary measures of physical and mental health. The eight domains of the SF-8 Survey are: general health, physical functioning, role physical, bodily pain, vitality, social functioning, mental health and role emotional. These domains are combined using a set of standardised weights, to provide the physical (PCS-8) and mental (MCS-8) summary indices. SF-8 scales are scored so that higher values are indicative of better health. All domain scores and summary scales are scored on a on a continuous scale of 0-100, with scores above and below 50 being above and below the average of the norm[‡] respectively. Originally developed in the United States by the Medical Outcomes Study team, the SF8 items have been translated and adapted for use in more than 15 countries, including South Africa and a number of other developing country settings. Specific SF8 forms are available for a 4 week, 1 week and 24 hour recall period and all recall periods have been normed and validated. The recall period used in the diaries was one week i.e. acute, albeit over an eight week period as the applicable questions were asked every week for the full eight week cycle. The SF-8 values are calculated using norm-based scoring methods. This method allows meaningful comparison between scales within and between studies (Ware et al., 2001).

[†] The SF8 uses the best item measuring each of 8 health domains in the longer SF-36 Health Survey. Average scores based on the SF-8 measures are unbiased estimates of SF-36 scores for the same measure (Ware, J.E., Kosinski, M., Dewey, J.E. and Gandek, B., 2001, How to Score and Interpret Single-Item Health Status Measures: A Manual for Users of the SF-8 Health Survey. QualityMetric Incorporated, Lincoln, RI.).

3.2.2.1) Concentration indices to measure health inequality

a)   Criteria for a measure of health inequality

The concentration index is a common measure of inequality in health and health care first introduced by Wagstaff et al. (Wagstaff et al., 1989). Concentration curves plot the cumulative proportion of the population, usually ranked by some measure of socio-economic status, against the cumulative proportion of health as measured by a continuous cardinal measure of health such as the SF8. The concentration index can have a maximum value of +1 and a minimum value of -1, and is calculated as twice the area between the concentration curve and the diagonal (van Doorslaer and Gerdtham, 2003). If the concentration curve falls on the diagonal (or the index is equal to 0) then everyone in the population enjoys the same health, regardless of their socio-economic status. If the curve falls below the diagonal (or the index is greater than 0), then inequalities exist that favour the rich. The closer the index tends to +1, and the further the curve from the diagonal, the more unequal the distribution of health. Similarly, a curve lying above the diagonal (or an index of less than 0) indicates health inequalities that favour the poor and the more the index tends towards -1, the more unequal the distribution of health (Koolman and van Doorslaer, 2004).

Aside from having the advantage of both visual and numerical expression, the concentration index meets three important criteria for a measurement of inequality i.e. *"i. it takes account of the socio-economic dimension of inequality in health (unlike the gini coefficient for example); ii. it reflects the experience of the entire population rather than two extreme groups on the socio-economic scale (e.g. income quintile 5 versus income quintile 1) as is the case in range measures (e.g. rate-ratios), and iii. it is sensitive to changes in the population across socioeconomic groups."* (pg 204 Wagstaff et al., 1991)

In Chapter 4, the SF8 is the measure of self-assessed health (SAH) used to calculate the concentration index. Social economic status (SES) is measured by individual income, which is measured as the individual's share of household income i.e. total household income is divided equally between all adults in the household.

b)   Standardisation versus sub-group analysis

For the purposes of this study, standardisation of the self assessed health measure attempts to control for biological differences in health that would be unalterable regardless of socio-economic status. As such, standardisation of health measures is most usually done by age and gender (Kakwani et al., 1997).

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‡ The norm is based on the 1998 general US population (Ibid.).

Standardisation can be done using direct or indirect methods. The direct method requires the use of grouped data to derive average age and gender specific illness/health for each socio-economic category. These averages are then applied to the age and gender structure of the population (Kakwani et al., 1997). The indirect method can be applied to individual data whereby rates for a study population are based on a standard population i.e. each person in the study group takes on the average health score of a person of the same age and gender in the standard population (Diaz, 2002; Kakwani et al., 1997; StataCorp, 2003a). In Chapter 4, we apply the indirect method of standardisation to facilitate analysis at the individual level. As is the convention, the analysis is standardised by age and gender. We also standardise by race/population group to acknowledge that the two population groups in this sample may face different health risks. The data are standardised using a convenient regression equation such as that commonly used to calculate the Relative Index of Inequality (Mackenbach et al., 1997; The World Bank, 2005).

Diaz argues however, that the use of any standardisation method will disguise potential demographic (i.e. non-biological) effects. She proposes that the standardisation procedure be replaced with the calculation of concentration indices for homogenous population groups. As such, the analysis in Chapter 4 is presented in both standardised and unstandardised form, by demographic group (Diaz, 2002).

3.2.2.2) Regression analysis of health need

Given the nature of the mental and physical SF-8 scores used as a measure of health need, it is possible to treat them as continuous variables. As such, they can be used as the dependent variable in a simple linear regression. However, as this dataset has both time and case dimensions, it is necessary to estimate a model appropriate for such panel data. When selecting a longitudinal model for panel data, it is necessary to consider whether a fixed effects, between effects or random effects model is more appropriate.

a) Fixed effects

"The fixed effects model assumes that differences across units can be captured in differences in the constant term" (pg 287 Greene, 2003). Fixed effects models thus control for omitted variables that differ between cases but are constant over time i.e. they allow for variation between cases over time but do not allow for variation within cases over time (Data and Statistical Services, 2006 (Last accessed:12/10/2006); Greene, 2003). These models assume that the independent variable is fixed, although it may be stochastic (Greene, 2003; Newsom et al., 2005). The results from fixed effects models can only be generalised to cases

were the independent variables have the same (or very similar) values as they do in the applied model (Newsom et al., 2005). .

b)   Between effects

This form of model takes the mean of each variable for each case over time and runs the regression on this reduced dataset. This model is seldom used in practice however it is an input into the random effects model explained below (Data and Statistical Services, 2006 (Last accessed:12/10/2006)).

c)   Random effects

The key benefit of random effects models is that they allow time-invariant variables (such as gender) to be included amongst the regressors (Yaffee, 2005). Random effects models are also more appropriate if the investigator wishes to make inferences beyond the particular values of the independent variable used in the study (Newsom et al., 2005). Finally, random effects models allow variation both between and within cases over time and have a random constant term (Greene, 2003). *STATA* 's random effects estimator is a weighted average of fixed and between effects estimation (Data and Statistical Services, 2006 (Last accessed:12/10/2006)).

3.2.2.3)   Selecting a Model

a)   Hausman's specification test for the random effects model

The Hausman test is used to establish whether the fixed or random effects model is more appropriate for a given panel. It tests the null hypothesis that the coefficients estimated by the efficient random effects estimators are the same as the ones estimated by the fixed effects estimator. If the p-value is insignificant, then one should use the random effects model. If the p-value is significant, the fixed effects model should be used (Data and Statistical Services, 2006 (Last accessed:12/10/2006)).

b)   Breusch and Pagan Lagrange multiplier test

The Breusch and Pagan (1980) Lagrange multiplier is a test for random effects. The null hypothesis is that $Var(v[i]) = 0$ and the statistic is given by:

$$l = T * [Sm=1m=M [Sn=1n=m-1 [rmn2]] \qquad [1]$$

where rmn2 is the estimated correlation between the residuals of the M equations and T is the number of observations. It has a chi-squared distribution with $M(M-1)/2$ degrees of freedom (StataCorp, 2003b). As such, it tests whether the dependent variable y is heteroskedastic as a function of regressors X. If it is, that suggests use of GLS or SUR estimation in place of OLS

i.e. a random effects model should be used. The Breusch and Pagan test statistic is always non-negative. Large values of the test statistic reject the hypothesis that y is homoskedastic in X (Moffatt, 2004).

c)   Modelling options in STATA

STATA has a number of options for modelling panel data. The command 'xtreg' fits cross-sectional time-series regression models. This command can fit fixed-effects (within), between-effects, and random-effects (mixed) models as explained above. It can also fit population-averaged models. 'Xtreg' uses the common form;

$$y[i,t] = a + B*x[i,t] + u[i] + e[i,t]$$ [2]

The form of estimator used is determined by the option specified. If no option is specified, the GLS random-effects estimator is assumed. Using the command 'xttest0', after running the regression presents the Breusch and Pagan (1980) Lagrange multiplier described above (StataCorp, 2003b).

3.2.2.4)   Selecting independent variables

A review of the literature on Self Rated Health scales has suggested a number of health score determinants (see for example (Craig, 2005; Crossley and Kennedy, 2002; Lindeboom and van Doorslaer, 2004)). These determinants include age, level of education, individual income, household income, ethnicity, and gender. In Chapter 4 of this thesis, health status is analysed by demographic group, including ethnic/population group, to establish whether or not significant variation exists. Scatter plots are also used as a descriptive tool to validate the selection of independent variables and to inform the choice of functional form.

3.2.3)   ESTIMATING HEALTH EXPENDITURE

Chapter 7 of this thesis uses regression analysis techniques to analyse the determinants or predictors of total health expenditure. Health expenditure as measured in this study is a limited dependant variable in that, despite being continuous for much of its distribution, it has a mass of observations at zero. The most common techniques for modelling data of this type include the two-part model, the Tobit model and the sample selection model. However, these models are conventionally used to model instances where zero expenditure implies no care seeking. In this study however, there are some instances where health service users claimed to incur zero costs. The Heckman model is an appropriate specification for such sample selection data as it can accommodate zero expenditure among users who did not pay for utilisation, quite separately

from non-users of health services who did not spend as a result (Sigelman and Zeng, 1999). This is the methodology adopted in this study.

3.2.3.1)   The Heckman Model

The sample selection process underpinning the Heckman model is specified as follows:

$$z_i^* = w_i \gamma + \mu_i \qquad\qquad [3]$$

$$y_i = x_i \beta + \epsilon_i \qquad \text{observed only if} \quad z_i^* > 0 \qquad [4]$$

In this case then, y_i is total health expenditure and it is observed only if z_i — health service use — is positive. This separates out the 'true' zeros in our distribution from our non-users, allowing explicitly for the different processes that may determine use versus non-use and positive versus zero expenditure amongst users. An attempt to measure total health expenditure using simple OLS estimation on data of this kind would result in biased estimators.

The Heckman estimator is thus based on the conditional expectation of the observed y as follows, where the final phrase, $\lambda(-w\gamma)$, is known as the inverse Mills ratio:

$$[5]$$

$$E(y \mid z^* > 0) = x\beta + \rho \sigma_\epsilon \lambda(-w\gamma)$$

This equation implies that when the error terms of equations [3] and [4] are correlated, $x\beta$ will not be the conditional expectation of y as y is affected by variables in both the selection and regression equations. As such a change in x has a compound effect on y through both the selection and regression equations and the coefficients can therefore not be interpreted as simple OLS coefficients. However, if the error terms of equations [3] and [4] are uncorrelated then a simpler two part model can be applied, with the second part of the model interpreted as a simple OLS estimator. *STATA* provides a measure of this correlation in the form of the *rho* statistic which, when multiplied by the adjusted standard error for the regression equation (reported by *STATA* as *sigma*), provides the estimated selection coefficient (reported by *STATA* as *lambda*). If *lambda* is significant, this justifies the use of the Heckman model over the simpler two step or OLS approach (Sigelman and Zeng, 1999).

If *lambda* is significant, it is necessary to transform the coefficients before interpreting their effect on y. This is done by calculating the average selection or truncation effect, measured as multiplying the inverse Mills ratio (IMR) by the estimated selection coefficient *lambda*. The

product of the IMR and *lambda* is then multiplied by the coefficients of the model to adjust for the selection effect (Greene, 2003; Sigelman and Zeng, 1999).

Few post-estimation procedures are necessary for the Heckman model as specified in this thesis. The standard output provided by *STATA* gives much of the information required to evaluate the model. *STATA* fits regression models with selection using either Heckman's two-step consistent estimator or full maximum likelihood (StataCorp, 2003b). For the purposes of this study we utilise the full maximum likelihood approach with robust standard errors and adjustment for clustering at the individual level. The robust standard errors are generated using *STATA* 's '*robust*' command, while the adjustment for clustering is conducted using the '*cluster*' command and the person code as the household reference point. *STATA* does not provide the facility to estimate Heckman as a random effects panel model and, as such, the Heckman model is run as a pooled model i.e. cross-sectional model.

3.2.4) MODELLING THE DEMAND FOR HEALTH SERVICES

In Chapter 7 of this thesis, regression analysis is used to analyse the demand for, and use of, health services. A panel data technique appropriate for binary categorical dependent variables i.e. the random effects probit, is applied to the use versus non-use case. A negative binomial model, a count model, is then used to estimate the number of visits to any provider. In all instances, there is reason to believe that the models estimated in Chapter 7 may be prone to endogeneity. As such, testing and appropriate corrections are made where needed. Finally, as these estimation techniques are computationally intensive, item non-response and attrition over the course of the model can negatively affect the stability of the models in the first instance, and may result in sample selection bias in the second instance. These problems are discussed in more detail below, as is the rationale for the recommended solution i.e. to impute missing data.

3.2.4.1) The Random Effects Probit

The random effects probit model is designed to cope with qualitative or categorical dependent variables and panel data with multiple individuals and multiple time periods. In a panel dataset such as the one used for this study, we have observations for our dependent variable y_{it}, where the i subscript refers to the observations for a given individual and t denotes the observation for the particular time period. The dependent variable (y) may be health service use or provider choice. The findings of both are presented and discussed in Chapter 7. There are two sources of variability in a model of this nature i.e. variability within observations for an individual, known as the fixed effects component, and variability between individuals. The observations for an individual are believed to be correlated over the course of the panel

(Arulampalam, 1998; Hardin, 1997).

In this study, each week of the diary placement is a discrete time period. As such there are 250 individuals in the sample, each of whom participated in eight diary placement periods of one week over the course of the study. The probit models estimated in this thus chapter take the following form:

$$Y_{it}^* = x_{it}\beta + v_{it}$$

[6]

Where $i=1,2,...,250$, $t=1,2,...,8$, and $v_{it} = \alpha_i + u_{it}$

$y_{it} = 1$ if $y_{it}^* > 0$ and $= 0$ else,

where, y^* denotes the unobservable (latent) variable e.g. the demand for health services or the probability of becoming a health service user, y is the observed outcome e.g. health service use, x is observable time-varying and time-invariant (fixed effects) vector of strictly exogenous characteristics which influence y^*, β is the vector of coefficients associated with the x, α_i denotes the individual specific unobservable effect and the u_{it} is a random error (adapted from (Arulampalam, 1998)).

In *STATA* (Version 9), the likelihood function of the random effects probit is calculated by adaptive Gauss-Hermite quadrature. For this calculation, the default number of integration points is twelve. Increasing the number of integration points increases the accuracy of the quadrature approximation. The accuracy of the approximation is tested after every probit specification to test whether amending the quadrature by increasing the number of integration points would make a statistically significant difference to the model. The number of integration points is increased where appropriate.

The independent variables used in the analyses below are either suggested generally in the literature or are suggested in the preceding chapters of this thesis.

3.2.4.2) *The Negative Binomial Model*

The analysis of the number of visits to any health service provider requires the use of a count model. Two commonly used count models are the Poisson model and the negative binomial model. The Poisson model requires the mean and the variance of the distribution to be equal. When this is not the case, the distribution is said to display over dispersion. When this occurs, the Poisson estimates will be inefficient, biasing the standard errors downwards and inflating the z values of coefficient estimates. The negative binomial model is used to estimate count models when there is over dispersion in the Poisson distribution. When there is no over dispersion, the estimates for the negative binomial model will be equal to those from the

Poisson model. When over dispersion is present, only the negative binomial model will be efficient and unbiased. The negative binomial distribution is given by:

$$\Pr\left(y \mid x\right) = \frac{\Gamma\left(y + \alpha^{-1}\right)}{y!\,\Gamma\left(\alpha^{-1}\right)} \left(\frac{\alpha^{-1}}{\alpha^{-1} + \lambda}\right)^{\alpha^{-1}} \left(\frac{\lambda}{\alpha^{-1} + \lambda}\right)^{y} \qquad [7]$$

Where y is the number of counts and α is an ancillary parameter that measures the degree of over dispersion in the model. If $\alpha=0$ then the negative binomial distribution reverts to the Poisson distribution, wherein λ is both the mean and the variance of the distribution (Ender, 2006)

For the purposes of the estimation in Chapter 7, the negative binomial is estimated twice, once as a panel model without correction for zero inflation and once as a cross-sectional model with correction for zero inflation. In the panel model, the number of visits in each week contributes to the total count for that week and as such the visit count for any individual will vary from week to week over the course of the panel. The panel model is estimated for the full sample and as such, suffers from zero inflation which may result in biased estimators. To correct for the problem of zero-inflation without limiting the sample to users only and thus introducing the problems associated with truncation, we then run the model again as a zero-inflated negative binomial model. This model adjusts for zero inflation by explicitly modelling the zero inflation within the overall specification i.e. by modelling the count model as a two part model as follows:

$$u_{it} = \begin{cases} 1 & if \quad y_{it} > 0 \\ 0 & if \quad y_{it} = 0 \end{cases}$$

$$[8]$$

$$y_{it} = \begin{cases} m_{it} & if \quad y_{it} > 0 \\ . & if \quad y_{it} = 0 \end{cases}$$

$$m_{it} = \eta_{0i} + \eta_{1i} a_{it} + \varepsilon_{it}$$

Where u_{it} indicates whether or not a person i is a service user in time t, y_{it} is the visit count for individual i at time t, and m_{it} is the latent demand process that underlies the number of visits for individual i in time t (Kreuter et al., 2000).

This method provides unbiased, consistent estimates for the count model. However, this method is not available for panel data analysis in *STATA* or any comparable statistical package. It is thus necessary to run this iteration as a cross-sectional model for the panel as a whole i.e. with only one time period, counting the total number of visits over all eight weeks of the

diary placement. A Vuong statistic is used to compare the zero inflated negative binomial model with the standard negative binomial. Although the estimates from the zero inflated model will be unbiased, by creating a cross-sectional model we unavoidably loose the value of the panel data and the variability of service use over time and, as such, the findings of both models are presented in Chapter 7 and the similarities and differences discussed.

3.2.4.3) Testing for Endogeneity

The independent variables of the random effects probit and negative binomial models are required to be strictly exogenous. Evidence from earlier chapters and the wider literature raises the possibility that health status may be endogenous to health service use and provider selection. Similarly, the quality of health service providers may be endogenous to provider selection.

In the analysis in Chapter 7, the Durbin-Wu-Hausman (DWH) augmented regression test established whether or not these variables introduced endogeneity into the models of service use and provider choice. The test is conducted by using an auxiliary or predictor regression to calculate the residuals of each potentially endogenous independent variable as a function of all exogenous variables. These residuals are then used as an independent variable in a regression of the original or main model e.g. the model of service use (Davidson and MacKinnon, 1993). If the coefficient of the residual variable is significantly different from zero in the main model, then the variable in question is considered to be endogenous to that specification.

The most common solution to this problem is the use of instrumental variable regression techniques to control the endogeneity. However, this option is not available when estimating the demand for health using a categorical (or non-linear) dependent variable such as use versus non-use or provider choice, or for count models using panel data. However, the instrumental variable approach can be simulated by using the predicted rather than the observed values of the endogenous variable and ensuring that at least one exogenous variable is contained in the auxiliary model of the endogenous variable but not in the main model of demand (Gold and Wooldridge, 1995). This method is applied in Chapter 7 where appropriate.

3.2.4.4) Imputing missing values

Over the eight week period of the study, the attrition rate amongst participants was 18% with most attrition happening in the first or last week of the placement. As indicated in Table 3.4, small number of participants missed a week or more of the diary and then rejoined in subsequent weeks. Attrition varied significantly by gender, population group and age with females having a higher attrition rate than males (p<0.05), and Black/African respondents having a higher attrition rate than Coloured respondents (p<0.01). The youngest age

category i.e. 15-29 year olds had the highest attrition rate and the rate of attrition declined with age ($p<0.01$ for the 15-29 category compared with the 20-29 category, and $p<0.01$ for the 15-29 category compared with all other categories). This non-random general attrition results in an unbalanced panel.

An unbalanced panel can cause inconsistent estimators and sample selection bias. The problem can be easily corrected with first differencing methods or a series of selection equations if the estimation method is a linear panel model and attrition is an absorbing state i.e. once participants have left the sample in any time period they do not return. However, in the case of Chapter 5, the methods used are either non-linear or count models and attrition is not an absorbing state. Modelling attrition as an absorptive state i.e. treating any respondents who 'drops-out' in a single time period as a permanent drop-out, regardless of whether or not they rejoined the sample in subsequent weeks, would result in a significant loss of data that may prohibit much of the analysis or at least make these computationally intensive models unstable with a sample of this size. Inverse probability weighting is a complex alternative method that can be applied to non-linear models under certain restrictive assumptions however, this method will not solve the problem for the count models in Chapter 5 (Gold and Wooldridge, 1995).

Table 3.4: Panel attrition rates

	Male		Female		15-19yrs		20-29yrs		30-39yrs		40-49yrs		50-64yrs		Black/African		Coloured		Total	
Week No.	n=	Attrition Rate	n=	Attrition Rate	n=	Attrition Rate	n=	Attrition Rate	n=	Attrition Rate	n=	Attrition Rate	n=	Attrition Rate	n=	Attrition Rate	n=	Attrition Rate	n=	Attrition Rate
1	71	5.3%	167	4.6%	22	12.0%	65	7.1%	54	1.8%	44	4.3%	42	2.3%	130	7.1%	99	1.0%	238	4.8%
2	70	1.4%	162	3.0%	22	0.0%	63	3.1%	52	3.7%	43	2.3%	41	2.4%	126	3.1%	97	2.0%	232	2.5%
3	70	0.0%	155	4.3%	22	0.0%	62	1.6%	50	3.8%	42	2.3%	38	7.3%	121	4.0%	95	2.1%	225	3.0%
4	70	0.0%	150	3.2%	21	4.5%	59	4.8%	49	2.0%	41	2.4%	39	-2.6%	117	3.3%	94	1.1%	220	2.2%
5	69	1.4%	154	-2.7%	21	0.0%	62	-5.1%	49	0.0%	41	0.0%	39	0.0%	118	-0.9%	96	-2.1%	223	-1.4%
6	69	0.0%	152	1.3%	20	4.8%	61	1.6%	49	0.0%	41	0.0%	39	0.0%	116	1.7%	96	0.0%	221	0.9%
7	66	4.3%	149	2.0%	19	5.0%	56	8.2%	49	0.0%	41	0.0%	39	0.0%	110	5.2%	96	0.0%	215	2.7%
8	64	3.0%	142	4.7%	18	5.3%	52	7.1%	47	4.1%	40	2.4%	38	2.6%	106	3.6%	91	5.2%	206	4.2%
Total	549	15.5%	1,231	20.4%	165	31.6%	480	28.5%	399	15.4%	333	13.8%	315	12.0%	944	27.1%	764	9.2%	1780	19.0%

As such, the analysis in this thesis uses imputation to balance the panel. Values that are missing either due to attrition or item non-response are imputed by age, gender, ethnicity and in some cases, household income. Although imputation is not without its drawbacks, this method solves the problems of the unbalanced panel, item non-response and low sample bases that result in potentially unstable models of behaviour amongst sub-populations. Imputation also has the benefit of being a relatively simple and transparent procedure. Summary variables for all imputed variables are provided before and after imputation in the findings of Chapter 4 to 7 to maximise that transparency.

Imputation was done using *STATA* (Version 9). *STATA* organizes the cases by patterns of missing data so that the missing-value regressions can be conducted efficiently using a limit of 31 independent variables. As mentioned previously, age, gender, ethnicity/population group and household income were used as independent variables for the missing value regressions.

3.2.5)   A GENERAL CHALLENGE TO THE APPLICATION OF ECONOMETRICS IN HEALTH

Jones argues that we cannot identify pure causal effects from empirical data "because the "counterfactual" can never be observed." (Jones, 2000) Possible solutions to this problem include identifying the average causal effects calculated with sample data. Experimental designs may offer an alternative to observational data but are seldom used in practice. When using observational data such as the data used in this study, care should be taken to correct for problems of non-random selection and measurement error that may introduce bias. Three alternative estimation strategies are commonly used to estimate these treatment effects (Jones, 2000; Mullahy and Manning, 1996);

1) <u>Longitudinal data</u> provide the opportunity to control for unobservable individual effects that are constant over time.

2) <u>Instrumental variables</u> may be used to purge bias.

3) <u>Control function or selection model</u> approaches to correct for selection bias.

In this study, longitudinal data is used to control for unobservable individual effects that are constant over time. Where necessary, the instrumental variable approach is appropriately adapted to purge bias. Finally, the three step approach to estimation detailed above should correct for any possible selection bias without the need for an explicit control function. Where the panel is unbalanced and a risk of sample selection bias occurs, imputation is used to address the problem rather than selection equations.

CHAPTER FOUR:

INTEGRATING PERCEIVED NEED INTO

THE DEMAND FRAMEWORK

1) INTRODUCTION

Although not explicitly incorporated into the economic model of demand, perceived health need will affect whether or not health seeking takes place and, if it does, what form that health seeking may take. Some studies incorporate this framing into their analysis by running models conditional on ill health (for example Dzator and Asafu-Adjaye, 2004), others run demand models amongst health service users only (such as De Vos et al., 2005), while still others incorporate perceived need into the demand model as an independent variable (for example Gao et al., 2001).

The latter strategy leads to a potential specification problem as the endogeneity of health status is an often cited source of bias in studies of demand for curative health services. A significant body of literature demonstrates that self rated health measures vary systematically by socio-economic status, gender and age, amongst other factors (see for example Charasse-Pouélé and Fournier, 2006; Eriksson et al., 2001; Needham et al., 2001). If some perceived notion of poor health is a necessary precursor to many forms of health seeking, this raises the possibility that health seeking also varies systematically along these lines. If for example, poorer people are less likely to consider themselves in ill-health and to seek care (or more likely to delay health seeking), this bias may contribute to inequities in positive health outcomes. This in turn may bias cost effectiveness as poorer individuals may be more likely to suffer adverse health outcomes thus raising the cost per positive outcome for these groups. This in turn may bias concomitant supplier-side resource allocation decisions if these groups are perceived to be 'more expensive' to treat. From the users or patients perspective, if perceptions of ill health and resultant health seeking vary systematically across groups, some will benefit disproportionately from health expenditure as illustrated in Castro-Leal et al.'s benefit incidence analysis of public spending in several African countries (Castro-Leal et al., 2000). Spending on the poor will only benefit them if they are accessing the services purchased or provided by the State on their behalf (Castro-Leal et al., 2000; Sahn, 2000; Wagstaff and van Doorslaer, 2003).

This chapter extends the standard methodology for estimating and analysing health need in a number of ways. Firstly, the use of the SF8 questionnaire to quantify self-assessed health

allows a more disaggregated measure of health status than more commonly obtained from binary measures or five point 'wellness' scales from single wellness questions. As a multi-attribute measure, the SF8 is also less prone to cut point shift (or scale of reference bias), index shift and other forms of reporting heterogeneity (Groot, 2000; Lindeboom and van Doorslaer, 2004; Shmueli, 2003)*. Importantly, the scoring of the SF8 is not based on provider preferences and as such there is little overlap between this discussion and the discussion regarding patient preferences in Chapter 5 of this thesis (Brazier et al., 2002). Secondly, the bias in health seeking caused by systematic variation in self reported or perceived ill health is explored using the quantitative data and possible exogenous factors causing the bias are discussed. Thirdly, the qualitative data provide an opportunity to explore how patients arrive at their health status evaluations. And finally, the lag between the perception of ill health and any use of health services is explored qualitatively.

Data are derived from a study set in four high TB prevalence communities in Cape Town, South Africa. The qualitative data are drawn from eight focus group discussions amongst TB affected and unaffected adults. Weekly health diaries were used to collect quantitative data from all adult members of 144 households over an eight week period. Self reported health status was collected weekly using the SF8 protocol, which measures both mental and physical dimensions of health. The study is deliberately conducted in an urban setting to control for the constraints on health seeking imposed by supply shortages or severe geographic barriers to treatment access. The methods used to analyse the qualitative and quantitative data presented in this chapter were described in detail in Section 4 of Chapter 3.

2) QUANTITATIVE FINDINGS

2.1) THE SF-8 MEASURE OF HEALTH STATUS

Self assessed health status was measured using the SF-8[†] Health Survey with a one week recall period as described in Section 4.2.2 of Chapter 3. The applicable questions were asked every week for the full eight week cycle. The SF-8 values are calculated using norm-based scoring methods. This method allows meaningful comparison between scales within and between studies (Ware et al., 2001).

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* This will be discussed in considerable detail in the final section of this chapter.

† The SF8 uses the best item measuring each of 8 health domains in the longer SF-36 Health Survey. Average scores based on the SF-8 measures are unbiased estimates of SF-36 scores for the same measure (Ware, J.E., Kosinski, M., Dewey, J.E. and Gandek, B., 2001, How to Score and Interpret Single-Item Health Status Measures: A Manual for Users of the SF-8 Health Survey. QualityMetric Incorporated, Lincoln, RI.).

2.1.1) OVERVIEW OF PHYSICAL AND MENTAL HEALTH

The domain and summary scores for all participants over all weeks of this panel are provided in Table 4.1 below. The SF8 norm is weighted to achieve a normal distribution with a mean of 50. As expected then, the means of the health scores in this study are all close to 50. There also appears to be sufficient variation around the mean to facilitate analysis. The highest variation occurs around the means of the summary scores. Table 4.1 also indicates however, that there are missing observations for both the domain and summary scores as the complete dataset should have 2000 observations for each. Missing domain scores may be the result of item non-response or respondent attrition over the course of the panel as presented in Table 3.4 in the previous chapter. Missing summary scores are the result of missing domain scores i.e. if a score for any domain for any individual is missing, the summary score for that individual will be missing. As much of the analysis in this chapter is conducted by demographic group, these missing values are unlikely to create significant bias in the findings. There is also no empirical need, as there is in Chapter 7 of this thesis, to impute the missing values to ensure the robustness of applied econometric models. That said, there may be some unobserved heterogeneity across groups that would result in bias and this has not been corrected in the analysis that follows.

Table 4.1: SF8 Domain and Summary Scores for the Total Population

SF-8 Health Scores for the Total Population					
Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
General Health	1780	49.10	9.79	22.81	59.45
Physical Functioning	1780	48.09	8.70	21.46	54.05
Role Physical	1779	47.49	8.95	23.01	53.98
Bodily Pain	1779	53.33	9.62	25.45	60.77
Vitality	1778	53.24	9.53	28.14	61.83
Social Functioning	1780	49.15	8.64	23.44	55.25
Mental Health	1779	49.82	9.35	21.4	56.79
Role Emotional	1780	46.56	8.09	21.66	52.42
Physical Summary Scale	**1775**	**49.89**	**10.45**	**11.22**	**67.27**
Mental Summary Score	**1775**	**50.67**	**10.57**	**11.33**	**65.41**

The summary scores in the preceding table have not been adjusted for biological differences in age and gender, or the different health risks faced by the high TB prevalence population groups in our sample. The scores are then standardised using the indirect convenient regression method described in Section 4.2.2. of Chapter 3. These regressions are simple linear regressions of age, gender and population group on the average physical and mental health scores respectively. The health score used is a single summary score for each individual i.e. each person's scores for the eight week period are averaged to provide a single physical health measure and a single mental health measure for the total period of the diary placements.

Table 4.2 below summarises the results of the physical health regression. This regression indicates that females have worse health physical scores although this difference is not statistically significant. Statistically significant predictors of physical health are age and population group. Each additional year of age reduced the predicted physical health score by 0.21. Respondents who classified their population group or ethnicity as Coloured, Indian or White all had significantly better physically health scores than respondents who classified their population group or ethnicity as Black/African (the omitted category).

Table 4.2: Standardisation regression for the physical health score

Dependant Variable: Average Physical Health Score[‡]

Source	SS	df	MS	Number of obs	=	241
Model	3807.09	5	761.4	F(5, 235).	=	15.51
Residual	11533	235	49.08	Prob > F	=	0
Total	15340.09	240	63.92	R-squared	=	0.25
				Adj R-squared	=	0.23
				Root MSE	=	7.01

	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Female	-1.40	1.00	-1.40	0.16	-3.37	0.57
Age	-0.21	0.03	-6.24	0.01	-0.28	-0.14
Coloured	7.11	0.99	7.22	0.01	5.17	9.06
Indian	8.76	4.11	2.13	0.03	0.67	16.85
White	6.11	3.01	2.03	0.04	0.17	12.04
Constant	55.15	1.43	38.54	0.00	52.33	57.97

By comparison, Table 4.3 summarises the results of the mental health regression. Unlike the physical health score, gender is a statistically significant predictor of mental health with females having lower scores that their male counterparts. Age and population group are also significant predictors of mental health. Each additional year of age reduced the predicted physical health score by 0.12. Coloured, White and Indian respondents have higher predicted mental health scores than Black/African respondents (the omitted category).

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‡ 'Gender' and 'population group' are modelled as dummy variables and the base categories for these variables are 'male' and 'Black/African respectively.

Table 4.3: Standardisation regression for the mental health score

Dependant Variable: Average Mental Health Score						
Source	SS	df	MS	Number of obs	=	241
Model	3561.78	5	712.4	F(5, 235)	=	14.26
Residual	11735.82	235	49.94	Prob > F	=	0
Total	15297.59	240	63.74	R-squared	=	0.23
				Adj R-squared	=	0.22
				Root MSE	=	7.07

	Coef.	*Std. Err.*	*t*	*P>t*	*[95% Conf.*	*Interval]*
Female	-2.18	1.01	-2.16	0.03	-4.16	-0.19
Age	-0.12	0.03	-3.42	0.01	-0.18	-0.05
Coloured	7.41	0.99	7.46	0.01	5.46	9.37
Indian	8.09	4.14	1.95	0.05	-0.07	16.26
White	9.96	3.04	3.28	0.01	3.97	15.94
Constant	52.76	1.44	36.55	0.01	49.92	55.60

These simple regression equations were used to predict health scores for each individual in the dataset. The standardised health measures were calculated by taking an individual's actual health score, subtracting the predicted value for someone of that age, gender and population group, and adding the difference to the mean health score for the population.

The standardised and unstandardised scores for the total population and for different demographic groups are presented in Tables 4.4 and 4.5 below. A significance test for the equality of means was calculated on selected pairs i.e. males versus females, Black/African versus Coloured etc. Among the unstandardised physical health scores:

- Males have significantly <u>higher</u> mean scores than females.

- Black/African respondents have significantly <u>lower</u> means scores than Coloured respondents.

- These differences hold when gender and population group are combined i.e. Black/African Males have significantly <u>lower</u> mean scores than Coloured males, and Black/African females have significantly <u>lower</u> mean scores than Coloured females.

- The differences between the means of successive age groups are not statistically significant. However, respondents in the 18-29 age category have a significantly <u>higher</u> mean score than those in the 40-49 category (p>0.1) and those in the 50+ age category (p>0.01). Similarly, respondents in the 30-39 age category have significantly <u>higher</u> mean scores than those in the 50+ category (p>0.05).

Unsurprisingly, as standardisation is designed to correct for demographic differences in population composition, the standardised physical health scores analysed by demographic health

group exhibit no significant differences between the means of selected pairs.

Table 4.4: Physical Health Scores by Demographic group

PHYSICAL HEALTH					
Unstandardised Values					
Demographic Group	*Obs (n)*	*Mean*	*Std. Dev.*	*Median*	*Significance test for equality of means (z)*	*P>z*
Total	241	49.61	7.99	52.19		
Male	72	51.29	7.03	53.60	2.29	0.022
Female	169	48.89	8.29	51.14		
Black/African	133	47.24	8.85	49.12	-5.73	0.002
Coloured	99	52.70	5.63	54.19		
Male Black/African	33	49.52	7.53	52.67	-2.15	0.032
Male Coloured	37	53.10	6.30	54.82		
Female Black/African	100	46.49	9.15	48.47	-5.28	0.000
Female Coloured	62	52.46	5.23	53.53		
18-29 years	90	51.32	6.24	52.86	0.80	0.424
30-39 years	54	50.32	7.74	52.62	1.04	0.298
40-49 years	44	48.62	8.36	51.59	0.99	0.322
50+ years	53	46.80	9.75	49.22		
Standardised Values					
Demographic Group	*Obs (n)*	*Mean*	*Std. Dev.*	*Median*	*Significance test for equality of means (z)*	*P>z*
Total*	241	49.61	6.93	50.38		
Male*	72	49.61	6.47	50.31	0.00	1.000
Female*	169	49.61	7.14	50.38		
Black/African*	133	49.61	8.00	50.43	0.00	1.000
Coloured*	99	49.61	5.39	50.38		
Male Black/African*	33	50.83	7.18	51.79	1.40	0.162
Male/Coloured*	37	48.63	5.83	49.76		
Female Black/African*	100	49.21	8.25	49.58	-0.94	0.347
Female/Coloured*	62	50.19	5.07	50.82		
18-29 years*	90	49.59	6.08	50.13	-0.27	0.779
30-39 years*	54	49.90	7.06	50.83	0.62	0.535
40-49 years*	44	49.03	6.84	50.82	-0.52	0.603
50+ years*	53	49.83	8.29	51.94		

Among the unstandardised mental health scores the findings are much the same:

- Males have significantly <u>higher</u> mean scores than females.

- Black/African respondents have significantly <u>lower</u> means scores than Coloured respondents.

- Black/African Males have significantly <u>lower</u> mean scores than Coloured males, and Black/African females have significantly <u>lower</u> mean scores than Coloured females.

- There are no statistically significant differences between the means of the

different age categories.

Again, in the standardised mental health scores there are few significant differences between the means of difference demographic groups. However, after the standardisation procedure, respondents aged 50 years and older have <u>higher</u> mean mental health scores than respondents aged 40-49. This is despite the fact that mean scores decrease with each successive age group up to this point.

Table 4.5: Mental Health Scores by Demographic group

MENTAL HEALTH					
Unstandardised Values					
Demographic Group	Obs (n)	Mean	Std. Dev.	Median	Significance test for equality of means (z)	P>z
Total	241	50.35	7.98	52.54		
Male	72	52.60	6.70	54.61	3.16	0.003
Female	169	49.39	8.31	51.96		
Black/African	133	47.33	8.24	49.29	-7.14	0.000
Coloured	99	54.01	6.00	55.56		
Male Black/African	33	50.26	7.03	52.06	-2.76	0.006
Male Coloured	37	54.59	5.93	55.83		
Female Black/African	100	46.37	8.41	47.68	-6.40	0.000
Female Coloured	62	53.66	6.06	55.42		
18-29 years	90	50.86	6.80	52.33	0.14	0.889
30-39 years	54	50.68	7.78	53.72	1.18	0.238
40-49 years	44	48.49	10.09	51.18	-1.17	0.242
50+ years	53	50.69	8.10	53.12		
Standardised Values					
Demographic Group	Obs (n)	Mean	Std. Dev.	Median	Significance test for equality of means (z)	P>z
Total*	241	50.35	6.99	51.49		
Male*	72	50.35	6.30	50.95	0.00	1.000
Female*	169	50.35	7.28	51.79		
Black/African*	133	50.35	7.77	51.46	0.00	1.000
Coloured*	99	50.35	6.10	51.58		
Male Black/African*	33	51.64	6.69	52.97	1.55	0.121
Male/Coloured*	37	49.28	5.97	50.76		
Female Black/African*	100	49.92	8.08	50.93	-0.95	0.342
Female/Coloured*	62	50.98	6.14	52.47		
18-29 years*	90	50.61	6.53	51.53	0.01	0.992
30-39 years*	54	50.60	6.51	51.69	1.60	0.110
40-49 years*	44	48.13	8.35	49.88	-2.15	0.032
50+ years*	53	51.50	6.80	51.87		

2.1.2) SOCIOECONOMIC INEQUALITY OF HEALTH NEEDS

For the purpose of this analysis, a concentration index is calculated for each summary health measure.   As discussed in Section 4.2.2 of Chapter 3, the concentration index provides a measure of absolute and relative dispersion ranging from zero to positive (or negative) one, with zero representing perfect equality and positive (or negative) one representing perfect inequality favouring the rich (poor).

As before, both the standardised and unstandardised scores are calculated. The unstandardised concentration indices for physical and mental health are 0.039 ($\sigma = 0.005$, $t=7.25$, $p<0.01$) and 0.044 ($\sigma = 0.005$, $t=8.59$, $p<0.01$) respectively, indicating some inequality of health distribution that favours wealthier groups even within these relatively poor and homogenous communities. Similarly, the standardised concentration indices for physical and mental health are both 0.015 ($\sigma = 0.005$, $t=2.99$, $p<0.01$ and $\sigma = 0.005$, $t=2.83$, $p<0.01$ for physical and mental health respectively). Again, this indicates inequality of health distribution that favours wealthier groups. Unsurprisingly, this inequality is less than that observed with the unstandardised scores. The difference between the standardised and unstandardised scores for the total population is significant at the 99% confidence level.

The concentration curves for the total population are illustrated in Figures 4.1 and 4.2 below. The graphs on the right illustrate the unstandardised scores, while those on the left illustrate the standardised scores.

Figure 4.1: Concentration Curves for Physical Health

(* denotes Standardised)

102
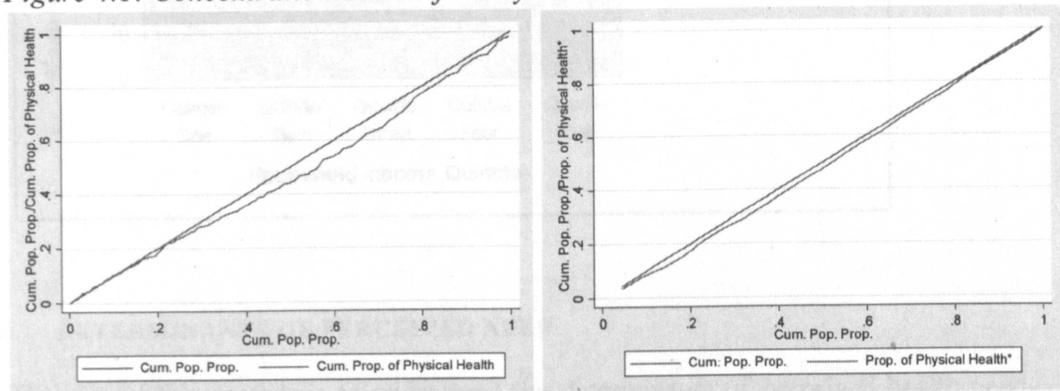
Figure 4.2: Concentration Curves for Mental Health
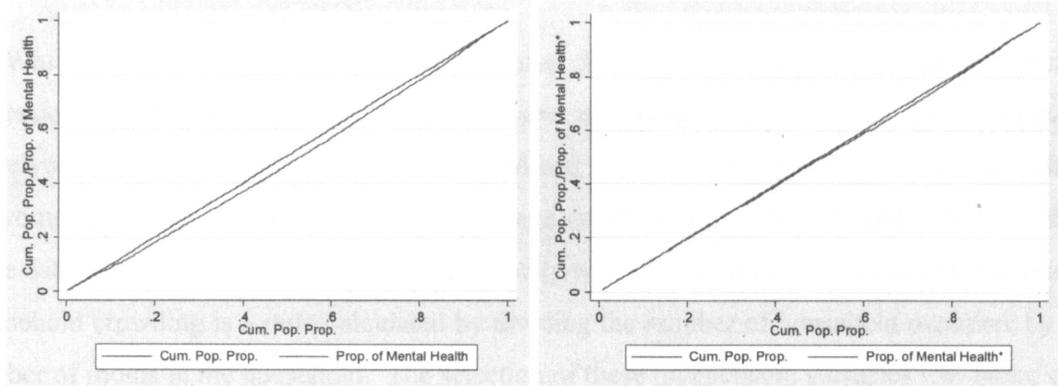
(* denotes Standardised)

To corroborate these findings, household income was then used to divide the sample into socio-economic quintiles. As Figure 4.3 demonstrates, mean health scores improve with household income. The improvement in the mental health summary scores is slightly greater than the improvement in the mean physical health scores.

Figure 4.3: Summary Health Scores by household income:
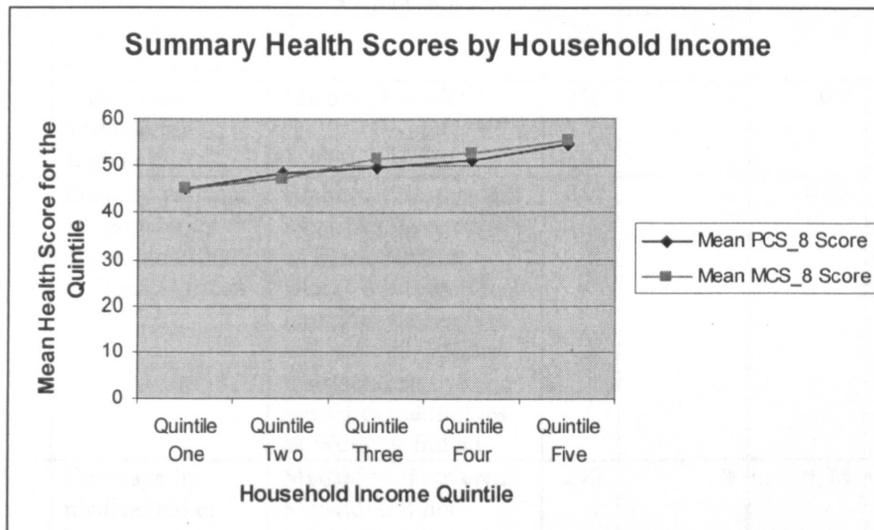
2.2) DETERMINANTS OF PERCEIVED NEED

The aim of this section is to understand the determinants of perceived health need. The summary scores for physical and mental health are used as continuous dependent measures of perceived health need for this purpose as they incorporate all domains of the SF8 in a parsimonious manner. These summary scores are not standardised for this analysis. Section 4.2.2 in Chapter 3 described the methods of analysis used here in some detail. With reference to that discussion then, the analysis below uses a linear random effects panel model. The use of the random effects regression method is justified by the Breusch and Pagan Lagrange multiplier

test that was run after each regression.

While physical and mental health constituted the dependent variables in each respective regression model, the following variables were incorporated as potential determinants of perceived ill-health: age, education, individual income, household income, household crowding, coverage by private medical insurance (medical aid), ethnicity and gender. All of these data were collected from respondents directly with the exception of the crowding measure. Household crowding is a ratio calculated by dividing the number of household members by the number of rooms in the household. The selection of these independent variables was based on a review of the literature on self rated health scales and the use of scatter plots as described in section 4.2.2 of Chapter 3. The scatterplots revealed individual and household income to be highly correlated and as such, individual income was omitted from the analysis in favour of household income. The independent variables are summarised in Table 4.6.

Table 4.6: Summary Of Independent Variables Used To Predict Physical And Mental Health

VARIABLE NAME	DESCRIPTION	VALUES FOR CATEGORICAL VARIABLES	N	MEDIAN	MEAN	STD DEV.	MIN.	MAX.
age	Age at last birthday in years	-	250	35.5	36.78	14.38	18	74
female	Categorical variable for female	Male=0, Female=1	250	1	0.7	0.46	0	1
black	Dummy variable for population group identified as Black/African	Black=1 if respondent identifies themselves as Black/African, Black=0 if respondent identifies themselves as Coloured, Black=. if respondent identifies themselves as White or Indian.	240	1	0.58	0.49	0	1
medaid	Coverage by medical aid or insurance	Medaid=1 if covered, Medaid=0 if not covered	247	0	0.26	0.44	0	1
edyears	Education in years	-	250	10	9.88	2.7	1	16
shareofhhinc	Per capita household income (in ZAR)	-	246	566.67	1189.99	1482.70	0	8500
crowding	A ratio calculated by dividing the number of rooms in a house by the number of household members.	-	144	1	1.24	0.97	0.14	6

Separate regressions were run on the physical and mental health summary scales and both are presented in Table 4.7 below. The models were estimated using a stepwise technique which ensures that the addition of each successive independent variable adds to the Wald statistic and increases the R-squared statistic i.e. improves the explanatory power of the model. The signs of variables in preceding specifications did not change with the addition of new variables. The addition of the last four variables in Table 4.7 added little to the explanatory power of the model however, as they did make a positive contribution and their inclusion made sense from a theoretical perspective, they were retained.

In both models, the Wald chi-squared test rejects the null hypothesis that the coefficients of the regressors are all zero, indicating the models' overall statistical significance. Similarly, in both cases, the Breusch and Pagan Lagrangian multiplier test for random effects indicated that the random effects model is appropriate for both the physical and mental health models ($p<0.01$ in both cases). Sigma_u and sigma_e give the standard deviation of the common residuals (u_i) and the unique residuals (e_i) respectively. Rho gives the proportion of the unexplained variance due to differences among units i.e. differences among the individuals. Both models are strongest at fitting the variation around the means between individuals and weakest at explaining the variations around the means within individuals over time. This is unsurprising as many individual level explanatory variables such as age were fixed for the period of the study.

Table 4.7: Random Effects GLS Regression of Physical and Mental Health

	PHYSICAL HEALTH REGRESSION		MENTAL HEALTH REGRESSION	
	b	*t*	*b*	*t*
Age	-0.19***	(-5.35)	-0.09*	(-2.31)
Household Income (log)	1.70**	(2.84)	1.76**	(2.83)
Crowding	-1.40*	(-2.49)	-0.84	(-1.44)
Covered by medical aid/ insurance	0.27	(0.21)	0.03	(0.02)
Years of Education	0.21	(1.05)	0.30	(1.44)
Black/African	-1.70	(-1.18)	-2.47	(-1.66)
Female	-0.97	(-0.97)	-1.93	(-1.88)
Constant	44.87***	(8.49)	40.76***	(7.46)
Model Statistics				
R Squared: within	0.00		0.00	
between	0.33		0.29	
overall	0.17		0.15	
Wald Chi-Squared Test	100.461***		87.373***	
Sigma_u	5.909		6.134	
Sigma_e	7.699		7.846	
Rho (fraction of variance due to u_i)	0.371		0.379	
No of groups	226		226	
Ave. no of observations per group	7.3		7.3	
No. of cases	1656		1656	

Significant predictors (for p<.05, ** for p<.01, and *** for p<.001):*

105

In the physical health regression only age, the log of household income and the log of crowding are statistically significant predictors of self-assessed health. Household income has a positive effect on self-assessed health while crowding and age both have a negative effect on self assessed health. Age has a greater effect on the physical health summary scale than it does on the mental health summary scale.

In the mental health regression only age and household income have a statistically significant impact on self-assessed mental health. Interestingly, crowding was statistically significant until the addition of the gender dummy variable 'female'. Possible interaction terms were investigated but found not to be significant.

3) QUALITATIVE FINDINGS

While the quantitative data enable the analysis of need by demographic group and the possible predictors of mental and physical health need, the qualitative data provide an opportunity to explore more broadly the determinants of health needs, the factors that may influence that determination and how perceptions of health need may interact with service use/non-use generally. The process of establishing need from the patient's perspective is also explored.

3.1) ESTABLISHING A NEED FOR HEALTH CARE

3.1.1) MONITORING

Some level of 'health monitoring' seemed to occur on an almost continuous basis. The illness narratives emerging from the focus groups described both internal and external monitoring i.e. monitoring of self by self, and monitoring of self by others. This monitoring process can be split into two forms, namely ongoing monitoring, and event based monitoring.

a)   Ongoing Monitoring:

Some amount of monitoring appeared to occur fairly consistently over time. Ongoing monitoring tended to focus on the comparison of health states at various times or on the comparison of health states against the states of others at a single time point. Ongoing monitoring appeared to be subconscious until an anomaly was identified.

> "Sometimes I could hardly take a bucket and fetch water from the tap outside
> [as I normally do]." Group 6, Female, TB affected

b)   Event Based Monitoring:

Event based monitoring tended to be more deliberate than ongoing monitoring but the two forms of monitoring did interact:

- Events could serve to corroborate ongoing monitoring as in the following example where ongoing monitoring identified a persistent cough and weight loss, while the comments from others regarding that weight-loss acted as the event that corroborated the respondent's own monitoring and, in this case, sparked health seeking:

  o Need identified by on-going monitoring: *"I had a persistent cough, I sweated heavily and I was losing weight at an alarming speed."*

  o Event(s) that corroborate monitoring: *"[My boyfriend] could see that I was losing weight and people in my neighbourhood were also commenting on thin I had become."* Group 6, Female, TB affected

- Events could spark conscious ongoing monitoring: For example, a workplace fire caused one respondent to monitor vigilantly for a period after the fire

- Events could confuse ongoing monitoring: The respondent who experienced the fire attributed her TB symptoms to the fire.

The self centred monitoring process may have highlighted a potential heath problem but, as is discussed later in this section, there was usually a need for confirmation and this extended the monitoring to an available evidence base. Figure 4.4 illustrates how the conceptual realm appeared to interact iteratively with an evidence base in participants' illness narratives. The diagram shows how this interaction was facilitated by factors such as an expectation of social support if one could verify one is truly 'ill'. Similarly, stumbling blocks could also interfere with the interpretation of evidence, particularly if that evidence was not physical evidence.

3.1.2) A GENERAL DISTRUST OF SELF-ASSESSED NEED

All group participants were asked to recall their last illness experience. In half of the groups this was most likely to be their TB experience. In the other half, this experience varied from benign 'flu' type illnesses to acute appendicitis and kidney stones. In all groups and across all illness, respondents struggled to identify the point at which they were ill enough to warrant a consultation with a medical professional if help was sought. The extract below is taken from a focus group discussion amongst women from Mitchell's Plain/Oostenberg who had been affected by (or were currently affected by) TB. This woman was suffering from undiagnosed TB.

"Moderator: You were in and out of hospital with your baby. The doctor there
told you that you had a bad cough. You knew that you were coughing. Tell me
about that. Did you know you were ill?
Respondent: I didn't know. Didn't think of that. Just thought it was a cough.
Moderator: You didn't tell anyone that you had this bad cough?
Respondent: No. They heard, but they didn't take notice. Didn't think of TB.
Moderator: It took a doctor to tell you that you were ill.
Respondent: Yes." Group 5, Female, TB affected

Even participants who claimed to know their symptoms were serious ignored the symptoms if they were similarly ignored or unnoticed by surrounding family and friends. The rationale for this behaviour was complex but appeared to relate to a general distrust of ones own judgement.

Self-assessment of health need was seen to lack objectivity and as such, methods were introduced to test the validity of a needs assessment. These methods commonly included seeking validation from a second person, comparing ones health at different points in time and testing ones ability to complete a routine task. In short, respondents interacted with an available evidence base, often through a series of facilitating factors and stumbling blocks. This process is illustrated in Figure 4.4 later in this chapter.

3.1.3) HOW SICK IS SICK?

The key area of uncertainty pertained to the question: 'how sick is sick?' When is one sick enough to be exempt from one's usual responsibilities and when is one sick enough to warrant seeking 'outside' help? The discussions strongly indicated that malaise did not necessarily imply sickness, although it may have sparked the monitoring described above. When symptoms matched those of a known illness this may have been taken to indicate actual sickness but this wasn't always the case, as was borne out in the case of the coughing mother with her baby quoted above. On the other hand, incapacitating pain or significant blood letting usually did signify sickness.

"[After being kicked in the side] I got home, then I urinated, passed blood. I
didn't know then, I then thought it's perhaps [something wrong] or so, [so I
told my Aunt that my] urine is reddish, she said I must urinate again and then
she rushed me to the Day-Hospital and from there they sent me to Groote
Schuur." Group 3, Male, not TB affected

The crux was objectivity, the more objective the indicator or signal, the more likely the person was to attribute it to illness and not to flawed monitoring. Validation of an indicator

or signal by a third party greatly increased its objectivity and this tended to place greater importance on physically visible/noticeable signals such as 'thinning', sweating and coughing as illustrated in earlier quotes from the discussions and those presented below.

"I was very tired and my mother saw that I was sweating. She took me to the doctor. She saw that I was sleeping a lot. If I wake I was full of sweat."
Group 7, Male, TB affected"

"Moderator: What made you think that you were ill?
Respondent: I didn't think that I was ill. I was very frustrated. Never thought of it. Just angry towards everybody. My mother told me that something was wrong with me. I was losing weight and I [had been] quite fat. My mother told me to go to the hospital.
Moderator: Let us go back to the beginning. You said you didn't know that you were ill, but your mother told you that you were different.
Respondent: I was stubborn then. I didn't want to listen to her.
Moderator: What did you think – why did you lose weight?
Respondent: I didn't eat a lot – I felt sick every time.
Moderator: You were sick and you vomited blood. [Respondent had mentioned this earlier]
Respondent: Yes. I coughed a lot and then I vomited.
Moderator: You didn't think that you were ill?
Respondent: No
Moderator: Your mother told you in the end.
Respondent: Yes, she told me to go. I went to the day hospital first and they sent me to the clinic." Group 5, Female, TB affected

Conversely, contradiction of a physically obvious signal sparked a search for a narrative to explain the signals. This narrative may or may not have involved illness as a root cause. If it did involve illness as a root cause, further validation was sought. The role of these narratives is discussed further in the next section of this chapter.

Figure 4.4: Monitoring to establish health need

Evidence base

Stumbling blocks

Self now versus self at other times

Physical functioning – can I perform my normal tasks?

Appearance: thinning

Distinguishing sickness from malaise: how sick is

Martyr syndrome: if no-one cares about me why should I?

Denial

Expectation of social sanction/ rejection

Questioning objectivity

Conceptual realm

Physical monitoring of body by self and others

Symptoms match the symptoms of a 'known/ accepted' illness

Iterative process

Iterative process

Bio-medical reinforcement : diagnosis or prescription from a health professional

Objective event sparks monitoring

Expectation of social support

Reinforcement of own judgment by others: 'you don't look well'

Self now versus others now

Symptoms obvious to others:

Facilitators

What sparks the monitoring? Event based versus ongoing

3.2) RATIONALISING THE NEED FOR HEALTH CARE: ROLE OF THE NARRATIVE

3.2.1) HOW I GOT SICK IS AS IMPORTANT AS THE FACT THAT I DID GET SICK

An illness narrative refers to the story of a single illness episode. Generally, participants described an illness including details about its symptoms, causes and cures. They may have been influenced by some professional opinion but this was not always the case and, where a professional opinion was integrated, it was always interpreted and adapted to form a coherent part of the total narrative complementing rather than supplementing lay theories.

The male groups tended to share personal narratives but were less likely to share the narratives of a third party. By comparison, the female groups tended to be equally comfortable sharing their own illness narratives and the narratives of friends and families. The female groups tended to make extensive use of third party narratives both as a tool for explaining and as a source of 'evidence'.

Respondent explaining why some people die of TB when the group has agreed that the illness is curable and therefore not a source of fear: *"Because you sometimes go to a doctor and he fails to detect TB. In the meantime it is causing ruin inside your body. Some people find out too late that they have TB, when their lungs are ravaged. If that's the case then your chances of staying alive are almost nil. You stay alive for only a very short time"* Group 6, Female, TB affected

Respondent explaining how alcohol abuse contributed to her uncle's illness: *"...my uncle was an alcohol abuser. He would leave the house in the morning without eating to go and drink, come lunch time, his plate will be there for him to eat, he will come in and not touch a thing, he would want more of this alcohol. He would leave and come back very late when we were already asleep and not take the supper plate. He would wake up in the morning, feeling sick as hell, he would want nothing but water and eventually, a piece of meat and my understanding is, you cannot take proteins on an empty stomach hoping to fill you in and it would the road to drink again. This went on and on for years and he eventually became a sick person because of alcohol abuse. I think, alcohol suppressed his appetite and he got thin and it was said he had TB, flu or just coughing as though that was normal, but it was not, he was abusing the alcohol."* Group 2, Female, not TB affected

These illness narratives played a number of important roles in health seeking. Individuals learned about 'effective' behaviour from the illness narratives of others, and their own illness narrative had an important role in establishing any level of 'responsibility' for an illness. The personal narrative usually sought to explain how and why the respondent fell ill. This learning fed into future illness identification and strategy development, despite the fact that the accuracy of these narratives and concomitant attributions varied greatly[§]. The narratives served to establish whether the illness was the 'fault' of the respondent or whether it was caused by factors beyond any reasonable notion of control. Obviously this tended to bias the narrative as there was an incentive to ensure that the illness was not the respondent's fault (or that it is not perceived to be so.)

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§ Accuracy in this sense is determined by how well the patient's initial symptom attribution matched a medical professional's diagnosis and successful treatment of the illness.

Respondent explaining why it is not her cousin's fault that she contracted arthritis when arthritics were accused by this group of being a 'lazy lot':

"*Respondent: Okay, let's say it's more common with the aged, the obese aged who used to work as domestic servants. Most of their lives they were doing people's laundries and washing mountains of dishes. So, water penetrated their bones. A cousin of mine who worked as a domestic most of her adult life is crippled with arthritis*

Moderator: Is it cause by constant handling of water?

Respondent: That's what she said, that the years of washing dishes in the 'kitchens' were coming back to haunt her. I don't know. Sometimes a washing machine would break and she'd have to wash laundry by hands. We wash laundry by hand but it hasn't afflicted us yet." Group 6, Female, TB affected

Respondent explaining how he contracted TB from the dust at work:

"*Respondent:...we worked on machines. We had to grind the machines but they never gave us protective masks. I told the guys that we had to talk to the supervisor, because you should have a mask if you work with dust. You have to drink milk every day – they have to give you a litre of milk every day.*

Moderator: Is that a fact, if you work with dust and things like that [you will contract TB]?

Respondent: Yes. Even if you paint too.

3.2.2) PARTICIPANTS FELT A RESPONSIBILITY TO AVOID ILLNESS

"*I had to help my mother. I got ill and I couldn't help her anymore. I just wanted to sleep. I couldn't do the work anymore.*" Group 5, Female, TB affected

Respondents expressed a sense of responsibility to avoid sickness through prevention. Prevention generally involved scanning for risk factors and taking necessary preventive action. Failure to avoid preventable illness may have incurred blame or censure. In the case of the TB-affected participants, this censure appeared to take the form of social exclusion albeit of a temporary nature. Once someone was on treatment or obviously returning to full health by gaining weight for example, they were generally accepted back into their social circle.

"*Moderator: From the common and rare illnesses, which ones would you would be blamed if you caught any them?*

Respondent: AIDS.

Respondent: TB.

Moderator: Would they say the same about TB, that you are to blame?

Respondent: They would because you did not treat yourself or did not take precautions.

Respondent: It can happen, we have a child at home that is into eating iced blocks, we always warn him, always give her a bit of a slap because she is always eating it, whether it is cold or warm she is into it, whenever she gets sick, we always say it is her fault, we always say, it is her doing. It is the same with a person that drinks, wanting very cold beers all the time, eventually, when I get ill, I will be told, it is because of the very cold beers that you insist on drinking.

Moderator: Referring to TB?

Respondent: It is the same, you would be exposed to cold and they will say, it is because of your self-exposure to cold that you have TB" Group 4, Male, not TB affected

Avoiding blame therefore seemed to require either a successful illness-avoidance strategy or a narrative to attribute 'fault' elsewhere (beyond the control of the patient) as is illustrated in the following quotation.   Failure to manage either of these two strategies often resulted in significant delays in communication and treatment seeking – particularly amongst men.

"When I went back to the clinic I was told I had TB. I didn't understand why I could get it because I always keep warm and all that. I was told that it was because of the fire I'd been involved in and because of the fumes I'd inhaled. That's how I discovered I had TB. I then began taking TB treatment." Group 6, Female, TB affected

Quick/effective recovery was another common way to minimise blame but it appears that this strategy could be problematic for those affected by chronic illnesses;

"Arthritis sufferers tend to be a lazy lot" Group 6, Female, TB affected

Blame wasn't the only reason why respondents avoided illness, searched for an illness narrative and tried to effect a rapid recovery. In many cases these strategies simply aimed to limit personal suffering and/or the narrative was devised to reduce worry amongst family members particularly. In these instances, the illness was attributed to a benign cause. Any real fear that the illness may have been serious (or that the symptoms had a 'serious' underlying cause), as is the case with TB, resulted in delays in communication.

"I was scared to tell mom because I didn't want to worry her." Group 6, *Female, TB affected.*

3.2.3) HOW DID RESPONDENTS ACTIVELY AVOID ILLNESS?

The following diagram illustrates how respondents attempted to prevent illness. Respondents identified risk factors and actively developed strategies to avoid illness. This was done by learning from the illness narratives of others, adopting 'conventional' wisdom (or at least considering it), applying the tenets of any relevant formal learning and also by applying the lessons of experience. Once an avoidance strategy was adopted, it was evaluated and adjusted accordingly – particularly if the respondent fell ill, signalling a possible failure of the prevention strategy.

Figure 4.5: Preventing health need

3) Evaluate and adjust those strategies

1) Identify risk factors

Even before the sick role is taken on, there is a responsibility to actively avoid the role through prevention.

2) Develop strategies to reduce/ avoid risk factors
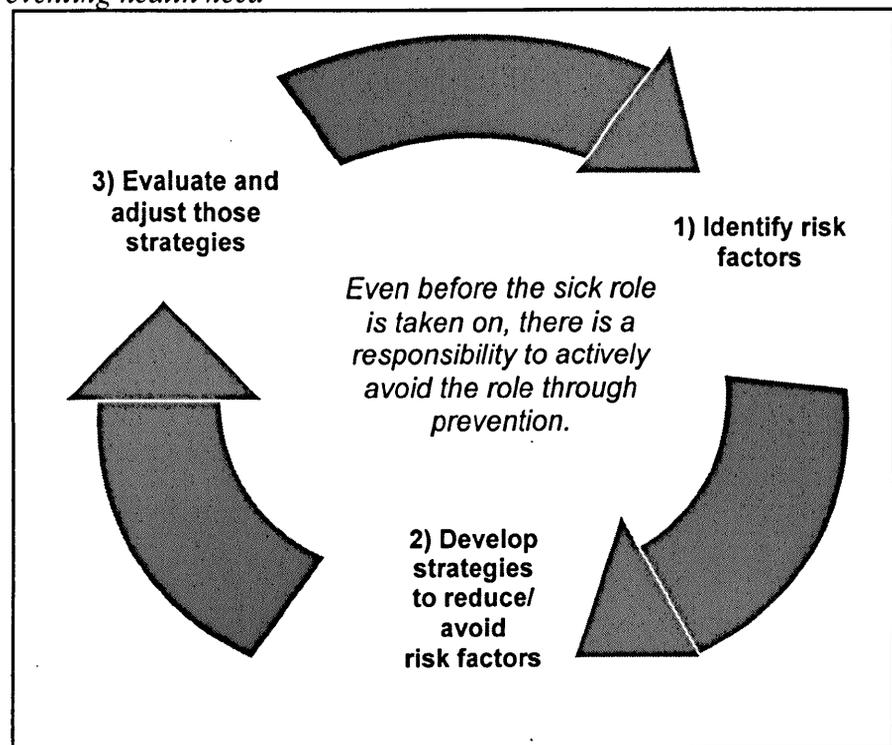
At the start of each discussion, group participants were asked what made people sick and what kept people healthy. The most commonly identified risk factors for illness (across all groups), included smoking, alcohol, drugs, poor diet, direct contact with an infected person (including sharing a cigarette or drinking glass), unprotected sex, airborne sickness and occupational and industrial risks (particularly air pollution). Poverty, overcrowding and poor sanitation (dirty communal taps, blocked drains and uncollected refuse) also featured commonly as causes of illness but were more frequently mentioned by respondents from Khayelitsha/Nyanga.

Predictably, unprotected sex was seen as a risk factor for AIDS and airborne sickness as a risk factor for TB. Many respondents also saw smoking as a direct cause of TB. Failing to complete a course of treatment or failing to take medication as directed were risk factors mentioned only by TB-affected respondents.

> "*Moderator: Does smoking make us sick?*
>
> *Respondent: Yes.*
>
> *Respondent: We get TB from smoking.*
>
> *Moderator: How can smoking...*
>
> *Respondent: From smoking we get TB.*
>
> *Moderator: Smoking gives you TB? How does that happen?*
>
> *Respondent: The cigarette smoke. In your lungs, yes. It affects your lungs.*
>
> *Moderator: Smoke affects your lungs.*
>
> *Respondent: More Cancer than TB, man. Cancer." Group 3, Male, not TB affected*

There were a number of gender differences in the perception of risk factor. Female participants appeared to take greater personal responsibility for exposing themselves to risk factors and were more likely to mention stress as a source of illness. The following quote demonstrates how male participants seemed to place responsibility for certain risk factors in the hands of others:

> "*Respondent: And not being taken care of*
>
> *Moderator: Not being taken care of in which way?*
>
> *Respondent: Like if you're unwell and people in your household are not taking good care of you.*
>
> *Respondent: Not eating healthy food, for example*
>
> *Respondent: Not being taken good care of in terms of the food you eat."*
>
> *Group 8, Male, TB affected*

This did not apply to all risk factors and male respondents were likely to take personal responsibility for excessive drinking as a potential risk factor. In so doing however, male respondents placed less emphasis on avoiding blame in their narratives and more emphasis on exploring the reasons/causes of the illness:

> "*Respondent: Yes. Like I was drinking too much, very cold beers*
>
> *Moderator:.   Very cold beers*
>
> *Respondent: As a result I contacted TB." Group 8, Male, TB affected*

The most notable and consistent gender difference in risk factors for illness was the role of prisons. As mentioned in earlier chapters, prison was a recurring theme in the males groups but was almost never mentioned in the females groups. Prison spells interrupted treatment and seemed to be a source of infection although respondents did not explicitly identify prisons as a risk factor for initial infection:

> "Respondent: [W]hile I was still getting my treatment I went back to jail because I'd been out on parole. In jail I reported that I've been taking treatment for TB and so I continued with treatment. They phoned Nyanga and found out from them what medication I was taking. But I was later transferred to Voorberg jail but there I wasn't getting any TB treatment
>
> Moderator: Did you not tell them you were taking medication for TB?
>
> Respondent: I did but they ignored me. So my illness went untreated
>
> Moderator: Which prison were you in before?
>
> Respondent: Pollsmoor – that's where I was getting treatment. When I got transferred I didn't get any. That is why when I got out TB was still with me"
>
> Group 8, Male, TB affected

As perceptions of risk factors varied by TB status and gender, so too did they vary by ethnicity. In particular, respondents from Khayeltisha/Nyanga identified HIV/AIDS as a risk factor for illness (particularly TB) and were more likely to mention overcrowding as a cause of ill health.

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4)   DISCUSSION

This chapter explored patients' assessments of their own ill health and their perceived 'need' for health services. The standard methodology for estimating and analysing health need uses five point scales of self reported general health to measure patient's perceived health. Aside from the fact that these scales cannot differentiate between mental and physical dimensions of health, they are prone to cut point shift, index shift and other forms of reporting heterogeneity which can significantly bias secondary analysis[**]. In this chapter, the SF8 was used to address these shortcomings. Systematic variation in health need and inequality in the distribution of need have also been explored using the quantitative data while the analysis in this chapter used the qualitative data to explore how patients arrive at their determination of health

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[**] For an applied study that illustrates the impact of this bias in South Africa, see Case, A. and Deaton, A, 2006. Health and wellbeing in Udaipur and South Africa, Research Program in Development Studies and Center for Health and Wellbeing, Princeton University, Princeton NJ 08544.

need, and how this process of determination may delay health seeking or the initiation of a 'demand process'.

As there is little overlap between the findings from the quantitative and qualitative datasets in this chapter, data from the qualitative dataset are primarily used to clarify and extend the findings from the quantitative analysis. The key findings are summarised below, drawing on findings from other studies to add clarity or context. The literature is also used to highlight potential limitations of the methods used in this analysis, and to clarify potential concerns regarding their interpretation or application.

4.1) SELF RATED HEALTH AS A MEASURE OF NEED

"Individuals make judgements about their health against prevailing implicit standards of what it is to feel well." (pg 13 Eisenberg, 1977)

The first point of discussion is whether self assessed health (SAH) measures such as the SF8 are indeed appropriate and accurate measures of health need. Even if agreement could be reached on an appropriate definition, the measurement of 'true' health and concomitant health need will always be complicated by the fact that it is largely unobservable. Certainly the quote from Eisenberg and Kleinman above suggests that the subjective nature of SAH may lead to temporal instability of a measure with little grounding in actual health need (Eisenberg, 1977). By this reasoning, actual health need is unobservable even to the individual under study and to some extent this is borne out in the findings from the qualitative data analysis of this study. For instance, participants may have suspected the need for health (or health care) but were reluctant to trust their judgement unless presented with evidence such as an objective indication of need or validation from a third party. The findings from this study also suggest however, that while there may be considerable uncertainty about health need, and while that uncertainty may be underpinned by the unobservable nature of much health need, individuals will take significant steps to correctly and timeously identify health need.

There is a significant body of literature that supports the use of SAH as an accurate and stable measure of health need. The main argument used to validate this association is the relationship between SAH and mortality. Idler and Benyamini reviewed 27 studies from North America, Western Europe, Eastern Europe, Hong Kong, Israel and Australia all linking SAH with mortality and concluded that SAH was *"an independent predictor of mortality in nearly all of the studies, despite the inclusion of numerous specific health status indicators and other relevant covariates known to predict mortality."* (pg 21 Idler and Benyamini, 1997). Burstrom and Fredland further concluded that, in Sweden, poor self rated health was a strong predictor of subsequent mortality in all population subgroups studied (Burstrom and Fredlund, 2001).

Other studies from the United States similarly show that SAH is an accurate predictor of morbidity (Connelly et al., 1989; Okun et al., 1984), and that patients use assessments of both physical and mental health to determine health need (Connelly et al., 1991). In Botswana, self rated health was found to be significant predictor of diagnostic delay in TB patients (Steen and Mazonde, 1998). Frankenberg and Jones expressly set out to establish whether the same relationship between SAH and mortality existed in low income settings. They use data from Indonesia to test the hypothesis and found that the relationship held in that setting (Frankenberg and Jones, 2004). The measure of SAH used in all of these studies was a single general wellness question.

Although SAH may be an appropriate and largely accurate measure of health need, it is frequently subject to reporting heterogeneity i.e. variation in SAH across demographic groups for a given level of true health (Lindeboom and van Doorslaer, 2004; Shmueli, 2003). When using single item measures of SAH, it is not possible to distinguish reporting heterogeneity from variation in true health. However, when using a multi-attribute indicator such as the SF8 which covers 8 health domains[tt], Shmueli argues that it is possible to construct a measure of true health. He utilises three multi-attribute SAH measures to construct 'true' health without reporting heterogeneity and his findings rest on the assumption that the composition of three multi-attribute models does indeed measure 'true' health. His analysis concludes that men tend to report higher levels of both mental and physical health on the SF36 scale, and older respondents tend to report higher mental health scores for the same level of true health. This implies that the distribution of health need as measured by SAH will be sensitive to the sample used. For this and other reasons the sample is detailed fully in Chapter 3 and a summary table of relevant variables was included again in the earlier sections of this chapter.

By comparison however, Lindeboom and van Doorslaer warn of reporting heterogeneity due to potential cut-point shift and index shift when SAH is measured by a single wellness question only. Even with a single question measure of SAH, they provide evidence for reporting heterogeneity for age and gender only and warn that any heterogeneity may be more pronounced for comparisons across cultural groups. They do not find similar heterogeneity for income, education or language. Groot similarly argues that adaptation behaviour and different scales of reference can bias single question SAH. He finds this most marked by age and disability and recommends normalizing by age to correct for both forms of heterogeneity (Groot, 2000). Lindeboom and van Doorslaer argue however, that a multi-attribute index of health such as the McMaster Health Utility Index would represent a more valid and reliable general health measure than a single SAH question (Lindeboom and van Doorslaer, 2004). This

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tt Schmueli's point is made regarding the SF36 measure and not the SF8, however the principle holds for both scores.

assertion would apply equally to the SF8 as a multi-attribute measure of SAH that is scored using weights from a different survey on a different sample. Although this does not invalidate Schmueli's findings, it does suggest their implications may not be material to the analysis in this study. However, as Schmueli's analysis cannot be replicated with the data from this study and his findings cannot be refuted entirely, the findings discussed below are tempered with reference to his conclusions.

Aside from cut-point shift, index shift and other forms of reporting heterogeneity, another potential limitation of SAH was identified in a recent study using Australian data. Crossley and Kennedy warn that repeated measurements of SAH using a single 'general health' five-point scale with the same population may suffer from ordering effects if patients assess their health with measurement error and then revise these estimates on subsequent questioning as they 'learn' about their health status. In their study, this learning was attributed to the SF36 survey which was asked of respondents between the first and second application of the single general health question. They propose that the detailed SF36 questionnaire 'taught' respondents about their health and particularly about the domains of health collected by the SF36 questionnaire (Crossley and Kennedy, 2002). In this study however, no single illness question is applied and the same multi-attribute or multiple domain health questions are used throughout. Thus respondents are 'taught' about the domains of their health from the outset, reducing or even eliminating any ordering effect comparable to that identified in the Crossley and Kennnedy study. No studies have found ordering effects with the SF8 or SF36 questionnaires and in this study individuals measures of health status appear to fluctuate from week to week rather than converging on a single point – suggesting that this data is not prone to a systematic ordering bias that teaches respondents about their health and allows them to converge on some newer and more accurate measure health.

4.2)   VARIATION IN PERCEIVED ILL HEALTH

Quantitative analysis of the unstandardised mental and physical and mental health scores revealed gender and ethnic differences in perceived ill-health, with women and Black/African respondents reporting significantly greater average ill health. Average physical health decreased with age while there was no significant increase (or decrease) in mental health need by age. Levels of perceived health also improved with increases in household income. The regression analysis of physical and mental health utilising the longitudinal data found that age, household income and crowding were all significant predictors of SAH. However, age had a greater effect on physical health than mental health, the effect of household income on SAH was slightly greater for mental health and crowding similarly had a greater effect on mental health than physical health. Insignificant predictors of SAH in the regression analysis included

medical aid/insurance coverage, population group, financial situation, years of education and gender. It is likely however, that the insignificant predictors of SAH are in fact significant predictors of health service use conditional on SAH. This hypothesis will be explored further in Chapter 7.

The unstandardised SAH scores reveal both biological and demographic differences in health scores and as such these differences should be seen as inequalities rather than remediable inequities. By comparison, the standardised scores revealed only one significant difference in health need by demographic group as the oldest age group (50+) exhibited lower mental health needs than those in younger age groups. These scores attempt to remove, or control for, biological differences in need but in so doing also remove many demographic i.e. non-biological differences in need (Diaz, 2002).

The qualitative findings also identified gender differences in health need as women were more likely to take personal responsibility for exposing themselves to health risks and more frequently cited stress as a determinant of poor health. This seems to support the assertion of Benyamini et al. that, when studying SAH, it is important to attend to the full illness-wellness continuum (Benyamini et al., 2000). Stronks et al. also highlight the role of psychosocial stressors linking SES and SAH (Stronks et al., 1998) and this theme is explored in Section 2 of this chapter, where inequality of health need is discussed in detail. In this study however, men were only likely to take responsibility for excessive alcohol intake as a risk factor and they were less likely to develop an illness narrative to avoid blame for their illness.

Differences in health need by demographic group have been identified in a number of other studies, most of which used a single question health status measure. In South Africa, Charasse-Pouele and Fournier found that Black/African and White respondents faced different health risks. They also found that females had greater health need while education reduced health need (Charasse-Pouélé and Fournier, 2006). Studies from other settings yielded similar findings. In Sweden, van Doorslaer and Gertham found that older age, functional limitations and/or high blood pressure increased mortality risk, while higher income and education decreased mortality risk (van Doorslaer and Gerdtham, 2003) In Brazil, Diaz found that women consistently considered themselves to have greater health need than men (Diaz, 2002). In Canada, van Doorslaer and Jones similarly found that women and higher age groups reported greater health need (Doorslaer and Jones, 2003) Again in Sweden, Eriksson et al. found that heath need increased with age and although they found that women consistently rated their health poorer (and needs greater), this finding was more marked amongst the youngest age categories in the study (18-44 years) (Eriksson et al., 2001).

McIntyre et al. also identified geographic variation in deprivation and correlated ill health in South Africa (McIntyre et al., 2002). In Lebanon, Khawaja and Mowafi found similar geographic variation in SAH and also concluded that cultural capital, group membership and social support were negatively associated with general and mental health need (Khawaja and Mowafi, Unpublished draft). These findings highlight the limitations of this study, which did not address these issues.

Importantly, the qualitative findings in this chapter highlight that in this population at least, needs determination is not an exact science for the observer or the study subject. Among group participants, health monitoring was iterative - seeking events, corroboration or objective evidence to validate potential health needs. Even once a need was identified it frequently required justification and/or explanation to ensure that the sufferer was not blamed for the illness and received support in any health seeking efforts.

4.3) SOCIOECONOMIC INEQUALITY OF HEALTH NEED

In this chapter, the inequality of health need is measured using a concentration index. Wagstaff et al. argue that only the concentration index and the slope index of inequality are likely to present an accurate picture of socioeconomic inequalities in health (Wagstaff et al., 1991). The concentration indices for this study reveal statistically significant socio-economic inequality for both physical and mental health, and significant differences in socio-economic health inequality by demographic group. The physical health concentration indices for the total sample are 0.039 and 0.015 for the unstandardised and standardised scores respectively. The mental health concentration indices for the total sample are 0.044 and 0.015 for the unstandardised and standardised scores respectively.

Although common in studies from industrialised countries, few studies from low and middle income countries have used indices of SAH for analysis comparable with that conducted in this chapter. Diaz calculates a comparable SAH concentration index for Brazil of 0.086 for the total study population. She also identified demographic differences in inequality, which increased with age and were larger for women on average (Diaz, 2002). Other studies in low and middle income countries tend to focus on indices of service use or of clinic health outcomes. As an example of the former, Hidayat et al. calculated concentration indices of public and private outpatient care use in Indonesia. The mean concentration index for public outpatient care use was 0.0206 and the mean index for private care use was |0.1021| (Hidayat et al., 2004). As an example of the latter, Zere and McIntyre calculate three concentration indices under-five child malnutrition for the Western Cape in South Africa. The index for stunting was 0.273, underweight was 0.274 and wasting was 0.123 (Zere and McIntyre, 2003). Although the findings from these studies are not directly comparable with the findings from this chapter,

they do assist in providing a scale of reference for the relative size of concentration indices. In a slightly different manner Wagstaff corroborated the finding of this chapter that inequality exists among the poor. He used concentration indices to measure the inequality of health subsidies in Vietnam and co-operative medical scheme coverage in China, drawing attention to inequalities between poor and less poor people within poor areas in those settings (Wagstaff, 2005).

By providing that scale of reference, international comparisons assist in the interpretation of the concentration indices (CI) for this study. However, it has been argued that the interpretation of the CI is not intuitive i.e. what constitutes a large or small CI and how much health (or health care) should be transferred from one person to another to remove socioeconomic inequality? Addressing this criticism directly, Koolman and van Doorslaer use a linear redistribution scheme and Blackburn's lump sum distribution to show how a CI can be translated into a percentage redistribution required to eliminate income inequality – but not necessarily to obtain perfect equality of SAH (Koolman and van Doorslaer, 2004). In Chapter 9 of this thesis we use this methodology to inform the policy recommendations stemming from this study. Wagstaff warns however, that concentration indices embody "*one specific set of value judgements*" but argues that health inequalities can be measured in such a way as to take into account policymaker's attitudes towards inequalities (Wagstaff, 2002).

A complete discussion of the mechanisms through which income inequality relates to health inequality falls outsides the bounds of this dissertation. However, the main arguments in this substantive literature are summarised here for purposes of completeness. The first, very general argument is that poverty causes ill health and ill health maintains poverty. The mechanisms through which this cycle occurs are summarised in Figure 4.6.

Figure 4.6: Cycle of health and poverty
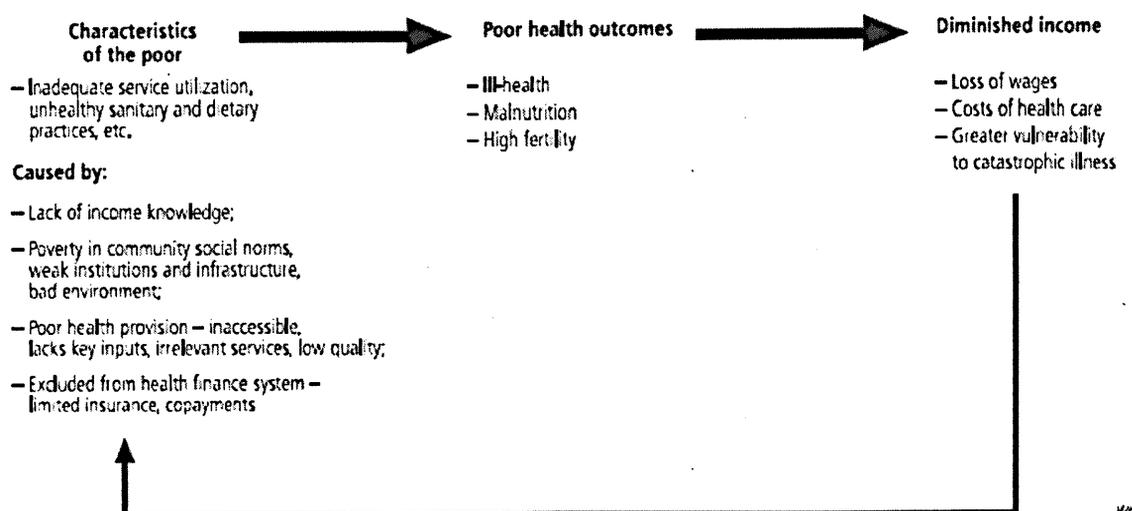
Source: (Wagstaff, 2002) pg 98

Wagstaff also provides a detailed conceptual framework to explain why socioeconomic inequalities in health tend to disadvantage the poor as discussed in Chapter 2. He explains how the inequality between determinants, and the extent to which determinants impact the poor, vary significant between countries and between measures of health outcome (Wagstaff, 2002). Craig similarly argues that the association between income inequality and health is context (or place) specific (Craig, 2005).

More recently, Adams et al. exploited panel data to study the causal links between SES and health in an elderly North American population. That study found no direct causal link from SES to mortality and to incidence of accidents and some acute conditions, controlling for initial health conditions. They did find some association between SES and the incidence of gradual onset health conditions, *"due either to causal links or to persistent unobserved behavioural or genetic factors that have a common influence on both SES and innovations in health"* (pg 3 Adams et al., 2003) However, the study has come under criticism for the imposed assumption that the relationship between SES and heath status is constant over time (Poterba, 2003).

Although there is considerable evidence on the extent and causes of socioeconomic health inequality, Wagstaff also argues that too little is known about the effectiveness of policies intended to combat socioeconomic inequality in health (Wagstaff, 2002).

4.4) LOCATING HEALTH NEED WITHIN A BROADER DISCUSSION OF DEMAND FOR HEALTH

> *"Ideally, health needs should arouse a proportionate and appropriate demand for health care, which can then be supplied in a systematic way. In real life, this desirable process is distorted by faulty perception of actual need; by failure of even perceived need to generate demand, while at the same time demands are made which bear little relation to need; and finally by the inappropriateness of some service provision to either need or demand."* (pg 3 Black, 1983)

The analysis in this chapter has furthered the understanding of health need in the study communities. The individual process of determining health needs exhibited by study participants has also highlighted how social context can affect the initiation of health seeking behaviour by influencing the determination of need. The qualitative data has clearly illustrated patient's reliance on external sources of information and reference, which in turn indicated how information asymmetry between the patient and their reference group may exacerbate the patient's imperfect information regarding their health state and delay effective treatment seeking. Formally, the patient doesn't know;

- That their capacity to benefit[‡‡] from the consumption of health resources is positive
- What is their optimal consumption point; and
- What 'goods' make up that bundle i.e. clinic services versus private doctor visits.

The findings from this chapter also suggest that the complex process of determining health need may exacerbate unmet need in the study population. For example, needs may be unmet because the patient's monitoring does not 'agree' with the assessment of others, a factor unrelated with supply. The findings from this chapter thus begin to inform the relationship between the use of health services and a patient's capacity to benefit from treatment – a relationship that will be explored further in Chapter 7.

Finally, the findings from this analysis emphasis that, in this setting, people are active health seekers who expressed a sense of responsibility to reduce any imperfect information that might lead to an illness experience. The process of health seeking is often initiated before an illness event occurs through the accumulation of health-related information for future potential illnesses, although 'inaccurate' narratives perpetuate ineffective health seeking behaviour. Health seeking behaviour and particularly the impact of health need on health service use will be formally explored in the Chapter 7.

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‡‡ Matthew was the first to define health need in terms of the capacity to benefit from treatment rather than the size of the health problem (Matthew, G.K., 1971, Measuring need and evaluating services. In: G. McLachlan (Ed.), Portfolio for Health. Oxford University Press, London.). McGuire also introduced a capacity to benefit curve in his discussion of supplier induced demand (McGuire, T.G., 2000, Chapter Nine: Physician Agency. In: A.J. Culyer and J.P. Newhouse (Eds.), Handbook of Health Economics. Handbooks in Economics. Elsevier, Amsterdam, pp. 347-407.) This theory was briefly outlined in the literature review in Chapter 2 of this thesis.

CHAPTER FIVE:

FORMULATING THE CHOICE SET

1) INTRODUCTION

According to Neoclassical utility theory, individuals are assumed to be able to rank bundles of commodities according to the satisfaction they yield in order to maximise the utility of their consumption. This chapter analyses the formation of patient preferences and explores the factors that may affect the composition and ranking of consumption bundles or choice sets. In particular, the analysis considers how perceived quality, fear of community sanction, illness type, the awareness of different providers and even the potential mismatch of supply with perceived need may affect the composition and ranking of those bundles.

Although working primarily within the cognitive bounds of utility theory, the discussion also extends beyond this construct to explore alternative theories regarding strict optimisation. As discussed in Chapter 2, Neoclassical theory has long been criticised for assuming that individuals are hyper-rational. New Institutional Economics (NIE) proposes that strict optimisation and full information are replaced with the concept of satisficing using less than full information. This chapter considers the merits of this NIE contribution in the context of health seeking by describing common strategies for satisficing e.g. the use of opinion leaders, and considering how the household and community context of care seeking may affect service utilisation. This discussion will inform the manner in which health service bundles are formulated and ranked in practice.

The chapter begins with a brief overview of utility theory and its application in the analysis of health markets. The quantitative dataset is then analysed for findings pertaining to the awareness of health service providers, provider use versus non-use, perceived quality of service providers in the general sense and any illness-specific health service utilisation. Analysis of the qualitative data follows a similar flow; however, the concept of quality in this context is analysed, as are the reasons for provider preference. The chapter concludes with a discussion of the main findings, triangulating the analysis from the qualitative and quantitative datasets and making reference to findings from other studies. Where appropriate, the discussion draws on both emerging and established theories to highlight any points of divergence or convergence,

and to identify methods that may assist in the construction of an analytical model in Chapter 7.

As described in Section 4.1 of Chapter 3, the qualitative data are drawn from eight focus group discussions amongst TB affected and unaffected individuals from two communities i.e. Oostenberg/Mitchell's Plain and Khayelitsha/Nyanga. All focus group participants from Oostenberg/Mitchell's Plain described their ethnicity or population group as 'Coloured', while all participants from Khayelitsha/Nyanga described themselves as 'Black/African'. The focus groups were further segmented by gender.

The quantitative data are drawn from health diaries and survey-based interviews conducted in the same two communities, but not necessarily with the same participants. Although the participants in the quantitative data collection were more heterogeneous than those participating in the focus group discussions, the majority of respondents from Oostenberg/Mitchell's Plain described their population group or ethnicity as 'Coloured', and the majority of participants from Khayelitsha/Nyanga described their population group or ethnicity as 'Black/African'

1.1) HOW IS UTILITY THEORY USUALLY APPLIED TO HEALTH MARKETS?

The demand for health services is a derived demand. Individuals do not derive positive utility from health services per se, but from the health benefits those services can confer. Health economists commonly argue that the observed utilisation of health services is equivalent to the revealed preferences for health service consumption. If individuals are consuming a particular bundle, that consumption bundle (or combination of price and quantity) must necessarily be on their demand curve.

The demand curve for health services is underpinned by the assumption that an individual is maximising their utility subject to some constraint (usually budgetary). The demand function is the loci of tangents between a series of constraint functions and utility functions. For any given utility curve, the point of tangency with the budget constraint will be determined by the slope and intercept of the constraint. This optimisation problem is commonly formalised as follows:

$$max \ U = f(X,Y)$$

$$s.t. \ P_x(X) + P_y(Y) \leq I$$

In this specification, U denotes utility, which is a function of the consumption of two goods X and Y. P_x is the price per unit of good X and P_y is the price per unit of good Y. The constraint states that the expenditure on X plus the expenditure on Y cannot exceed the

individual's income (I).

The slope and intercept of the budget constraint are assumed to vary with changes in income and changes in the prices of goods in the consumption bundle. As changes in prices impact on real income, they have an income and/or substitution effect. These effects are usually quantified by using either the Slutsky or Hicksian decomposition methods (Griffiths, 2002). The Slutsky Theorum states that the substitution effect will always be positive for a fall in price, although if goods are perfect complements there will be no substitution effect. The direction of the income effect is determined by the nature of the good in question i.e. positive for normal goods, negative over certain income ranges for inferior goods, and zero if the goods are perfect substitutes. Perfect substitutes and complements are extreme cases and will not be discussed further in this thesis. The budget constraint is discussed further in Chapter 6, however, the direction of the income and substitution effects is a function of the shape of the utility curve – the focus of this chapter.

The starting point for the optimisation problem then, is the measurement of preferences. Preferences determine choice sets i.e. bundles of goods that yield an equal level of utility. This is expressed by the indifference curve or a series of indifference curves denoting different levels of utility obtained from different bundles of goods. Within the neoclassical paradigm, there are three main approaches to the measurement of preferences. The first is the cardinal approach, which involves asking individuals how much utility they derive from a particular good and aggregating this across all goods. Demand is then calculated on the assumption that people consume the combination of goods that maximises total utility. Studies using the cardinal approach are rare in the health context and, as such, this method is not discussed further in this chapter. The second and more common approach is the ordinal approach. According to this method, individuals are asked to quantify the relative utility derived from consuming one good versus another. This results in a basket of goods (or a choice set) that is assumed to be complete, reflexive and transitive i.e. individuals must be able to strictly and consistently rank the goods in their bundle. The final approach is the revealed preference method. This requires the observation of individuals' actual consumption decisions given different prices and/or incomes (Griffiths, 2002). As before, completeness, transitivity and reflexivity are required if preferences are to be characterised by a utility function. While the weak and strong axioms of revealed preference require a unique choice set or consumption bundle at each budget, the generalized axiom of revealed preferences "allows for flat spots in the indifference curves that generate the observed choices"(pg 133) (Varian, 1992). If preferences are additionally convex and monotonic, the utility function will generate downward sloping demand curves (Andreoni,

1990).

This chapter uses modified applications of both ordinal theory and the revealed preference approach to derive preferences and understand choice sets. The revealed preferences approach is the method most commonly used in health economics either implicitly through studies of utilization (Ahmed et al., 2000; Makinen et al., 2000), or explicitly through attempts to test the theory using survey data (Harris and Keane, 1998; Leonard et al., 2002). This study uses quantitative and qualitative data on health service usage to measure revealed preferences. This analysis goes beyond the existing literature as we are able to probe the reasons for these preferences and any systematic variations within and between demographic groups.

The ordinal approach underpins many economic evaluation studies, particularly those on willingness to pay for health services (Donaldson, 2001; Gibb et al., 1998; Phillips et al., 2002). In this study, the qualitative data allows us to explore the relative utility derived from consuming one good versus another. Although utility cannot be quantified using the methodology applied in this study, we are able to probe possible reasons why certain health care providers deliver higher levels of utility. Finally, we are able to consider whether the 'choice set' is indeed complete, reflexive and transitive for health seeking in this setting.

2)   QUANTITATIVE FINDINGS

The primary quantitative data collection is described fully in Section 3.3 of Chapter 3. That discussion explains that before commencing with the Health Diary data collection, study participants were asked to complete an Introductory Health Survey (see Appendix 2). This survey aimed to collect baseline information on awareness, perceptions and past usage of service providers. The Introductory Health Survey also contained a section designed to elicit preferences for health service providers based on disease specificity, and asked for the reasons for those preferences. A total of 250 individuals completed the Introductory Health Survey and these data are used below to explore the non-price determinants of demand and the composition of the choice set in the study setting.

2.1)   AWARENESS AND USAGE OF SERVICE PROVIDERS

Assuming that respondents cannot include in their choice set a provider of which they are unaware, we begin with an analysis of provider awareness.

Respondents were asked which service providers they knew of or had ever heard of and

responses were captured on a detailed list that differentiated between provider type and sector. Any providers mentioned but not listed were captured using an open ended 'other' field.

Unprompted, 90.4% mentioned public/government clinics as demonstrated in Table 5.1. On average, each respondent was spontaneously aware of approximately 4 providers. This is a relatively small subset of the possible list of providers available to the respondents. It is difficult to see how choice sets can be considered complete if, for example, 1 in 4 respondents are not spontaneously aware of public hospitals and a similar number are not spontaneously aware of private doctors. This is discussed further later in the chapter.

Table 5.1: Awareness of Health Service Providers (N=250)

Health Service Provider	Frequency	Percentage of respondents mentioning this provider
Health facility provided by employer	10	4.0%
Other private health service provider	5	2.0%
Other public sector provider	14	5.6%
Pharmacy/chemist	76	30.4%
Private clinic	57	22.8%
Private doctor/specialist	183	73.2%
Private hospital	75	30.0%
Public/government clinic	226	90.4%
Public/government hospital	186	74.4%
Spiritual or alternative healer	23	9.2%
NGO	1	0.4%
Traditional healer	35	14.0%

Respondents were then asked which service providers they had personally ever used. They were prompted with a list that included the options 'other' and 'none'. The following table illustrates that public/government clinics and private doctors/specialists were the most commonly used providers. Pharmacies and public/government hospitals were also commonly used. On average, respondents have ever used 2 different service providers, approximately half of the providers of which they were spontaneously aware.

Table 5.2: Past Usage of Health Service Providers (N=250)

Health Service Provider	Frequency	Percentage of respondents mentioning this provider
Health facility provided by employer	11	4.4%
None	4	1.6%
Other private health service provider	12	4.8%
Other public sector provider	7	2.8%
Pharmacy/chemist	101	40.4%
Private clinic	37	14.8%
Private doctor/specialist	149	59.6%
Private hospital	54	21.6%

Public/government clinic	160	64.0%
Public/government hospital	92	36.8%
Spiritual or alternative healer	15	6.0%
TAC treatment action campaign	1	0.4%
Traditional healer	6	2.4%

To simplify the analysis, the health service providers listed above were combined during data analysis to form three categories: public service providers, private service providers and alternative service providers. These are grouped as follows:

- Public service providers: Public/government hospitals, public/government clinics and other public/government sector providers.

- Private service providers: Private clinics, private doctors/specialists, private hospitals, pharmacies/chemists and other private health service providers.

- Alternative service providers: Traditional healers and spiritual or alternative healers.

Employer provided services were omitted from this analysis as they are deemed to be distinct from the other forms of service provider and were only used by 11 respondents. Using these category definitions, the following summary statistics are derived:

- 74.8% of respondents had ever used a public service provider,

- 66% of respondents had ever used a private service provider,

- 8% of respondents had ever used an alternative service provider,

- Amongst those who had ever used a public provider, 59.9% had ever used a private provider.

- Amongst those who had ever used a private provider, 67.9% had ever used a public provider.

These may be considered an individual's revealed preferences. The impact of income and pricing on these choices is discussed in Chapter 6, which focuses on the budget constraint.

The high level of private provider usage is significant in these relatively poor urban communities. While the impact of price and income determinants of usage is discussed in Chapter 6, we explore possible non-price determinants in this chapter. The similarly high levels of reported 'cross-usage' i.e. usage of both private and public providers is particularly

interesting and will be explored further in the ensuing discussion. The key questions regarding this cross-usage are: What factors determine which providers are used (and in which order)? Are different providers used for different illness or are different providers used for the same illness? Each of these questions has a direct impact on the formation of the preference set and particularly on the transitivity and reflexivity of the set. The quantitative analysis below, and the qualitative data analysis that follows, goes some way towards addressing these questions.

2.2) PROVIDERS THAT RESPONDENTS WOULD NEVER USE

Respondents were asked which health service providers they would never consider using and why. Respondents were read a comprehensive list of possible providers and were given the opportunity to list any other providers not mentioned on the list. The reasons for non-use were unprompted and captured on a pre-coded list generated from preliminary analysis of the focus group data. Any reason given by a respondent but not provided on the pre-coded list was added using open-ended fields and captured verbatim.

Although 19% said there was no provider they would never consider using, 64% would not use a traditional healer and 48% would not use a spiritual or alternative healer. 31% of respondents said they would not use at least one of the private health service providers available. The main reason why some respondents would never consider using either of the private providers is because it is 'too expensive'.

Table 5.3: Health service providers that respondents would never use (N=250)

Health Service Provider	Frequency	Percentage of respondents mentioning this provider
Health facility provided by employer	1	0.4%
Other private health service provider	2	0.8%
Pharmacy/chemist	5	2.0%
Private clinic	27	10.8%
Private doctor/specialist	12	4.8%
Private hospital	30	12.0%
Public/government clinic	11	4.4%
Public/government hospital	12	4.8%
Spiritual or alternative healer	119	47.6%
Traditional healer	161	64.4%
None	47	18.8%

Of those who would never consider using a traditional healer, 70% are female and 57% classified themselves as 'Coloured'. A lack of trust and perceived high risk are the main

reasons why these respondents would never consider using a traditional healer. Within the constraints of this dataset, there was no opportunity to explore what respondents meant by a 'risky' provider.

Table 5.4: Reasons respondents would never use a provider (N=250)

Reason(s) why respondent would never consider using a traditional healer	Freq.	Percent of respondents citing this reason
I do not trust this service provider	64	39.8%
This is a risky provider	31	19.3%
Against my beliefs / principles	27	16.8%
Would never need this provider	25	15.5%
Bad reputation	23	14.3%
Too expensive	10	6.2%
It is not a specialised provider	7	4.3%
Don't know/Don't see the use	4	2.5%
The staff is poorly trained / not knowledgeable	4	2.5%
Dirty facilities	3	1.9%
Not interested/Not used to them/ Personal Preference	3	1.9%
Don't give a thorough examination	2	1.2%
Has poor equipment/no equipment	2	1.2%
Have had a bad personal experience with	2	1.2%
They will not have the necessary drugs	2	1.2%
You will not have privacy	2	1.2%
Due to kidney problems must only get me	1	0.6%
Money making business	1	0.6%
Prefer a psychologist	1	0.6%
Who died and made them God	1	0.6%
Would not get the best service	1	0.6%
Would not solve a medical problem	1	0.6%
You will receive less attention at this	1	0.6%

There are similar differentials amongst those who would never consider using a spiritual or alternative healer. Of these respondents, 66% are female and 67% classified themselves as 'Coloured'. The reasons why respondents would not consider using a spiritual or alternative healer are varied. The most commonly cited reasons pertain to a lack of trust/ perceived high risk, failure to identify a potential need, lack of faith in these providers (or the concern that their use would contravene their faith) and the perception that these providers have a bad reputation.

Table 5.5: Reasons respondents would never use spiritual/alternative healer (N=250)

Reason(s) why respondent would never consider using a spiritual or alternative healer	Freq.	Percent of respondents citing this reason
I do not trust this service provider	34	28.6%
Would never need this provider	24	20.2%
Against my beliefs/ principles	22	18.5%
This is a risky provider	22	18.5%
Bad reputation	21	17.6%
It is not a specialised provider	7	5.9%
Don't know/ don't see the use/ have no preference for them	6	5.0%
Too expensive	4	3.4%
The staff is poorly trained / not knowledgeable	2	1.7%
Dirty facilities	1	0.8%
Has poor equipment/no equipment	1	0.8%
Money making business	1	0.8%
Personal preference	1	0.8%
Prefer a psychologist	1	0.8%
They will not have the necessary drugs	1	0.8%
Who died and made them god	1	0.8%
Won't solve medical problem	1	0.8%
Would not get the best service	1	0.8%
You will not have privacy	1	0.8%

2.3) PERCEIVED QUALITY OF PROVIDERS

The overall quality of health service providers was then rated on a 5 point scale, with 1 denoting 'very poor' and 5 denoting 'very good'. On average, private providers received higher mean scores for overall quality than their public-sector counterparts. The standard deviation is larger for public sector providers than their private-sector counterparts. Traditional healers received the lowest score of any individual provider group.

Table 5.6: Quality rating for each provider (N=250)

Health Service Provider	Obs	Mean	Std. Dev.	Min	Max
Public/Government hospital	243	3.79	1.26	1	5
Public/Government clinic	243	3.19	1.28	1	5
Other public/government sector provider	171	3.53	1.06	1	5
Private hospital	216	4.51	.58	2	5
Private clinic	216	4.51	.58	3	5
Private doctor/specialist	244	4.62	.57	2	5
Other private health service provider	127	3.77	.93	1	5
Traditional healer	131	2.69	1.44	1	5
Spiritual or alternative healer	137	3.19	1.38	1	5
Pharmacy/ chemist	243	4.24	.72	1	5
Health facility provided by an employer	115	3.53	1.12	1	5

133

2.4) RECOMMENDED HEALTH SERVICE PROVIDER USE

This section aims to establish which health service providers are seen as most appropriate for different types of illness. The list of illnesses used attempts to capture a range of illness 'types' i.e. common, non-life threatening illnesses, potentially life threatening illnesses for which there is a cure and for which there is currently no cure, acute health needs such as injury, and for preventive care which is unlikely to offer immediate health benefits. Respondents were thus asked which health service provider they would recommend to someone suffering from:

- Flu,

- TB or a persistent cough with blood,

- HIV (or someone who suspects they have HIV),

- An injury such as a stab wound or burn,

- Someone wanting to have their child immunized.

Respondents were only allowed to list one provider per illness; however, they were allowed to give multiple reasons for selecting that provider. Any reasons or providers mentioned by respondents that were not contained in the closed coded lists, were recorded verbatim and coded during data capture. For each illness, respondents were allowed to recommend 'no provider'.

All analysis was run for the full sample before being segmented by gender and population group. The z-test was used to test the hypotheses for differences between two means or proportions. The z-test uses a standard normal distribution and in all cases the null hypothesis stated that the proportions were equal i.e. that any observed differences were due to chance. Only those differences that were statistically significant at the 90% confidence level or above are mentioned in the discussion below. Exact p statistics are provided for each pair of proportions.

In general, we find that public clinics are the most commonly recommended providers for all illnesses, followed by private doctors. Men are more likely to recommend public hospitals, while women are more likely to recommend public clinics. Respondents who classified themselves as 'Coloured' are more likely to recommend private doctors, while respondents who classified themselves as 'Black/African' are more likely to recommend public clinics. We now examine these recommendations by illness.

2.4.1) PROVIDERS FOR FLU

Public clinics and private doctors are the most commonly recommended service providers for flu. This is illustrated in the following figure:

Figure 5.1: Recommended service provider for flu
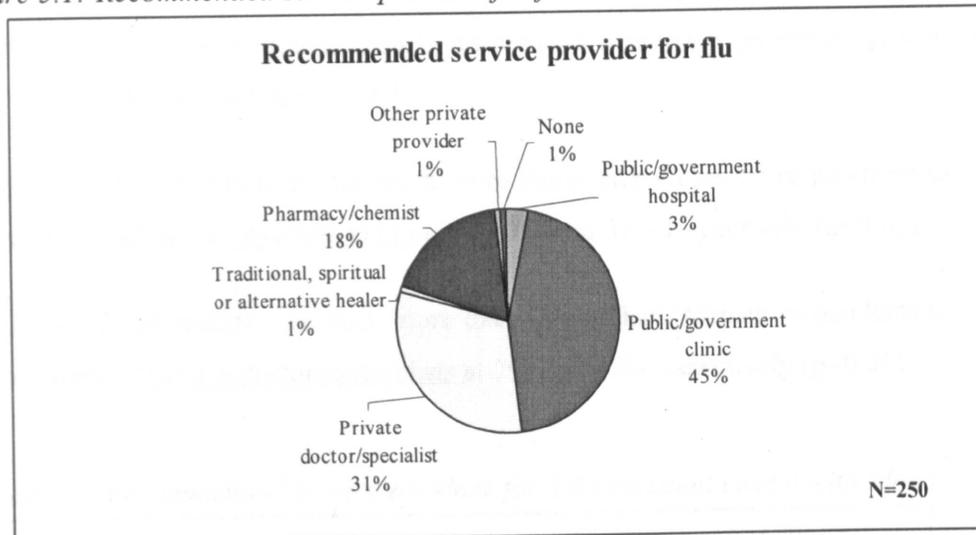
There are however, significant differences between population groups;

- 78% of Black/African respondents would recommend a public clinic, compared to only 3% of Coloured respondents (p<0.01).

- 57% of Coloured respondents would recommend a private doctor, compared to only 11% of Black/African respondents (p<0.01).

- 35% of Coloured respondents would recommend a pharmacy/chemist, compared to only 4% of Black/African respondents (p<0.01).

The main reasons for recommending a public clinic include the perception that it is closer to home/convenient for transport (28%), they are affordable (19%), there is more chance of seeing a doctor (13%), and they will have the necessary drugs (11%).

The main reasons for recommending a private doctor/specialist include the perception that they will give a thorough examination (23%), that it is a specialised provider (21%) and that they will have the necessary drugs available (14%).

2.4.2) PROVIDERS FOR TB OR A PERSISTENT COUGH WITH BLOOD

Public/government clinics are the most commonly recommended service providers for TB or a persistent cough with blood, however, there are significant demographic differentials between genders and high TB prevalence population groups;

- Women are more likely than men to recommend a public/government clinic at 70% and 59% respectively (p=0.07)

- Black/African respondents are much more likely than Coloured respondents to recommend public/government clinics at 81% and 51% respectively (p<0.01)

- Coloured respondents are much more likely than Black/African respondents to recommend private doctors/specialists at 29% and 3% respectively (p<0.01)

Figure 5.2: Recommended service provider for TB/persistent cough with blood
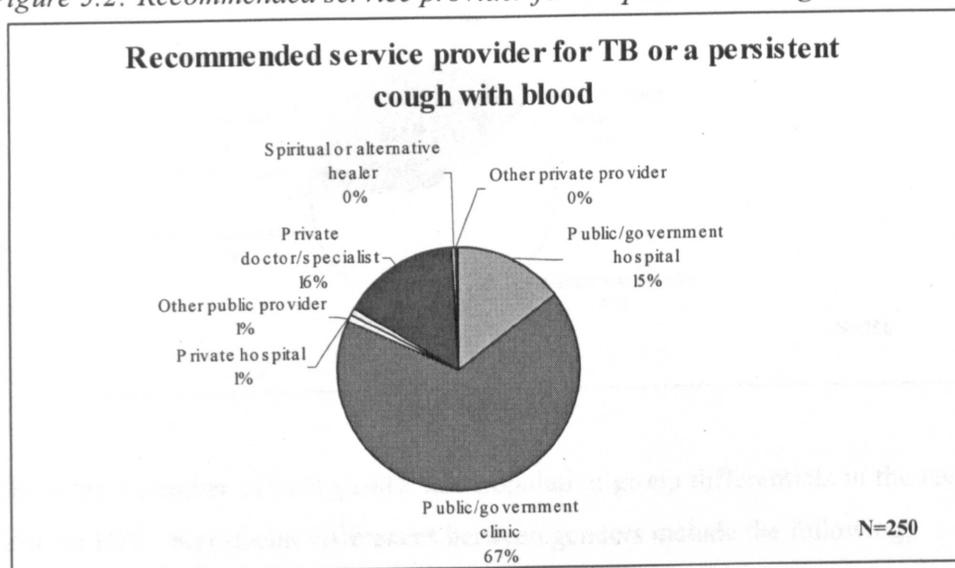
The most common reasons for recommending a public/ government clinic include the perceptions that they have good equipment/the right equipment (27%), they will give a thorough examination (17%), and there is more chance of seeing a doctor (15%).

The main reasons for recommending a private doctor/specialist include the perceptions that they will have the necessary drugs available (24%), that they will give a thorough examination (21%), that it is a specialised provider (13%), and they will have good equipment/the right equipment (11%). The presumption that private providers will have the necessary drugs is

particularly significant as private providers may not treat TB in South Africa. They may diagnose TB patients and may act as a DOTS observer but all medication must be obtained from a public clinic. The implications of this are discussed further later in this chapter.

2.4.3) PROVIDERS FOR HIV

Once again, public/government clinics are the most commonly recommended service providers for HIV or people who suspect that they may have HIV. Respondents recommend these clinics because they are perceived to be specialised providers (19%) who will give a thorough examination (17%) and whose staff are perceived to be more knowledgeable (11%).

Figure 5.3: Recommended service provider for HIV

Recommended service provider for HIV (or people who suspect they have HIV)

None 2%
Other 1%
Private doctor/specialist 18%
Private clinic 2%
Private hospital 2%
Other public provider 1%
Public/government hospital 13%
Public/government clinic 61%

N=250
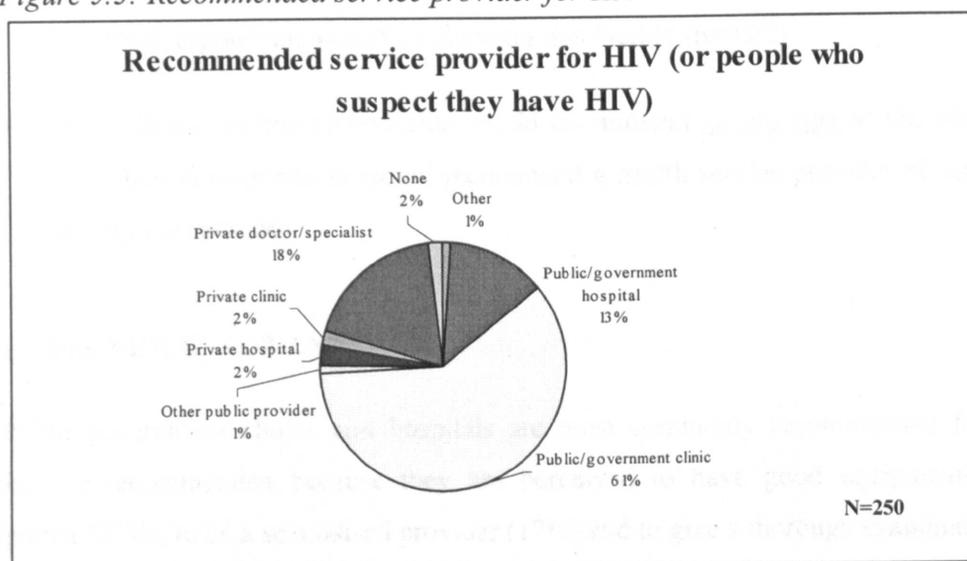
There are a number of both gender and population group differentials in the recommended provider for HIV. Significant differences between genders include the following;

- 19% of men would recommend a public/government hospital, compared to 10% of women (p=0.07)

- 47% of men would recommend a public/government clinic, compared to 65% of women (p=0.01)

- 25% of men would recommend a private doctor/specialist, compared to 15% of women (p=0.05)

Significant differences between the two high TB prevalence population groups include the following:

- Only 5% of Black/African respondents would recommend a public/government hospital, compared to 24% of Coloured respondents (p<0.01)

- 79% of Black/African respondents would recommend a public/government clinic, compared to 36% of Coloured respondents (p<0.01)

- Only 6% of Black/African respondents would recommend a private doctor/specialist, compared to 33% of Coloured respondents (p<0.01)

- No Black/African respondents would recommend a private clinic, while 4% of Coloured respondents would recommend this facility (p=0.02)

- 4% of Black/African respondents would recommend no provider at all, while all Coloured respondents would recommend a health service provider of some description (p=0.06)

2.4.4) PROVIDERS FOR AN INJURY

Public/government clinics and hospitals are most commonly recommended for injuries. Clinics are recommended because they are perceived to have good equipment/ the right equipment (21%), to be a specialised provider (17%) and to give a thorough examination (12%). Hospitals are recommended because they are perceived to be closer to home (28%), to have good equipment/ the right equipment (18%), and to be a specialised service provider (11%).

Figure 5.4: Recommended service provider for an injury

Recommended service provider for an injury

Private doctor/specialist 9%

Private hospital 6%

Public/government hospital 25%

Public/government clinic 60%

N=250
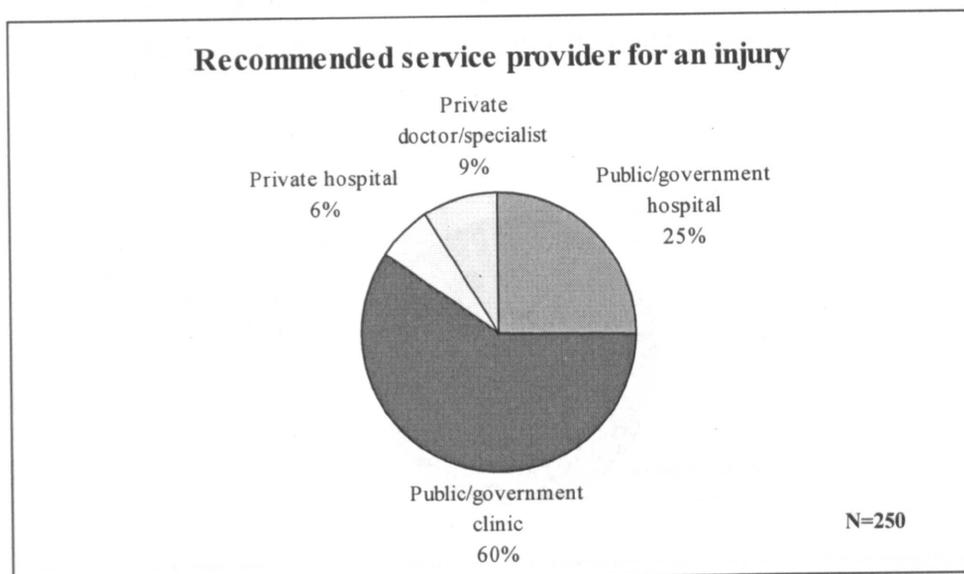
As for the other illnesses mentioned above, women are more likely to recommend <u>clinics</u> (63% compared to 48% (p=0.02)), while men are more likely to recommend <u>hospitals</u> (35% compared to 21% (p=0.02)). Black/African respondents are more likely to recommend <u>clinics</u> (87% compared to 20% (p=0.00)), while Coloured respondents are more likely to recommend <u>public hospitals</u> (50% compared to 9% (p=0.00)). Similarly, 14% of Coloured respondents would recommend a <u>private hospital</u> compared to 1% of Black/African respondents (p=0.00), and 15% of Coloured respondents would recommend a <u>private doctor</u> compared with 3% of Black/African respondents (p=0.00).

2.4.5) PROVIDERS FOR CHILDHOOD IMMUNISATIONS

The public/government clinic is again the most likely service provider to be recommended for the provision of childhood immunisations. Clinics are recommended for this purpose as they are perceived to be a specialised provider (24%), with whom respondents have had a positive personal experience (16%). It is also perceived to be closer to home/more convenient for transport (15%).

139

Figure 5.5: Recommended service provider for childhood immunisation

Recommended service provider for child immunisation

Traditional healer
3%

Spiritual or alternative healer
1%

Private doctor/specialist
8%

Public/government hospital
6%

Private clinic
2%

Other public sector provider
1%

Public/government clinic
79%

N=250
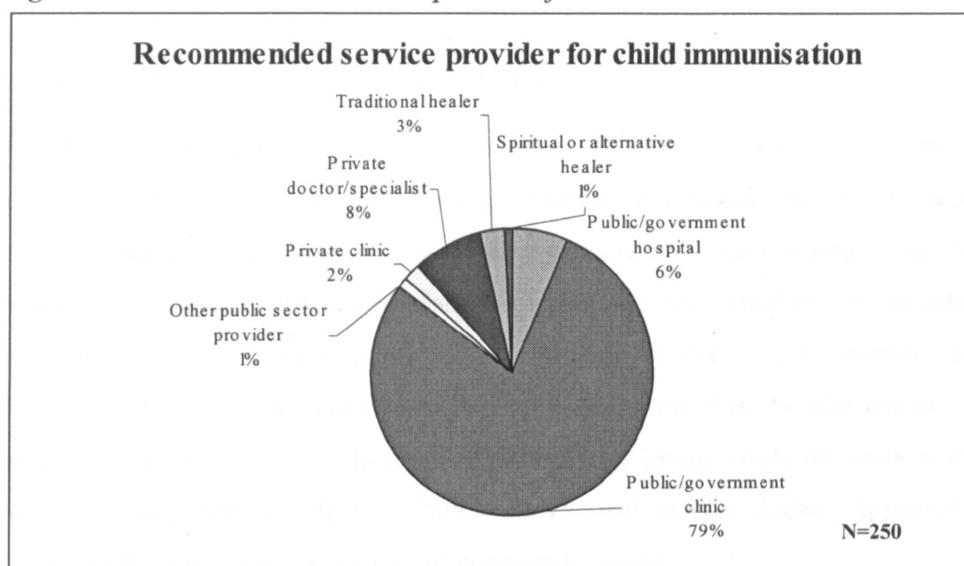
There are fewer significant demographic variations in the provider recommended for childhood immunisation; however, some differentials do exist:

- 7% of men would recommend a <u>traditional healer</u>, compared to only 1% of women (p=0.02)

- No Coloured respondents recommended <u>traditional healers</u>, compared to 5% of Black/African respondents (p=0.02)

- 5% of Coloured respondents would recommend <u>private clinics</u> while no Black/African respondents would recommend these facilities (p=0.01)

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3)   QUALITATIVE FINDINGS

The focus group discussions offer an additional forum to explore the composition of patients' choice sets. As in the quantitative dataset, participants were probed for their awareness, usage and perceptions of health service providers. The focus group methodology also provided an opportunity to more thoroughly investigate the reasons behind provider usage/non-usage and determinants of patient's preferences. As described in Chapter 3, which outlined the study methodology in detail, findings were elicited inductively from the dataset using modified grounded theory analysis. The findings relevant to our understanding of

preference sets are discussed in detail below.

3.1) AWARENESS OF SERVICE PROVIDERS

The focus group participants were aware of a wide variety of service providers. Aided by the group dynamic, respondents mentioned most public and private provider types operating in their areas including counsellors, church healing groups, traditional and other spiritual healers. There was also some mention of providers that might not conventionally be considered 'health service providers', such as Rastafarians. Similarly, social workers were commonly identified as health service providers and appeared to play an important role in the illness-recovery process by assisting with delivery of medication, application for grants while off work with an illness and even assisting with childcare. Public clinics and private doctors appeared to be the providers of which participants were most commonly aware. .

The terminology used by participants differed from that used in the health literature and in the quantitative data collection tool analysed above. Public providers were generally referred to by facility type e.g. clinic or day hospital, while private providers were generally referred to by designation or job description e.g. doctor. There was some confusion about the difference between a clinic and a day hospital. Some participants contended that the terms were synonymous while others that the two facilities offered different services. Amongst those who differentiated between clinics and day hospitals, clinics were seen as more specialised providers of services for babies and the TB affected. Day hospitals were seen as general primary service providers and were perceived to be more crowded.

The words public, government or private were not used in common parlance. When participants referred to clinics and day hospitals, they were referring to public facilities which they described as largely nurse led. Alternately, when participants referred to 'Doctors', they were referring to private providers – usually General Practitioners. If a public sector doctor was consulted, this provider was explicitly referred to as 'the doctor at the clinic'. Usually however, a consultation with a doctor or nurse at a clinic was simply described as seeing 'the clinic' or 'them at the clinic'. Tertiary hospitals were usually referred to by name, with Groote Schuur or Jooste the most commonly mentioned. The following discussion uses the language of the participants i.e. 'a doctor' refers to a private doctor unless otherwise specified, and clinics or day hospitals are public facilities unless otherwise specified. Tertiary hospitals are referred to by name where possible.

Doctors were seen by participants as a fairly homogenous group of providers, with no overt

differentiation between doctors. Clinics and day hospitals were differentiated on geographic grounds and there appeared to be perceived differences in quality between clinics in different areas. This will be discussed in more detail in Section 3.3.1 on provider quality. Hospitals appeared to be seen as heterogeneous providers with Groote Schuur seen as a very high quality provider while Jooste was seen as a low quality provider in general terms. Particular aspects of provider quality, as described by participants, are discussed in more detail in Section 3.3.1, with a focus on primary rather than tertiary services.

Awareness of the availability and general quality of providers was variably enhanced by some awareness of the services offered by providers and the processes followed by each provider. For example, some respondents knew that clinics had time slots for different needs e.g. baby clinic, and social workers were known to provide assistance with disability grants. However, this awareness was incomplete for most participants. There seemed to be some confusion regarding which providers offered particular services, which services were offered at specific times and what administrative steps to follow on entering a clinic or day hospital in the public sector. For example, a number of participants visited private doctors when they suspected they had TB and were unaware that private providers could not provide treatment for TB. In another case, one participant took her baby to the clinic out of hours and was turned away, causing her significant distress. Another respondent reported being ill-treated by staff when she did not know whether to collect her medical file or simply proceed to the treatment rooms to have stitches removed. These simple examples illustrate cases that were raised in numerous instances in the data. This lack of detailed awareness was a significant source of frustration to services users (and potential service users) and raised suspicion about the running of services and lack of transparency. This suspicion underpinned a common criticism that nurses favour some patients over others or are rude and abusive to patients. Staff attitudes are discussed further in the section on provider quality.

3.2)   USAGE OF SERVICE PROVIDERS

Along with pharmacists, clinics and private doctors were the most commonly used providers. Other providers that respondents frequently mentioned using included prayer healers or church-based healers (amongst female respondent only), herbalists (amongst Black/African respondents only), and tertiary hospitals both public and private. Hospitals were not only used to provide in-patient services, they were also used for out-patient diagnostic testing such as x-rays.

During the discussion, all participants were asked to outline the process of treatment

seeking for their last illness episode. In the TB affected groups their last illness episode was generally the onset of TB. In the other groups illnesses episodes varied significantly from seasonal colds to acute appendicitis and injuries. Reported usage patterns for these illnesses varied from the very simple, such as a single visit to a pharmacist, to the very complex involving multiple visits to multiple providers. Some respondents chose to self-medicate with home remedies or over the counter drugs kept in supply at home. Self-medication was most common for flu-like symptoms and attempts at self medication were occasionally followed by a visit to a service provider if a cure was not promptly forthcoming. Among those who sought help from a service provider, the shortest chain of usage was a single visit to a single provider. This provider was most commonly a chemist, clinic or doctor but was occasionally at a tertiary public hospital (presumably the Accident and Emergency department for which no referral is required), a spiritual healer or an herbalist. The longest chain of usage involved 10 visits to 8 different providers before a diagnosis was reached and appropriate treatment could commence.

Table 5.7 over the page details all reported chains for a single illness episode that involved more than one provider. Each of these chains was mentioned by at least one respondent, while some were reported by more than one respondent for similar or different illnesses. These chains of usage cover the full spectrum of illnesses mentioned by the group participants.

Table 5.7: Chains of health seeking behaviour

VISIT 1	VISIT 2	VISIT 3	VISIT 4	VISIT 5	VISIT 6	VISIT 7	VISIT 8	VISIT 9	VISIT 10
Day hospital/clinic	Public hospital	-	-	-	-	-	-	-	-
Day hospital/clinic	Public hospital	Day hospital/clinic	-	-	-	-	-	-	-
Day hospital	Clinic	Public hospital	Clinic	-	-	-	-	-	-
Day hospital/clinic	Chemist	-	-	-	-	-	-	-	-
Day hospital	Clinic*	-	-	-	-	-	-	-	-
Clinic (1)	Day hospital	Clinic	Private doctor	Clinic (doctor)	Prison (1)	Prison (2)	-	-	-
Clinic (Hout Bay: out of area)	Private doctor	Clinic (Nyanga)	-	-	-	-	-	-	-
Clinic	Private doctor	Clinic	Prison	-	-	-	-	-	-
Clinic	Private doctor	Day hospital	-	-	-	-	-	-	-
Self medication	Private Doctor (1)	Private Doctor (2)	Hospital (unspecified)	-	-	-	-	-	-
Self medication	Private Doctor	Private hospital	-	-	-	-	-	-	-
Self medication	Private doctor	Hospital (unspecified)	Doctor (unspecified)	-	-	-	-	-	-
Herbalist/ Self medication	Clinic (doctor)	Public hospital (Jooste)	Public hospital (Groote Schuur)	-	-	-	-	-	-
Private doctor	Chemist	-	-	-	-	-	-	-	-
Private doctor (1)	Private doctor (2)	Private doctor (3)	Private doctor (4)	Private doctor (5)	Private doctor (6)†	Public hospital (Groote Schuur)	Clinic (Woodstock: out of area)	Public hospital (Groote Schuur)	Clinic (Woodstock: out of area)
Private doctor	Tertiary hospital ((1): unspecified)	Tertiary hospital ((2): unspecified)	-	-	-	-	-	-	-
Private doctor	Private hospital (Claremont)	Private doctor	Clinic	-	-	-	-	-	-
Private doctor	Clinic	Prison facility (1)	Prison facility (2)	Clinic	-	-	-	-	-
Private doctor (1)	Private doctor (2)	Clinic	Day hospital	Clinic (out of area)	-	-	-	-	-
Private hospital	Clinic	-	-	-	-	-	-	-	-

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* Aside from those TB-affected participants who went directly to a clinic at the correct time, this was simplest permutation amongst TB-affected participants searching for diagnosis/treatment for TB

† Note that this participant visited six different private doctors

144

Although the usage sequences in Table 5.7 may appear random or haphazard, some systematic variation in health seeking was evident. For example, chains of usage were much simpler amongst participants not affected by TB. Amongst TB affected participants, the chains of usage were generally shorter and simpler amongst Coloured respondents from Oostenburg/Mitchell's Plain than Black/African respondents from Khayelitsha/Nyanga. Chains involving treatment from prison facilities were only mentioned by male participants.

These chains of utilisation offer qualitative evidence that public and private services are frequently used in conjunction with one another for a single illness episode. They also offer evidence that public providers 'out of area' i.e. not servicing the respondents' community, are deliberately sought out by patients who would have to lie about their address to receive care in these facilities.

3.2.1) PRIVATE VERSUS PUBLIC SECTOR USAGE

In many instances, private health care providers were used to replace and/or supplement public providers. However, public providers were also occasionally used to replace ineffective private providers amongst TB affected participants.

In the groups not affected by TB, private or public providers were able to conduct both the full diagnosis and treatment for a given illness episode. In these groups, public providers were still the most common 'first choice' provider however, private chemists were often necessary to supplement public services if drugs were not available.

> *"Moderator: [D]id you get medication when you were sick?*
> *Respondent: I got them, to drink and I had to go and take tablets from the*
> *hospital but as time went on, I stopped going there. I bought from the chemists*
> *because at times, there were none at the hospital." Group 4, Male, not TB*
> *affected*

Private doctors or pharmacists were occasionally used as 'first choice' providers in these groups, although this was more common amongst employed respondents and those covered by family medical aid or insurance.

Amongst TB affected respondents, the pattern was markedly different. The protracted nature of many of the diagnoses highlighted much more complex health seeking behaviour that often involved multiple care seeking both within and between sectors. This is in part due to the fact that private doctors may diagnose TB in South Africa but may not treat the disease. As such, patients in the private sector must be referred to public clinics for treatment.

R: *I was coughing and my chest would hurt every time I did. I thought it was just chest pains. I ignored them at first. I told them at home and they sent me to a special doctor. He took some tests including a urine test but he couldn't see anything wrong. But then the doctor sent me to a hospital in Claremont. I was told to pay R100.*

M: *Where you had chest pains*

R: *Yes. I went back to the same special doctor and he diagnosed TB and he sent me to the clinic where I go treatment*

The quote above illustrates a simpler case of health seeking for TB when private providers were involved. Of course some patients consulted public clinics as their first provider of first choice and, if successfully diagnosed during that visit, only interacted with that one health service provider (for diagnosis and subsequent treatment). Unfortunately, this was more unusual. More commonly, private providers were used as 'back-up' to unsuccessful consultations or slow diagnoses in the public sector, and to unsuccessful diagnoses with other private doctors.

"[My illness] started in September. I had fever. I went to Hout Bay Clinic. The doctor told me I had a cold, I'd caught one of the flu virus strains that were sweeping the country. I was given tablets and he told me that if I didn't feel any better I should come back. After a week I still felt the same. I started sweating, shivering with cold and feeling sharp pains. My chest hurt when I coughed and at night I was sweating like a horse. I then went to a doctor and he examined me. He said the clinic was right I did have a cold and that I must be handling water a lot. He gave me tablets. I also told him I had sharp pain and that at night I sweated. He gave me medication. I wasn't happy with the treatment because I was still coughing. My mom advised me to visit my uncle in Nyanga. I did eat but then I'd vomit. I was losing weight at an alarming rate. My uncle sent me to another doctor in Nyanga. The first time there was no improvement and I went back. The second time he gave me an injection." Group 6, Female, TB affected

Similarly public providers were used as 'back-up' to unsuccessful consultations in the private sector. This was much more prevalent in the TB affected groups.

"Moderator: When were you diagnosed with TB?

146

Respondent: In October, after I've been to doctor after doctor. Mom advised I go to a clinic. My sister was with me when I went to Nyanga clinic. They tested me for TB and when I went back for the results they did tell me that I had TB after all. They arranged everything for me and I go treatment." Group 6, Female, TB affected

Public hospitals, particularly Groote Schuur, were used as a 'fail-safe'. They were generally the 'last-choice' provider as patients had to be severely ill or injured and/or had to lie about their address in order to be seen without a referral from a doctor or clinic. This is where patients went when all other treatment seeking attempts had failed. However, patients spoke of this consultation as the definitive consultation and there was a strong impression that if patients could consult with Groote Schuur first, they would do so. There was a definite trust in this establishment and respondents only spoke of 'successful' interactions with Groote Schuur. Patients were occasionally referred to public hospitals by clinics or day hospitals, most frequently for severe TB which required a period of in-patient care but also for other illnesses.

3.3) DETERMINANTS OF PROVIDER PREFERENCES AND USAGE

Determinants of provider usage seemed to involve two core processes. The first was the decision to seek any care at all, i.e. is my illness 'serious' enough to warrant any attempt at health seeking? The decision to seek care often generated - or was generated by - a working hypothesis regarding the possible source of ill health. The second process was the decision to seek care from a particular provider or set of providers.

The first decision to seek any form of care is not discussed further in this chapter. Instead, this analysis focuses on those factors pertinent to the formation of the choice set. The preceding discussion above offers some insight into which health service providers were included in individuals' choice sets but it gives no insight as to why providers were used, why they were used in the order they were used and how patients decide whom to see 'next'. This section investigates the factors raised in focus group discussions that may impact this behaviour. We find that provider choice is influenced by:

1) Aspects of perceived provider quality,

2) Perceptions of the level of privacy one might expect at/from a provider

3) The availability of the provider at the time of perceived need

4) The individual's working hypotheses regarding their illness

5) Strategies used to overcome information shortages or asymmetries and whether or not the patient is the sole decision-maker

6) Demographic factors – particularly ethnic and gender differentials

Each of these will now be discussed in more detail.

3.3.1) ASPECTS OF PROVIDER QUALITY

The focus group participants mentioned a number of provider characteristics used as metrics of quality. These included waiting times, a provider's expected level of expertise, provider/staff attitudes, the availability of medication and expertise at diagnosing and treating particular diseases. It is unclear how these perceptions are formed but participants commonly cited examples from their own experience to validate a judgement or statement. This suggests that, to some extent at least, these perceptions were formed retrospectively based on experience. However, a number of characteristics were stated as 'fact', such as the lengthy waiting times anticipated at public clinics or day hospitals. These judgements may or may not be supported by examples from the respondent's own experience and they suggest that some perceptions were formed prospectively by drawing on the experiences of others. Regardless of how these perceptions were formed, they were clearly expressed and motivated in the data, and offer some insight into why patients used the providers they used.

3.3.1.a)   Waiting times:

Waiting times would normally be considered a price-related determinant of care seeking, quantified as an opportunity cost either in terms of lost income or as actual time spent. However, these data suggest that waiting times have a double burden, only one of which is the opportunity cost. The additional burden of lengthy waiting times is the 'frustration factor' related to fruitless or unpleasant waiting in an environment perceived to be hostile[‡].

Commonly mentioned sources of frustration or unpleasantness while waiting included the 'dirtiness' of facilities in which respondents were expected to wait and the (over)crowding of waiting rooms. Both of these factors were identified as potential health risks or risks of infection, and long waiting times were seen to extend exposure to these risks causing significant discomfort.

[‡] Perceived hostility will be discussed further in the section on 'Staff Attitudes'.

148

Participants in most groups also expressed dismay that emergency cases appeared to receive no priority in public clinics and day hospitals. Again, this was partly seen as a health risk as patients who were obviously severely ill and feared to be infectious were left to wait alongside patients with less severe ailments. This was also seen as source of anxiety amongst those who found it difficult to witness a waiting patient 'obviously' in pain. In some instances, respondents viewed themselves or their family members as the priority cases and, in these cases, long waiting times were particularly unbearable.

Although there were gender, ethnic and other variations in perceptions of these factors - and the extent to which they seemed to affect provider preference – they were raised in some way by almost every group. Interestingly, respondents almost never complained about waiting for successful health seeking episodes i.e. those that resulted in a consultation with a provider, preferably a doctor, and (usually) commencement of treatment that was both available and perceived to be effective.

3.3.1.b)   Provider/Staff Attitudes:

Poor staff attitudes were most commonly attributed to nurses at public clinics and day hospitals. These varied from disinterest i.e. ignoring a case that was (according to the discussants) patently a priority or emergency case, to open hostility. Nurses were also accused of favouring friends or popular community members, taking informal payments to move patients up the queue and selling drugs 'through the back door' thus resulting in drug shortages for bona fide patients.

Khayelitsha/Nyanga respondents in particular reported neglect, disrespect, hostility and even physical aggression. There was the impression amongst respondents that this ill-treatment was due to the patient's ethnicity and that, if they had taken along a so-called 'White' employer, they would not receive this kind of treatment.

> "*Respondent: The maternity side is the worst.*
>
> *Respondent: You can say that again.*
>
> *Respondent: And people are beaten instead of being helped.*
>
> *Respondent: The other thing is that, you cannot get to any clinic you wish to, if you are not staying around that area, you are not going to be accepted or helped.*

> *Respondent: If you need to go to a Wynberg clinic when you stay in Nyanga,*
> *for them to accept you, is if you say you are working and staying there. You*
> *have to lie and what else can you do because you are sick and you need help*
> *then.*
> *Respondent: Or you ask your madam [employer] to come with you and there*
> *will be no questions asked." Group 2, Female, not TB affected*

Seldom was a private provider accused of being in any way unkind or disrespectful, yet this was a common theme when talking about public providers. This characteristic set the two providers apart. Again, Khayelitsha/Nyanga based respondents reported the worst treatment at the hands of public service providers, particularly amongst non-TB affected individuals, and were the most likely to seek care in the private sector.

Mitchell's Plain/Oostenberg women reported receiving much 'kinder' care from clinic staff on average than did Khayelitsha/Nyanga women. Although one group mentioned a need for attitude change, this pertained to an instance of refusal to treat a sick child outside the hours of a baby clinic. Mitchell's Plain/Oostenberg respondents did exhibit frustrations with public providers but these tended to stem more from long waiting times or shortages of medicines, than hostile treatment by staff.

> *Respondent: They are far better than the people. The doctor is okay. The*
> *doctor will only see you on a Thursday. The nurse is always there to help you.*
> *If you have a problem – she is there to help you.*
> *Moderator: They are nice to you at the clinic or hospital – more so than the*
> *people in the street.*
> *Respondent: Yes. They tell you to come close – not to move away. They care.*
> *They use their own petrol to look for you if you do not pitch. The people out*
> *there won't worry about you – if you go or not go to the clinic." Group 5,*
> *Female, TB affected*

These differences in perceived care might go some way towards explaining why women from Mitchell's Plain/Oostenberg didn't mention visiting private doctors whereas their counterparts in Khayelitsha/Nyanga appeared to be as likely to consult a private doctor as a public one. In fact Khayelitsha/Nyanga women seemed to persist with private doctors even if those doctors failed to affect a cure.

3.3.1.c)   Availability of medication:

Public clinics and day hospitals were frequently accused of drug shortages.   Some discussants accepted this as a natural course of public service provision, supplementing public drug supply with private chemists.   Other respondents resented the shortages attributing them to staff ineptitude or dishonesty e.g. drugs were being kept for 'favoured' patients, or sold for cash to others as mentioned above.

Expected drug shortages seemed to be a material deterrent to public sector use.   Patients seemed more willing to contend with other quality shortfalls if they could be certain to receive the necessary drugs at the end point.   This relates to the 'fruitless' waiting discussed earlier.

3.3.1.d)   A provider's expected level of expertise:

A provider's anticipated level of expertise is strongly linked with their designation.   On a number of occasions, discussants referred to the doctor as knowing the best because they are 'the one with the title'.   There is little perceived variance in this expertise.   Private doctors were however, perceived to give a very thorough examination.   The thoroughness of the examination received in public clinics was never a point of discussion.

Variance in the expected level of expertise from a facility appeared to stem from the likelihood of seeing a doctor.   The title of 'nurse' was not imbued with any particular expertise and feelings towards nurses were distinctly mixed – largely due to aggressive or rude treatment that many patients reported receiving from nurses.

3.3.1.e)   Expertise at diagnosing and treating TB:

Public providers, usually clinics or day hospitals, occasionally failed to diagnose TB at the first opportunity.   This was frequently attributed by respondents to false negatives in the sputum test.   Respondents did not make reference to 'false negatives' per se but to sputum tests which said they didn't have TB and then subsequent sputum tests or x-rays which confirmed that in fact they did have TB.   For example, the patient quoted in the following extract was in fact TB affected.   He was correctly diagnosed and treated some time later.

[The doctor] gave me a bottle to spit in. I took it back to him on the 22nd and the 23rd I had the results. It was negative – I didn't have TB. I went to my aunt. It was during the holidays so I didn't work. I didn't have TB, but I got worse and worse. I didn't know what was wrong with me." Group 7, Male, TB affected

In some cases sputum tests could not even be conducted if the patient was unable to generate sufficient sputum for the test. Although in the quote below x-rays were available, they are not always offered and seemed to be more commonly provided for men than for women. Public clinics did not seem to have a general/consistent strategy when faced with a patient who could not generate sputum.

"Respondent: So I took [the x-rays] to the clinic in Nyanga East. The x-rays said I had TB. Now,…when I went to Nyanga East I had no sputum and they said they couldn't treat me for TB

Moderator: Oh, you have to have sputum?

Respondent: Yes. The TB was spreading at the time. I started treatment only a month after I've been diagnosed with TB. I went to a private door – Dr. Mbovane. I paid R110. He gave me a can with a chocolate flavoured nutritional supplement. He took a sample of my sputum. He then told me to take it to Nyanga." Group 8, Male, TB affected

Another commonly discussed reason for diagnostic delay in the public sector was the lack of co-ordination between public sector providers. Referrals from day hospitals or tertiary hospitals to clinics were not managed smoothly and the receiving clinics seemed to frequently question the referral and/or diagnosis, sending the patient away without treatment or referring the patient on to another service provider. Referrals from clinic to clinic were similarly flawed. This perpetuated multiple care seeking and delayed diagnosis and treatment.

"So mom took me to the clinic and I did a TB test. The Nyanga clinic sent me to a 'day' (day hospital). The one in Gugulethu. I went to a day hospital and they attended to me well. I've met a doctor and x-rays were taken. I was then told to go to Nyanga. There was confusion about why I had to take the x-ray at 'day' in Gugulethu – 76. So I took them to the clinic in Nyanga East. The x-rays said I had TB. Now, the was when I went to Nyanga East I had no sputum and they said they couldn't treat me for TB." Group 8, Male, TB affected

The health system seemed to be more effective at diagnosing TB amongst Mitchell's Plain/Oostenberg TB sufferers. There were no stories of multiple care seeking before effective diagnosis of pulmonary TB amongst the Mitchell's Plain/Oostenberg TB affected women. This could be because Mitchell's Plain/Oostenberg women were unlikely to use private doctors, who frequently failed to correctly identify TB (according to the illness narratives of their users). However, this could also be due to a lower incidence of TB/HIV co-infection and fewer false negatives from TB tests. Alternatively, doctors may be more vigilant about looking for TB amongst Mitchell's Plain/Oostenberg patients. In fact, these discussions suggest that Mitchell's Plain/Oostenberg respondents may have been receiving 'better' care from public providers in a number of ways. That said, less common forms of TB are slower to be diagnosed amongst all ethnic groups as the following quote illustrates;

"We went to 'Site B' [clinic]. She took me to the doctor who treats her. I was then to No. 29 – Emergency. I was given an injection and I felt better. I was then given tablets to take home. Later that day the stomach ache came back with a vengeance. My mom bought me ENO fruit salts but they didn't help. The next day I went back to Site B. The doctor said I should be sent to Jooste [hospital] because he doesn't know what's wrong with me. My mom went back home to fetch a duvet while I waited for an ambulance to take me to Jooste. I was then taken there. They couldn't help me either. My mom was told to go home as they were going to take care of me. It was a weekend and they were concentrating on accident victims. I was told to get out of my bed. I told them I couldn't, I could hardly stand.

I was then told that there were people with gunshot wounds, whatever and I was told to get out of bed anyway. I then asked to phone my mom as I was not being treated very well, so that she could come and fetch me. She told me she couldn't and she was just working there as a casual worker or something. I'm not sure what. I spent the night sitting on a chair. The next morning I saw a man I know and I asked him to give me money to phone home. In fact, I asked him to phone mom himself because I couldn't stand. So mom came and I told her what happened. She demanded to know why I could be treated that way. I then went back home. My boyfriend suggested to mom that I be taken to Groote Schuur as I was in a lot of pain. I was admitted and they operated on me. It was then discovered that I had stomach TB." Group 6, Female, TB affected

3.3.2) PERCEIVED LEVEL OF PRIVACY ONE MIGHT EXPECT AT/FROM A PROVIDER

'Public' and 'private' providers were associated with differing degrees of confidentiality. Private providers were not necessarily seen as private sector providers but as confidential providers. Conversely, public providers were not necessarily government provided services but were 'open' services which could be accessed by all members of the public i.e. for public use, and where one's treatment and diagnosis would similarly be in the public domain.

> *"Respondent: The public is like the hospital and clinic – everybody is going there. People know that they can go there if they have a problem.*
>
> *Moderator: Everybody can go there.*
>
> *Respondent: Yes, but if it is private – you want to keep it for yourself, then you will go to someone that will keep it between you and him."   Group 7, Male, TB affected*

> *"Moderator: What is the difference between public health services and private health services?*
>
> *Respondent: The private is something you do on your own and public is something you do in front of others..."   Group 5, Female, TB affected*

Respondents, particularly those from Khayelitsha/Nyanga, repeatedly mentioned a reluctance to visit local TB clinics because neighbours would see them walking to the clinic regularly and 'draw their own conclusions'. According to the participants, those conclusions would most likely be that the individual has HIV/AIDS and not TB because of the high prevalence of both diseases and the similarity of the visible symptoms (extreme weight loss particularly).

Although TB was considered common in both communities, there was a marked difference in the way it was viewed. In the groups from Khayelitsha/Nyanga, TB was synonymous with HIV/AIDS. There appeared to be two primary reasons for this close association. The first was the shared symptom of weight-loss mentioned earlier.

> *"Respondent: These days the first thing that comes into people's minds if they see you losing weight is that you've got AIDS. Only if you tell them you've got TB will they even consider it. A man in my neighbourhood is dying of AIDS, they'll say .*

154

Respondent: If you lose weight you're said to be HIV positive" Group 8, Male, TB affected

The second reason for the close association between these two diseases was the high rate of observed co-infection in this community.

"Moderator: Why else do people suspect that when you say you have TB you've got AIDS?

Respondent: Because HIV/AIDS does sometimes show up as TB. When you go for a TB test they might also suggest you take an HIV test as well, that is, if you don't mind... Most people I know who have AIDS were also diagnosed as having TB." Group 6, Female, TB affected

Despite the close association between the two diseases, TB carried less stigma than HIV. TB was considered curable and one would not always be blamed for contracting or spreading TB.

"Moderator: Do people regard TB with the same contempt they do AIDS?

Respondent: No

Respondent: TB used to be held in contempt but these days AIDS is what people regard with distaste

Respondent: Yes, AIDS is now the greatest evil

Respondent: For example if your brother has got TB and after a long time of staying in the same house you find that you have it too you are not gonna froth in the mouth blaming him for infecting you. You readily accept that it's in the family. But if you were to reveal to your boyfriend that you were HIV positive he might pack his bags and run for the hills or he might beat you to a pulp, call you names

Respondent: Or accuse you of infecting him if you were not using a condom." Group 6, Female, TB affected

"Moderator: Is TB the same as any other sickness?

*Respondent: Yes, in that it is curable if it's just TB and nothing else."
Group 6, Female, TB affected*

Unfortunately, while TB was differentiated from HIV/AIDS in theory, respondents from Khayelitsha/Nyanga were loath to believe that TB was only TB until there was physical evidence such as weight gain once treatment had commenced. Even those affected by TB were

sceptical of other TB sufferers as the quote below illustrates.

"Nonceba knows she's HIV positive but she's leading people to think she has
TB." Group 6, Female, TB affected, from the personification game.

Among respondents from this community then, TB necessarily implied HIV and sufferers expected to be sanctioned for the 'bad' behaviour that resulted in infection. This had implications for health seeking behaviour as respondents seemed to avoid seeking help for TB in public clinics, which ironically were the most likely institutions to correctly diagnose the disease and the only institutions capable of correctly treating the disease.

By comparison, there was no spontaneous link between TB and HIV in the groups from the Mitchell's Plain/Oostenberg community, TB affected or otherwise. Respondents from this community were more likely to seek help in public clinics.

3.3.3) THE AVAILABILITY OF THE PROVIDER AT THE TIME OF PERCEIVED NEED

A less explicit determinant of provider choice pertains to the availability of a provider at the time of need. One respondent visited a private doctor rather than a pharmacist because the doctor was closer to his home. He claimed that he would have visited a pharmacist rather than a doctor if the same illness episode had started during a working week rather than while he was on his annual leave. Other respondents mentioned selecting pharmacists because the later opening hours meant they were available when advice was needed. Similarly, self-medication appeared to be a fairly common way of 'holding out' until a provider was available, although this was more common amongst respondents who subsequently attended public providers.

Implicit in the discussion was the use of tertiary hospitals for 'illnesses' occurring at night because of their availability. These cases were not common but were mentioned mainly by male participants when relating narratives of injury or violence. One must assume that these respondents visited the accident and emergency departments at these hospitals, which are open 24 hours and do not require a referral. All other hospital departments require a referral from a clinic or doctor.

3.3.4) THE INDIVIDUAL'S WORKING HYPOTHESES REGARDING THEIR ILLNESS

3.3.4.a) Differences in health seeking between TB affected and unaffected individuals

Elements of the preceding discussion have already highlighted some differences in health

seeking between TB affected and unaffected respondents. Privacy was more of a concern for respondents who suspected that they had TB. Diagnosis, and hence treatment, also appeared to be slower for TB affected respondents resulting in more complex 'usage chains' or larger consumption bundles.

In addition to these factors, the process of TB treatment appeared to alter perceptions of public health providers. TB affected respondents were less critical of public health service providers, even though they remained aware of the shortcomings in the system. TB affected persons were also more aware of the role of clinics as service providers to adults.

> *"[C]linics are most beneficial to all of us, people who are unwell. You don't need to have money to go to the clinic and you do get help from them, even if sometimes they tell you to come back the next day." Group 6, Female, TB affected*

> *"The doctor will write down what I should get, I get to their dispensary, there is none. I will be told to come back the next day, it is the same day all the time. As a person that is not okay health-wise, I should have all the patients, go and check and see if I cannot get any. Sometimes, you get to the doctor's room and you are coughing, before he or she can say anything, she tells you, there are no cough mixture. You get to the clinic on Friday, you do not get what the doctor said you should have and that means, having to wait until Monday. You are in pain, you need something but you have to wait for Monday". Group 2, Female, not TB affected*

3.3.4.b)   Tuberculosis and state benefits or grants

While unemployed and receiving TB treatment, many respondents reported receiving a health grant of R700 per month. This suggests that if TB affected patients were not dependent on their families, they became dependent on the state. While R700 is likely to be significantly less than a salary from formal employment (the minimum wage is approximately double this), it is notable that many of the TB affected respondents were not employed when they fell ill and that the R700 grant would probably have increased their income significantly. At no point was this presented as a 'positive side' to TB or an incentive to fall (or remain) ill, but the need for this grant did influence health seeking behaviour when TB was suspected, as public providers were viewed as more likely to recommend the patient for a grant than a private provider.

"The advantage here [at a public provider] is that if you've got TB you can get treatment and you can also get health grant from a public hospital whereas privates never help you with it. But then you can bribe a doctor to write that you have an illness that qualifies you to get health grant. But in most cases it's public health service providers that give you a recommendation to get health grant." Group 6, Female, TB affected

The quotation above suggests that the possibility of a health grant may have affected provider choice. However, it did not appear to act through the budget constraint but rather through the choice set i.e. consideration of which provider was likely to yield the maximum utility.

3.3.5) OVERCOMING INFORMATION SHORTAGES OR ASYMMETRIES

As mentioned in an earlier section, participants were asked to recall their last illness experience. In half of the groups this is most likely to be their TB experience. In the other half of the groups this experience varied from benign 'flu' type illnesses to acute appendicitis.

In almost every instance, the respondent developed a working hypothesis regarding the cause of their illness but they commonly lacked confidence in the accuracy of this self-diagnosis. The working hypothesis was a key input in the development of a health seeking strategy but this too appeared to require validation and/or guidance. This self-doubt appeared to be due, in part at least, to uncertainty regarding the type of services provided by particular providers (information asymmetry). Information shortfalls i.e. information held neither by patient nor provider, also played a role usually through misdiagnosis of TB.

To overcome these information asymmetries and shortages, methods were frequently introduced to test the validity of a working hypothesis and the appropriateness of the planned health seeking strategy. These methods included seeking validation from a secondary person (such as the neighbour in the case above) or visiting different health service providers until the working hypothesis matched some professional input - or significant relief from the symptoms was achieved.

3.3.5.a) Advice/information support networks

The attribution of symptoms to a working hypothesis was commonly 'tested' on female family members first. Mothers, sisters and aunts were usually the first to hear about symptoms and fears. As such female family members, particularly mothers, played a central role in

guiding health seeking behaviour. In fact they often acted as the first health service provider; 'prescribing' traditional remedies, over the counter medication kept in the home or even left-over antibiotics from courses not completed by other family members.

> *"Respondent: I told my mother, "Mom, I don't feel well." [S]he asked what was wrong and I explained and she asked why and then I explained that my nose was running, my chest was sore. Then she said that perhaps I had a cold...and then she gave me antibiotics to drink." Group 3, Male, not TB affected*

Female family members guided illness attribution, where to seek help and when to return for further assistance if relief from symptoms was not achieved. They also assisted with adherence to medication. If the reaction from this first channel of communication was not negative, other family members in the household were usually informed.

> *"Yes, [my family] were supportive, very supportive. I went to mom when I first went to the hospital to see what was wrong and also when I went to get the results she was with me. I was still working at the time. She was the one who took my letter of resignation to work. To this day she ensures that I take my tablets." Group 6, Female, TB affected*

During the discussions, the only male figure to play a significant role in assisting or informing health seeking was the boyfriend or partner in those cases where respondents were co-habiting. In rare instances, uncles were named as the payers for health services but it was never clear how the uncles came to know of the illness. The role of payer is discussed further in Chapter 6 on the Budget constraint.

> *"Moderator: You told your boyfriend only and no one else?*
> *Respondent: Yes, he is the one that I know here in Cape Town." Group 2, Female, not TB affected*

Advice/information support networks varied from very informal conversations with a neighbour, to much more formal consultations with health service providers.

"So, I took the tablets from Thursday to Sunday without seeing any improvement in my condition. A neighbour said, Bongiwe, why don't you go and see if you don't have TB because your cough does seem rather suspect. I asked her when they do TB tests at the clinic and she said any day of the week. So, on Monday I visited the clinic." Group 6, Female, TB affected

The content of advice or information ranged from treatment options as in the quote above, it assisted in the development of the treatment narrative by posing possible explanations for the cause of illness, it helped to rationalise the duration of the illness and even provided reassurance that the sufferer was entitled to take on a 'sick role'.

Despite the important role that these advice/information support networks appeared to play, there was some variation in the extent to which individuals used this resource to overcome information asymmetries. For example, men were more likely to delay any form of communication. Although some men reported being active health seekers, the delays in communication more commonly led to delays in treatment seeking as there was no female family member encouraging and/or directing treatment seeking.

"Respondent: It was October last year. Just finished working.   I got home and brought up blood for a whole week, but I didn't worry to go to the hospital.
Moderator: Did you tell anyone?
Respondent: No
Moderator: Why not?
Respondent: I didn't tell anyone. Kept it for myself.   That was December last year – the Thursday I felt bad and I decided to go to the day hospital.
Moderator: Did you decide yourself to go to the day hospital?
Respondent: Yes, but I didn't get that far. I slept the Friday the whole day and I went to the hospital at 5h00... Group 7, Male, TB affected

Other individuals seemed concerned that the risks of seeking advice may outweigh the benefits. Respondents had little control over communication within the family, particularly when symptoms were observable, but control over communication with outside individuals was strictly controlled. The family occasionally colluded to maintain the privacy of the patient – particularly by sending respondents to visit providers out of the area - but again, obvious symptoms (such as significant weight loss or coughing) complicated efforts to maintain privacy.

"He could see that I was losing weight and people in my neighbourhood were also commenting on thin I had become." Group 6, Female, TB affected

Although privacy was often protected for its own sake, in the case of TB there was a concern that 'the community' would not believe the illness attribution. The results from the personification exercise illustrated how some feared that neighbours would not believe TB was the cause of the symptoms and would spread the belief that HIV/AIDS was the root cause. This fear was more specific to the Khayelitsha/Nyanga respondents. Amongst Mitchell's Plain/Oostenberg respondents, there was a greater fear of social exclusion if neighbours knew that someone in the household was suffering from TB.

"Moderator: Will Charles tell his neighbour that he thinks he has TB?

Respondent: No, not to the neighbours. He won't tell everybody.

Moderator: Why not?

Respondent: Because people make as if it very bad, but its not really.

Moderator: What about TB – why don't you tell everybody that you have that?

Respondent: Because people think TB is a very dangerous disease. This is why you don't tell everybody. You will tell some of your friends, but not all. There are certain people that don't worry – they will tell everybody." Group 7, Male, TB affected

3.3.5.b)   Multiple care seeking from different providers or iterative preference set formation

The group discussions identified a number of drivers of multiple care seeking behaviour in which information shortages or asymmetries played a role. To facilitate the discussion, these factors have been divided into 'patient driven factors' and 'supplier driven/institutional factors' although there is considerable overlap between the two categories.

Patient- driven factors:

Some respondents engaged in multiple care seeking behaviour if they failed to recover from an illness episode or if their working hypothesis was not corroborated by a professional opinion (and a cure was not immediate).

Delays in treatment seeking at the outset often exacerbated the severity of an illness, thus necessitating either additional visits before a cure could be effected, or masking the true cause

of the illness (as was the case in the quote below). Delays in treatment seeking at the outset also increased impatience for a diagnosis when healthcare was sought. This impatience then frequently resulted in multiple care seeking behaviour; for example, while patients were waiting for test results, they needed some immediate relief from symptoms which they obtained from a different provider. Some respondents even consulted a second doctor while still waiting for test results from the first doctor.

> *"I first fell ill last year at work. I work for a company that deals with chemicals. ...I was working at night and I felt pain which I ignored. It was in this shoulder. The pain continued for two weeks. I was now avoiding sleeping on this side. Now I became alarmed. I sweated at night and I have to have a towel right next to me so that when I woke up I'd wipe the sweat off my body. ...The pain moved from the shoulder to my chest. I ignored it still. I really got alarmed when the chest pains became worse. I was a supervisor at work. One of my Coloured colleagues rushed me to a doctor in Langa. The doctor asked if I'd ever had TB before. All he gave me were painkillers. They must have worked because I felt better. Then it struck again in September. The doctor I went to diagnosed TB. He took a sample of my sputum and the results came back positive. I was suffering from TB." Group 8, Male, TB affected*

Hedging one's bets by using more than one provider did not appear to be very common practice but it was raised indirectly in the discussions. Spiritual healers appeared to be the most common form of 'complementary healer,' and these were strictly used in addition to Western-style clinical health service providers.

> *"They [spiritual healers] see through the spirits, just like in the olden days of Jesus when followers of his, were given a vision. You get to these people and they tell you, you have this headache, before you even tell them what the problem is". Group 2, Female, not TB affected*

The use of spiritual healers appeared to be more acceptable to all ethnic groups than the use of traditional healers and herbalists. Even in the Khayelitsha/Nyanga groups, which arguably have an historic culture of traditional medicine, traditional healers were spoken of with some scepticism.

Supplier driven/ Institutional factors:

The most common supplier-driven factors behind multiple care seeking pertained to referrals (or institutional arrangements that prevented certain institutions assessing or treating patients). For example, private doctors may not treat TB patients in South Africa, nor may public day hospitals. Treatment must be provided by specialised public TB clinics. Patients seeking treatment for suspected TB seemed largely unaware of this constraint.

> *"My mom suggested that I go back to the hospital. The doctor told me these were TB symptoms that I was describing. He wrote a letter which I had to take to my nearest clinic". Group 6, Female, TB affected*

> *"I went to the day hospital first and they sent me to the [TB] clinic". Group 5, Female, TB affected*

If suppliers failed to correctly diagnose an illness such as TB, this often left patients with little choice but to seek help again until correctly diagnosed and treated.

> *Respondent: So mom took me to the clinic and I did a TB test. The Nyanga clinic sent me to a 'day' [day hospital]. The one in Gugulethu. I went to the day hospital and they attended to me well. I've met a doctor and x-rays were taken. I was then told to go to Nyanga. There was confusion about why I had to take the x-ray at 'day' in Gugulethu – 76...So I took them to the clinic in Nyanga East. The x-rays said I had TB. Now, when I went to Nyanga East I had no sputum and they said they couldn't treat me for TB.*
> *Moderator: Oh, you have to have sputum?*
> *Respondent: Yes. The TB was spreading at the time. I started treatment only a month after I've been diagnosed with TB. I went to a private door – Dr. Mbovane. I paid R110. He gave me a can with a chocolate flavoured nutritional supplement. He took a sample of my sputum. He then told me to take it to Nyanga. Then the results confirmed that I had TB. I then saw a doctor and I started treatment*

Medicine and staff shortages also caused institutions to refer patients elsewhere, thus extending the process of health seeking (and potentially widening the choice set).

"Sometimes you go to the clinic and they don't have everything and they send you to the day hospital. Sometimes you have to wait for long. You have to wait 2 to 3 hours." Group 1, Female, not TB affected

In the case of TB, multiple care seeking is entrenched in the system of diagnosis and directly observed treatment even if the patient attends the correct clinic and TB is suspected. The results of the sputum test cannot be given on the same day and as such patients are required to return for a second visit to collect their results. Thereafter, most patients are required to visit the clinic daily until their treatment is complete. These arrangements were reflected in many respondents' illness narratives.

"I went to the day hospital because of this pain. I am always sick – so I went to the day hospital. They took x-rays. They saw there was something wrong. They sent me to the clinic. I had to go and spit. I went there. The one was negative and the one was positive. They said I had to go back the Wednesday. I did go back and the doctor told me that they were going to put me on pills. Even if the one is negative and the other one positive. They gave me 5 purple pills. I had to go there to have those every morning. That is a 6-month treatment. Have to go there from Monday to Friday." Group 5, Female, TB affected

3.3.6) ETHNIC AND GENDER DIFFERENTIALS

3.3.6.a)   Ethnic differences in choice set formation and care seeking

When talking about TB particularly, female respondents from Khayelitsha/Nyanga tended to focus more on the weight loss symptom of TB whereas their Mitchell's Plain/Oostenberg counterparts seemed to focus more on the coughing and chest pain. This may be due to the close association between HIV and TB among Khayelitsha/Nyanga respondents, and the relationship between thinning and HIV that reinforces this relationship. Whatever the case, these visible symptoms appeared to impact variably on health set formation and choice set selection.

Traditional healers were only mentioned by, or in relation to, Khayelitsha/Nyanga respondents but both Khayelitsha/Nyanga and Mitchell's Plain/Oostenberg respondents mentioned spiritual and prayer healers. There appeared to be little or no stigma around prayer healing and it was seen as supplementary to medicinal/western treatment, not as a replacement.

Herbalists were also mentioned by both ethnic groups, although the Mitchell's Plain/Oostenberg groups referred to 'Rastas' i.e. Rastafarians providing the herbs rather than a 'herbalist' per se.

"Respondent: The Blacks believe in a sangoma. That is traditional.

Moderator: Is that public or private?

Respondent: That is private.

Respondent: With them it is very private.

Respondent: The priest can be public as well. Somebody that can pray for you.

Moderator: How do they provide health care services?

Respondent: They pray for you.

Respondent: Some of them are like doctors themselves –they will mix different ointments to give to you." Group 2, Female, not TB affected

3.3.6.b) Gender differences in choice set formation and care seeking

Prison was a recurring theme in the male groups that was never mentioned in the female groups. Prison influenced health seeking behaviour by diagnosing and providing treatment (it was the only provider available to inmates), while also being responsible for interrupting treatment either at the point of interment, during moves between prisons and/or at the point of release. Inmates appeared to have little choice in the health seeking decisions made for them while incarcerated and their choice set was thus limited during their period of interment. On release however, treatment provided (or not provided) in prison affected subsequent health seeking as the quotes below illustrate.

"... they moved me from one jail to another and in this new jail they said this could not be TB, because I just finished my treatment. I said I can't understand this, but something is wrong. After three months I got out of jail again and I went back to the clinic. I was right – I had TB again. This time it was in a more serious degree. I had to get injections for 2 months." Group 7, Male, TB affected

"But while I was still getting my treatment I went back to jail because I'd been out on parole. In jail I reported that I've been taking treatment for TB and so I continued with treatment. They phoned Nyanga and found out from them what medication I was taking. But I was later transferred to Voorberg jail but there I wasn't getting any TB treatment. I [told them about my TB] but they ignored me. So my illness went untreated." Group 8, Male, TB affected

In general, females seemed to be more effective monitors of their own health and were more sensitive to small changes in capacity/wellness. Males by comparison tended to be less effective monitors, requiring more obvious and objective evidence before an illness episode was identified. Both genders tended to be dependent on female family members (usually the mother) to guide health seeking but this was more pronounced amongst women. There were a number of instances when men claimed to identify a set of symptoms, decided they needed treatment and went off to seek that treatment. There were no cases of women having done this without seeking the advice, support or validation of a third party.

"Moderator: When you were sick, was there someone that told you to do this and that? How did you know that this is the process to take?
Respondent   At that time, I could tell that I was not feeling alright. I am supposed to be in charge of my own life, taking care of it." Group 4, Male, not TB affected

As mentioned in the discussion on information asymmetries, this particular difference in male/female health seeking behaviour often resulted in men delaying treatment for longer than women as they were less likely to receive validation and prompting to seek help.

Women tended to be more aware of the role of clinics as health service providers, whereas men associated clinics with babies and children. Although this association with children also held with some women, they were more likely than men to seek help at a clinic first if accessing the public sector. When accessing public services, men usually visited a day hospital first. Clinics were also associated with TB, but only by TB affected persons. Amongst both genders there was considerable confusion about the role of the clinic versus the day hospital and the difference between the two providers.

"Moderator: So a day hospital is accessible to everybody. What then is a Clinic, if you've got to describe that?

Respondent: [A clinic is for] bab[ies]." Group 3, Male, not TB affected

"Moderator: What is the difference between a day hospital and a clinic?

Respondent: The clinic is for the smaller children

Respondent: The hospital is for adults.

Respondent: You get your pills from the day hospital.

Moderator: But you say you go to the clinic for your pills.

Respondent: Only for the TB pills. Not for anything else." Group 5, Female, TB affected

"Moderator: Would you say a doctor, a hospital, a clinic is the best for TB patients? Which one offers the best treatment?

Respondent: Clinics! (CHORUS)

Moderator: Clinics. What's a clinic?

Respondent: A day hospital." Group 6, Female, TB affected

Interestingly, more men reported receiving x-rays for TB diagnosis than women. This may be related to their health seeking behaviour if day hospitals are more likely to conduct an x-ray while clinics only conduct sputum tests.

Women seemed more likely to self treat illnesses. Self treatment usually involved home remedies and seldom involved Chemist-bought medicines. The primary motives seem to be saving money and saving time.

"Respondent: I just mixed vinegar and fish oil and drank that. It didn't help.
Respondent: I also tried fish oil." Group 5, Female, TB affected

"In last year I had the flu. I had lemon and two Disprins and flu..."Group 1, Female, not TB affected

"Some people use self-medication. They don't like to go to the doctor all the time, because it is quite expensive if you don't have medical aid. You don't have access to any other medical scheme. If you have to go to the doctor every time and the doctor prescribes medication – you might as well do it yourself. Go to the pharmacy and these are my symptoms – do you have anything for me? It is quicker that way and it is cheaper also." Group 1, Female, not TB affected

Men were only likely to self treat if prompted and guided by a female family member. The exception to this rule was treatment for injuries, which featured much more strongly as a theme in the male groups. Males appeared comfortable self treating injuries for which they were unlikely to seek formal care unless absolutely necessary.

> "*Respondent: My girlfriend's niece's boyfriend, threw a brick on me. I had blood all over my face. I was scared to be stitched and I never went to the hospital. I treated myself.*
> *Moderator: What did the people say at your home?*
> *Respondent: I treated myself." Group 4, Male, not TB affected*

4) DISCUSSION

This chapter analyses the formation of patient preferences and explores the factors that may affect the composition and ranking of preference sets. The analysis goes beyond the existing literature as we are able to probe the reasons for these preferences and any systematic variations within and between demographic groups. We find that, in this setting, the choice set is highly sensitive to aspects of provider quality, the perceived level of privacy one might expect from a provider, the availability of the provider, the individual's working hypothesis regarding their illness, strategies used to overcome information shortages and demographic factors such as gender and ethnicity (or population group).

We also find that, far from being complete at the outset, asymmetric information or information gaps result in preference sets that are formed dynamically during the health seeking process. The strategies used to fill these information gaps and/or shortcut the decision making process also impact materially on the formation of the preference set. Respondents commonly behave as satisficing rather than optimising actors, using short-cuts to information and acting on less than full information.

The other neoclassical assumptions of transitivity, reflexivity and completeness appear to be frequently violated. In addition, assumptions regarding rationality are called into question as individuals bypass providers with the capacity to treat TB, in order to attend more expensive providers who do not have the facilities to treat the disease. These apparent departures from accepted theory prompt the discussion below of alternative methods that may be more appropriate for the modelling patient preferences in health markets.

Data from the qualitative dataset is used to triangulate and elucidate findings from the quantitative analysis. In this section we look at key points of convergence or divergence between the two datasets, drawing on findings from other studies to add clarity or context.

4.1) AWARENESS AND THE 'COMPLETE' CHOICE SET

The majority of respondents participating in both the qualitative and quantitative datasets were aware of public clinics, public hospitals and private doctors. While the quantitative dataset collected unprompted awareness of health service providers, the group discussions provided the opportunity for participants to 'prompt' one another. Unsurprisingly then, the list of known providers collected during the group discussions was much more extensive than that collected using the quantitative instrument. The qualitative data generated a list of providers that extended beyond the pre-coded list in the quantitative instrument, including providers such as 'Rastafarians' and social workers amongst others. By comparison, respondents in the quantitative dataset were, on average, aware of only 4 providers on the pre-coded list. Even amongst the most commonly known service providers, 26% of respondents did not spontaneously mention an awareness of public hospitals and 27% of respondents did not mention private doctors/specialists. We have already mentioned that individuals can only consume from amongst the providers they know of and the apparent divergence in the findings from the two data sources raises the question of how a "complete" preference set is defined. Is it best reflected by the pre-coded list of all conventional health service providers detailed in the quantitative research instrument, the truncated list of providers of whom the quantitative respondents were spontaneously aware, or the extended list of providers (including some unconventional health service providers) generated by the focus group participants?

Varian defines the assumption of completeness as follows; "*For all x and y in X, either x≥y or y≥x or both*" (pg 95 Varian, 1992). In this definition, X is the set of possible consumption bundles and both x and y are unique bundles within that set. Varian's text states that "*X is the nonnegative orthant of R^k*"(pg 94) however, no definition of R^k is proffered. He does state however, that 'specific' consumption sets may be used, thus leaving the theoretical concept of completeness open to some interpretation. The empirical application of the concept offers little more guidance and DeShazo et al. contend that "*few tasks in empirical modelling require as much subjective judgment or involve as much uncertainty as specifying the designated choice set*" (pg 2 DeShazo and Fermo, 2002). Haab similarly expresses concern that researchers typically assume the individual's choice set to be the same as the set of alternatives provided in the survey instrument (Haab and Hicks, 1997).

Understanding what comprises a complete choice set is not a trivial issue as misspecification in empirical models can bias estimates. Thankfully, tests for the misspecification of choice sets do exist. DeShazo et al. frames the problem by distinguishing those goods that are subject to discrete choice, from a numeraire good which contains substitutes omitted from the designated choice set. They then develop a test of choice set misspecification that determines whether the analyst-selected choice set *"mistakenly assigns relevant substitutes to the numeraire good"*. An error of this kind would misrepresent the degree of substitutability between goods (DeShazo and Fermo, 2002). Desposato addresses the case where, unbeknown to the analyst, choices are excluded from the choice set. For example, a tertiary hospital (public or private) may be excluded from a patient's choice set if they do not have a referral or live out of area, but this exclusion may be unknown to the researcher. He refers to this phenomenon as 'unobserved choice set variation' and proffers a method to correct for the resultant bias in standard choice models, as well as estimating both the predictors of the choice set components and the predictors of selection from the available options (Desposato, 2005). The difference between the choice sets in the qualitative and quantitative data, and the insights into choice set formation provided by the qualitative data analysis suggest that unobserved choice set variation may impact materially on any analysis of health service use in this setting.

4.2) PUBLIC SERVICE USAGE AND THE IMPACT OF QUALITY

Public clinics were used by a larger percentage of the quantitative sample population than any other service provider and were the most commonly recommended service provider for all illnesses listed in the survey. This is despite the fact that these service providers received a lower quality rating than their private counterparts. A price/quality trade-off may go some way to explaining this phenomenon but it fails to fully explain the complex tradeoffs observed in the qualitative dataset where, for example, some individuals were prepared to visit public clinics out of area but not those in their immediate vicinity, or some used private providers for certain illness episodes (despite the price) and public providers for others. These and other variations suggest that any price/quality trade-off is 'framed' within the complex context of health seeking. It also suggests that quality is multi-dimensional and that certain quality-related attributes may be more important than others within a specific decision frame. For example, the focus group respondents appeared willing to contend with rude or aggressive treatment by staff if they can be sure of a successful diagnosis and the availability of the necessary medication at the end of the visit.

Of all the quality-related criteria, the availability of medication and the correct equipment to conduct diagnostic tests appeared to be the most influential non-price determinants of service use among the focus group respondents. In the quantitative dataset, public clinics were most commonly recommended as they were perceived to be specialised providers who would give a thorough exam, while private providers were most commonly recommended because they were perceived to be specialised providers who would give a thorough exam and would have the necessary drugs. Public clinics were seldom recommended because they would have the necessary drugs and even in the case of flu, only 11% of respondents expected that they would have the necessary drugs. The focus group participants also expressed considerable concern about the availability of drugs in public clinics. This concern, as with a number of other quality-related issues, appeared to be more adamantly expressed by participants from Khayelitsha/Nyanga. The available data are unable to definitively clarify whether this perceived variation is geographic or ethnic but, in the case of staff attitudes at least, respondents attributed the 'poorer' treatment to their ethnicity rather than their locality.

As mentioned in the literature review in Chapter 2, the empirical literature offers little consensus regarding the appropriate measure of service quality. Haddad argues that the quality of public services in developing countries is frequently neglected and that, while some attention may be given to technical aspects of quality, the interpersonal elements of quality tend either to be ignored or underestimated by health service planners (Haddad and Fournier, 1995). At the extreme, some authors have indeed chosen to ignore quality or to assume it is uniform across services (Dor et al., 1987; Grootendorst, 1995; Sauerborn et al., 1994). While this method would constitute a significant oversight in light of the findings in this chapter, other authors have used measures of quality that would be appropriate to this study. In fact drug availability seems to be one of the most commonly used measures of quality in empirical studies[§]. Similarly, Bolduc (Bolduc et al., 1996) utilised community dummy variables to capture the differences in quality of care received by communities – a method worth testing in the context of this study where dummy variables for population group, community and gender may go some way towards understanding the impact of variation in perceived quality on demand. The literature also offers some corroboration of the apparent illness specific variation in the 'sensitivity' to provider quality i.e. the extent to which a quality related concern will prevent health seeking at a particular facility. At least two studies have identified illness-specific variation in the willingness to pay for transport to a health facility (Kloos, 1990; Stock, 1983).

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§ A more complete discussion of the quality variables used in other studies is provided in the literature review in Chapter Two

Aside from these applications of quality in the empirical literature, the review in Chapter 2 also highlighted potential concerns about the endogeneity of quality (Akin et al., 1985; Bitran, unpublished drafta). Bitran argues that quality affects consumption decisions, while Akin proposes that perceived quality is endogenous to the consumer. The findings from this study suggest that perceived quality in this context is not entirely endogenous, but is largely determined by observable provider characteristics. This is tested further in the empirical model presented in Chapter 7.

Finally, the applied literature provides some insight into the reasons why individuals were prepared to visit public clinics out of area but not those in their immediate vicinity. In these instances a price quality trade-off should not be required as both clinics are provided by the public sector suggesting equivalent quality, and both clinics would be free at the point of use thus ensuring that the only cost differential is the transport cost. Of course there is some evidence in the findings that levels of quality are not perceived to be equal across all public clinics and insofar as this holds true, the additional cost of transport may simply be the price respondents are willing to pay for higher levels of quality**. However, Leonard et al.'s study of health seeking in rural Tanzania also identified patients 'bypassing' high quality providers in favour of low quality providers out of area. As in this study, they conclude that patients apply various measures of quality to health service providers and exhibit an understanding of the relative importance of each measure for the illness that they suffer. Generally, Leonard et al. observe that "*patients seek facilities that provide high quality consultations and prescriptions, are staffed by more knowledgeable physicians, and are better stocked with basic supplies. Patients avoid facilities that use injections too liberally or over-prescribe medication*" (pg 441 Leonard et al., 2002).

4.3) CROSS USAGE OF THE PUBLIC AND PRIVATE SECTORS

High levels of 'cross-usage' i.e. usage of both public and private providers were observed in both the quantitative and qualitative datasets. As mentioned in the quantitative analysis section, this poses questions regarding the selection of providers i.e. what factors determine which providers are used (and in which order)? Are different providers used for different illnesses or are different providers used for the same illness? These questions are dealt with in detail in Section 3.3 of this chapter. This section thus focuses on the uses of different providers for different illnesses, versus the use of different providers for the same illness.

** Price related determinants of demand are discussed in more detail in Chapter Six

Both the quantitative and qualitative datasets suggest that, in general, different providers were used for different illnesses. From the quantitative data for example, 31% of respondents would recommend a private doctor or specialist for suspected influenza, while only 8% of respondents would recommend this provider for childhood immunisations and 9% would recommend this provider for an injury. Similarly, 25% of respondents would recommend public hospitals for and injury compared with 3% for influenza. A similar pattern was observed in the qualitative data where, for example, public clinics were seen to provide services for babies.

However, we also observe that different providers are used for the same illness. In the quantitative data for example, 31% of respondents would recommend a private doctor/specialist for influenza and 45% of respondents would recommend a public clinic for influenza. This is further reflected in the illnesses narratives of the focus group participants where, in a number of instances, public clinics and private doctors were consulted for the same illness episode. It is therefore unclear whether these goods are strict complements or substitutes in the economic sense.

Generally, all of the factors that impact on general provider use will also influence illness-specific provider choice. However, particular facets of illness-specific provider choice help to explain the apparent dilemma observed above. We have already mentioned that respondents seemed to apply various measures of quality to health service providers and exhibit an understanding of the relative importance of each measure for their suspected illness. This, as well as a simple price/quality trade-off, goes some way towards explaining why different providers are used for different illnesses but fails to explain why different i.e. public and private providers[tt] are used by the same individuals for the same illness episodes. To understand why in some instances different providers were used for the same illnesses, we need to summarise the findings from the TB affected and unaffected groups separately.

In the groups not affected by TB, public providers were the most common 'first choice' provider but private providers – particularly private chemists – were commonly used to complement the public clinic visit. This was usually due to poor drug availability at the clinic, a phenomenon that was frequently anticipated but did not (in many cases) prevent the clinic visit from taking place. From the outset, many respondents expected to use the private pharmacy as a compliment to the clinic visit for a single illness episode.

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tt This section deals only with cross-usage of the public and private sectors. Other chains of multiple care seeking are dealt with in Section 3.2 of this chapter

Amongst TB affected respondents, the cross-usage of public and private health service providers is much more complex and appears to be driven by two key factors; the need for privacy on the part of the patient and/or failure to diagnose TB on the part of the service provider (public or private). These findings relate particularly to the process of diagnosis and the use of both private and public services to obtain that diagnosis, as TB treatment cannot take place within the private sector in South Africa.

4.3.1) PRIVACY AS A DETERMINANT OF CROSS SECTOR USE

This is not the only study to highlight patients' concerns with privacy when health seeking for suspected TB. Lonnroth's study of health seeking behaviour for TB in Vietnam identified a number of reasons why patients chose to use private TB care rather than the National TB Control Programme where, according to the authors, an 'excellent prospect' of a cure is provided free of charge. In that study, private services were preferred because they offered flexible diagnostic procedures, no administrative procedures to establish eligibility for treatment, flexible drug regimens, unsupervised treatment, no official registration and no tracing of defaulters and the reduced 'threat to personal integrity' (Lonnroth et al., 2001). Long further identified gender differences in the need for privacy in Vietnam, with men more concerned about the economic implications of TB infection, and women more concerned about the social consequences of TB infection (Long et al., 2001). A study among TB affected patients in South India identified the perceived persistence of TB stigma even after treatment (Rajeswari et al., 2005).

Privacy as a determinant of care seeking behaviour also features in studies of other health problems. In Vietnam, a study of gender differences in perceptions of STDs highlighted the fact that men expressed embarrassment about telling their partners while women expressed fear of the social and physical consequences of an STD (Go et al., 2002). A quantitative study of patients at HIV testing locations in San Francisco highlighted the fact that most respondents preferred HIV tests that were accurate and timely, private and anonymous (Phillips et al., 2002). A qualitative study amongst the elderly in North America highlighted concerns regarding privacy, and ethnic variation in those concerns, as a determinant of service use (Bradley et al., 2002). These examples are by no means exhaustive but they do highlight the importance of privacy as a determinant of provider use for diseases that may carry social stigma. This is particularly relevant in light of the finding in this study that private providers are literally defined as providers giving privacy, while public providers are open to all and offer no similar attraction. It is also relevant due to the very close association of TB with HIV amongst

participants from Khayelitsha/Nyanga, and the consistent fear that accompanied any discussion of HIV. Finally, this finding is particularly relevant as TB and HIV, the two diseases most likely to require privacy in the context of this study, are the least likely to be effectively treated by private providers. It is this last point that explains why treatment seeking for TB in the private sector frequently leads to 'cross-use' of public and private providers rather than a simple increase in the use of private providers only.

4.3.2) PROVIDER FAILURE AS A DETERMINANT OF CROSS USE

This study has identified numerous instances when both public and private providers failed to diagnose TB at the first opportunity. Failure by a public provider either resulted in further treatment seeking at a different public provider or further treatment seeking at a private provider. Similarly, when private providers failed to diagnose TB, patients sought help from different private providers or public providers. Occasionally, failure by a private provider would result in a repeat visit to that same provider. As private providers are unable to treat TB in South Africa, a successful diagnosis in the private sector was seldom the definitive diagnosis as patients had to be referred across to the public sector where diagnostic procedures were usually begun from 'scratch' (with the same likelihood of failure as the initial attempt to obtain a diagnosis).

A number of other studies have attributed diagnostic delay for TB to similar provider failures. Pronyk's study in South Africa's rural Northern Province attributed a significant period of diagnostic delay to the failure of recognised clinical services i.e. public clinics, to identify TB. He found that those exhibiting a conventional risk profile for TB were diagnosed more quickly by health services, while women remained undiagnosed for longer than men (Pronyk et al., 2001). Although the gender differences in this study were less marked, there did appear to be significant differences in the delay of TB diagnosis between communities. Pronyk's findings regarding the 'conventional risk profile' combined with the longer history of TB in the Mitchell's Plain/Oostenberg communities may go some way towards explaining this variation as members of these communities may be considered the conventional sufferers of TB and doctors may therefore be more likely to promptly diagnose the problem amongst patients from this community.

In a study of health seeking for TB in Vietnam, women were identified as more likely to visit private practitioners and practice self medication before visiting public services, while men tended to go directly to public services (Johansson et al., 2000). Similar gender differences are

observed in this study, however the role of prisons is the most significant gender difference in care seeking for TB. Although the role of prisons impacts more directly on multiple-care seeking within the public sector than on care seeking between sectors, it is important to note that internment, movement between prisons and even release from prison can interrupt TB treatment. This is highlighted as a priority for consideration in Chapter 9 which considers policy recommendations from this study.

4.3.3) IMPLICATIONS OF CROSS USE

Aside from the economic cost of cross sector use, which will be discussed in more detail in the next chapter, using both private and public services for a single illness episode can have numerous implications. When services are used as complements, the implications appear to be less serious. This type of cross sector use did not seem to significantly delay health seeking or negatively affect health outcomes amongst respondents not affected by TB. One might argue however, that the necessity of this form of service use could exacerbate health inequalities as the poorest and/or sickest groups would be the least able to purchase medicines from separate private chemists after a lengthy visit to a public clinic. This raises the question of 'necessity' i.e. to what extent did patients visit private chemists because the drugs were entirely unavailable in the public sector. The findings suggest that much of this treatment seeking behaviour was viewed as 'necessary', however, in a few instances the drugs were simply not available at the time the patient was visiting the clinic and patients were unwilling to return at a later time when staff claimed the medication would be available.

The cross sector usage for TB diagnosis has more critical implications for effective TB treatment. The diagnostic delays resulting from cross sector use appear to be significant, and attempts to refer patients between sectors (and even within sectors) are largely ineffective. The implications of this cross sector usage were more strongly identified by respondents from Khayelitsha/Nyanga than those from Oostenburg/Mitchell's Plain. Respondents from Khayelitsha/Nyanga were more likely to initiate treatment seeking for suspected TB with a private provider, and private providers were more likely to misdiagnose TB than public clinics.

This finding is corroborated by other studies. Needham et al. found that, in Zambia, visiting a private doctor for suspected TB was significantly associated with diagnostic delay. They also concluded that centralised public services and a lack of integration between public and private providers contributed to diagnostic delay (Needham et al., 2001). Similarly, a study of the beliefs and experiences of TB patients in rural South Africa highlighted the need for traditional and western health workers to collaborate in the treatment of TB to minimise diagnostic delay

(Edginton et al., 2002). Outside of the African context, Aljunid points out that while the private sector delivers a significant proportion of healthcare in Asia, there is little published information on the interactions between these providers (Aljunid, 1995). This is thus highlighted as an area of need for future research and policy consideration.

4.4) PREFERENCE SETS ARE FORMED DYNAMICALLY DURING HEALTH SEEKING

Aside from the particular aspects of cross sector use discussed in detail above, the qualitative data also highlighted numerous other instances of multiple care seeking within and between sectors. Many of the focus group participants claimed to visit multiple public primary care providers or multiple private primary care providers for a single illness episode and a similar phenomenon was observed in the quantitative diary data. One of the key drivers of this process appeared to be information shortages and asymmetries. For instance, patients only had a working hypothesis regarding their illness with which to decide their health seeking strategy. This was compounded by the fact that patients' information regarding the services offered by different providers was often incomplete. Even when that information was complete providers frequently failed to meet even reasonable expectations of care by 'missing' diagnoses or failing to have stocks of the necessary drugs for treatment. The focus group participants in this study commonly attempted to limit uncertainty by referring to opinion leaders – usually the senior female member of the household – lending weight to the hypothesis that health seekers value the accumulation and weighing of information, and that they satisfice rather than strictly optimising utility.

The uncertainty that characterises heath seeking in this study has also been observed in other applied studies. Salaniponi et al. collected quantitative data on care seeking for TB from Government hospitals in Malawi. After the first provider contact, 79% of respondents in their study required one or more additional contacts before a successful diagnosis was achieved (Salaniponi et al., 2000). Needham et al. conducted a series of indepth interviews with TB affected patients in Zambia and concluded that diagnostic delay was significantly associated with more than six health seeking encounters prior to diagnosis (Needham et al., 2001). In their study of treatment seeking for malaria in Tanzania, Oberlander and Elverdan conclude that *"therapy is best viewed as a process in which beliefs and actions are continuously debated and evaluated throughout the course of treatment"* (pg 1352 Oberlander and Elverdan, 2000).

In this sample population at least, multiple providers were selected on the basis of multiple attributes – each of which may have had a different weighting for different individuals, or for the same individual at different points in time (or for different episodes of illness). This raises

doubts about the transitivity, reflexivity and even the consistency of these preferences sets although theory may not be strictly violated because of the weaker axiom of revealed preferences that allows for 'flat spots' on the utility curve (Griffiths, 2002; Varian, 1992). This finding regarding unstable or variable preferences is not unique to this study and, in the following quote Slovic identifies it as a key theme:

"One of the main themes that has emerged from behavioral decision research during the past 2 decades is the view that people's preferences are often constructed in the process of elicitation. This concept is derived in part from studies demonstrating that normatively equivalent methods of elicitation often give rise to systematically different responses. These "preference reversals" violate the principle of procedure invariance that is fundamental to theories of rational choice and raise difficult questions about the nature of human values. If different elicitation procedures produce different orderings of options, how can preferences be defined and in what sense do they exist? Describing and explaining such failures of invariance will require choice models of far greater complexity than the traditional models". (pg 364 Slovic, 1995)

Aside from raising the challenges of measuring apparently 'changing' preferences, the literature also identifies potential solutions. Gul and Pesendorfer have constructed a model of revealed preference theory that allows for changing preferences (Gul and Pesendorfer, 2004). This model is particularly useful in explaining health seeking as an iterative process. Similarly, decision field theory provides a method of analysis which allows for apparent violations of the general axiom of revealed preferences by modelling decision making as a dynamic rather than static process (Busemeyer and Diederich, 2002).

Multi-attribute utility theory provides another framework with which to formalise these findings. This theory is based on expected utility theory, which states that if an appropriate utility is assigned to each possible consequence and the expected utility of each alternative is calculated – then the expected utility of an event is the sum of utilities of the payoffs multiplied by their probabilities. In this framework then, expected rather than actual utility is maximised. Instead of reflexivity, this theory assumes preference and utility independence. Tradeoffs between attributes are thus explicitly measured (Ananda and Herath, In Press).

Zanakis et al. compare several methods for solving multi-attribute decision making problems (MADM) when different techniques may yield different results for the same

problem. The authors define MADM as one class of multiple criteria decision making models in which a limited number of pre-specified, discrete alternatives require *"inter or intra-attribute comparisons, involving implicit or explicit tradeoffs"*(pg 507-508). The authors found that the number of alternatives increased the divergence of findings between methods and that the distribution of the criterion weights affected the various methods differently (Zanakis et al., 1998).

This brief foray into decision field theory is not intended to provide a detailed overview of the methods available but simply to indicate that although health seeking in this study appears to be an iterative process involving complex tradeoffs between providers attributes, this finding can be accommodated within a significant and growing body of theory.

4.5) IS PATIENT BEHAVIOUR INDETERMINATE?

In conclusion then, juxtaposing the tenets of traditional Neoclassical Utility Theory alongside the findings from the primary research in this study, we see points of disjuncture. It is difficult to incorporate the selection of goods on the basis of their intrinsic value(s) or characteristics, and the idea that each good may have multiple characteristics and hence joint outputs. These data suggest that health service providers are valued as the sum of their multiple characteristics, and that those characteristics may yield different levels of utility (or have a different preference rank); depending on the illness for which the patient is seeking help.

New Institutional Economics provides indeterminate theories of satisficing and ad-hoc game theoretic models that can be optimised but can only be applied to a restricted set of health seeking problems. The question then arises whether any general theory of consumption exists that is both determinate and appropriate to the consumer behaviour observed in these data. Section 4.1 of Chapter 2 describes the Lancaster model as an alternative to traditional utility theory that is potentially determinate and able to cope with the identified traits of health seeking behaviour. Applying this structure to the observed data then, patients would rank provider characteristics such as privacy, drug availability, staff attitudes etc rather than ranking providers. This ranking would be required to have the properties of completeness, transitivity and reflexivity. Providers would then be ranked indirectly as a function of the characteristics with which they are associated. Lancaster's model can cope with r characteristics, m activities and n goods. As such, it can accommodate multiple providers, with multiple characteristics and health seeking for multiple illnesses. It does however require that the characteristics possessed by a good are the same, and in the same quantity for all consumers. The only element of personal choice is thus the choice and ranking of characteristics and not the allocation of

characteristics to goods. This model, as with the traditional model, is also a utility maximising model with no explicit accommodation of satisficing strategies. While it is conceivable that patients would have more information about the characteristics they would prefer from a provider than their preference for the provider itself, it is less conceivable that they may be able to assign those characteristics accurately to a provider and hence to consume the bundle of goods that would yield the utility maximising collection of characteristics.

It is worth noting however, that this chapter has succeeded only in describing the characteristics space in which utility maximisation, or satisficing, may take place. In so far as we can apply Lancaster's general theory of consumer behaviour to the consumption of health services in this market then, patient preferences may not be indeterminate. To reach a definite conclusion however, requires some examination of the goods space, the related budget constraint and the structure of the matrix B. The next chapter in this thesis initiates an exploration of the budget constraint and the goods space, beginning - as this chapter has done - within the framework of Neoclassical Utility Theory.

CHAPTER SIX:

PRICE AND INCOME CONSTRAINTS TO

HEALTH SEEKING

1) INTRODUCTION

Within the neoclassical framework individuals are seen as utility maximisers. The assumption of non-satiation implies that the consumption of more is always preferred to the consumption of less. What prevents an individual from consuming infinite amounts of a preferred utility bundle is the budget constraint or budget line. The budget line is a frontier separating the affordable from the unaffordable. It limits choice due to scarcity using a monetary denominator. Even when health services are free at the point of use, some financial limitation on consumption will usually apply as users pay for transport to reach a facility, or forego income while attending the facility. In this respect, the budget line is more an accounting phenomenon than a behavioural entity. It simply limits the quantity of goods purchased to the income (or financial resources) of the purchaser (Griffiths, 2002).

This chapter extends the existing literature by contextualising health expenditure within a broader framework of health seeking behaviour. After brief consideration of the way in which budget constraints are commonly applied to health seeking, the analysis begins with an inductive approach to the measurement of cost, allowing the relevant direct and indirect costs to be identified by patients. The qualitative data in particular provide an opportunity to probe whether individuals feel they have a choice in, or control over, their total health expenditure. Expected prices are compared with actual expenditure and coping strategies are explored in those instances where health expenditure may have exceeded or strained household resources. Finally, we consider the level at which the financial aspects of health seeking are decided i.e. individual versus household versus extra-household. These data provide an opportunity to test the assumption that health expenditure decisions are taken at the household, rather than individual level.

1.1) HOW BUDGET CONSTRAINTS ARE USUALLY APPLIED TO HEALTH SEEKING

Health economists commonly argue that the observed utilisation of health services is equivalent to revealed preferences for health service consumption. If individuals are consuming a particular bundle, that consumption bundle (or combination of price and quantity) must necessarily be on the demand curve and must therefore be a point of tangency between the budget constraint and the utility curve (Griffiths, 2002).

Despite being referred to as an accounting phenomenon, definitions of price and income are open to some discussion. The ambiguity of these definitions stems largely from the behavioural dimension of the constraint function in an applied setting. For example, should prices include only direct prices or should indirect prices also be included? If so, which indirect prices should be included and how should they be quantified? Similarly, should expected or actual prices be the metric of interest (assuming less than full information)? As far as income is concerned, should we use only individual income or assume that health services are consumed from household resources or even extra-household resources?

McIntyre et al. and Russell both provide detailed overviews of health expenditure studies, identifying direct and indirect costs commonly used to quantify the economic consequences of ill health (McIntyre et al., 2006; Russell, 2004). They conclude that the direct cost method is more consistently applied, albeit with some variation in the recall period. In addition, while all studies included in Russell's review included some measure of medical costs, some studies excluded non-medical costs such as travel costs or the cost of special food to aid recovery. Examples of direct medical costs commonly include user fees (or the price of traditional or private care), drug costs, informal payments and payment for diagnostic tests among others (Bolduc et al., 1996; Ellis et al., 1994; Hotchkiss et al., 1998; Mariko, 2003). Expected, rather than actual, prices are the most correct metric to use (Knowles, 1995) although actual prices are often used in their stead (Lavy and Quigley, 1993).

Indirect costs commonly enumerate the cost of productivity losses and the opportunity costs of care seeking. McIntyre et al. conclude that the treatment of indirect costs is heterogeneous, with some studies enumerating productivity loss only as the number of days off work due to ill health, while other studies also include the loss of productive life due to premature death (McIntyre et al., 2006). Studies of service use, rather than the economic consequences of health seeking, frequently reduce any productivity loss of ill health to include only the travel and waiting times attributable to a particular instance of health seeking, not accounting for any additional productivity loss due to ill health (Chawla and Ellis, 2000; Dow, 1996; Gertler and

Van der Gaag, 1990; Lavy and Quigley, 1993). Russell's review corroborates this finding and comments that the greatest source of variation in these and similar studies lies in the methods used to value productive time lost and the unit of analysis i.e. expressing costs per episode versus per month etc. He also notes that no studies included in his review attempted to quantify the costs of *"suffering, grief, or social exclusion arising from illness"* (pg 148 Russell, 2004).

As previously mentioned, the budget constraint is determined by the price of goods and the income of the purchaser. The discussion above indicates that the 'price' of health services usually incorporates both a direct and indirect cost. Turning to the other half of the equation then, in applied health demand studies income is most usually captured by a measure of household consumption or expenditure. Measures of household income are also used, albeit less frequently (Dow, 1996). Some studies also collect data on remittances, or inter-household transfers, in order to reflect the financial support provided by extended families in many contexts (Wiseman et al., 2005). However, this practice is by no means the norm and, even when used, may not accurately measure the resources available to the extended family network through irregular inter-household transfers. Household, rather than individual or extra-household income/expenditure is thus the common measure of the financial resources available for health seeking (Alderman and Gertler, 1989; Ellis et al., 1994; Gertler and Van der Gaag, 1990). Russell argues that this perspective is preferred as decisions regarding treatment and coping strategies are taken at the household level and illness costs fall on caregivers as well as the sick (Russell, 2004).

1.2) DATA

As in previous chapters, the exposition begins with an analysis of the quantitative data. This analysis uses data from all three primary quantitative surveys described in Chapter 3 i.e.

- The Introductory Household Survey, from which we obtained information about individual and household income, grants, regular intra- and inter-household transfers and the Medical Aid/Insurance coverage.

- The Individual Health Survey, from which we obtain information about expected prices.

- The Weekly Health Diary, from which we obtain actual heath expenditure over the period of the study.

This is followed by the qualitative data analysis with data drawn from the focus group

discussions also detailed in Chapter 3. The qualitative data provide an opportunity to explore the composition and impact of indirect costs as well as coping strategies when direct and indirect costs exceed or strain household resources. It is these data that allow us to explore the level at which financial decisions pertaining to health seeking are made i.e. individual, household or extra-household. The methods used in this chapter are described in Sections 4.1 and 4.2 of Chapter 3.

2) QUANTITATIVE FINDINGS

In this section, data from the Introductory Household Survey, the Introductory Health Survey and the Weekly Health Diary are used to analyse the resources available for health seeking i.e. individual income and household income. We also provide an analysis of expected prices before calculating actual health expenditure. The analysis of health expenditure is divided into direct and indirect costs to facilitate the exposition. These are then combined to express total costs as a proportion of household income. As the same individuals completed the Introductory Health Survey and the Weekly Health Diary, these data sets were merged to facilitate analysis. The Introductory Household Survey was analysed separately and tables based on data from this survey are clearly identified in the text.

2.1) FINANCIAL RESOURCES AVAILABLE FOR HEALTH SEEKING

This element of the analysis quantifies the potential financial resources available for health seeking i.e. individual income, household income and extra-household resources where applicable. Of course, health seeking is not the only likely drain on these financial resources, which must provide for other needs such as food, housing, education etc.

2.1.1) INDIVIDUAL INCOME

Three forms of individual income were collected in the Introductory Household Questionnaire i.e. remittances, grants and employment income. Data on remittances were collected for all household members while data on grants and employment income was only collected for household members aged 10 and over. Employment was defined for respondents as any work for pay or family gain, including payment in kind such as food or housing. Employment income was described as 'take home pay', inclusive of overtime, allowances and bonus payments. The recall period was the previous month.

2.1.1.a)   Remittances

7.6% of all household members claimed to receive remittances and 82% of all respondents receiving remittances were female. The mean remittance received was R385.22 (£27.11*) and the standard deviation was R692.44 (£48.73). The wide dispersion in the data may be due to an outlier as one respondent claimed to receive a monthly remittance of over R4000 (£281.47). Removing the outlier in the data significantly impacts the distribution of the data as the mean drops to R293.78 (£20.72) and the standard deviation to R311.47 (£21.95).

Despite the fact that 82% of respondents receiving remittances were females, there was a difference in the mean remittance received by men and women. As demonstrated in the graph below, among the 45 individuals receiving positive remittances men received an average of R410.62 (£28.89) while women received an average of R268.51 (£18.89) per month.

Figure 6.1: Remittances by Gender Among Those Receiving Positive Remittances (N=45)†
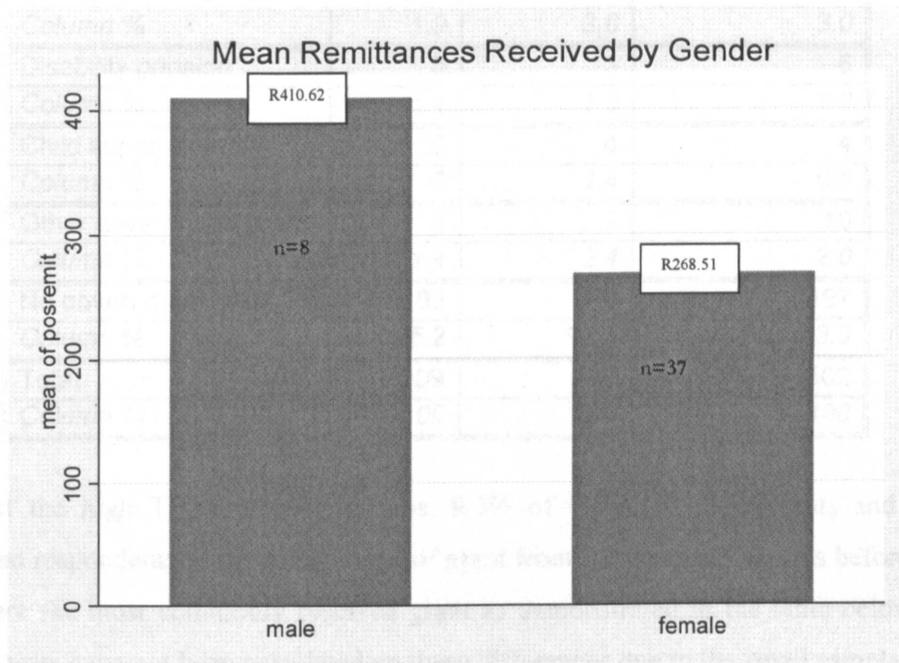
There is a similar differential in the mean level of remittances received by respondents describing themselves as Coloured versus those describing themselves as Black/African. Coloured respondents receive a mean remittance of R390.00 while their Black/African counterparts receive a mean of R168.75 per month. Statistical significance of these differences

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* All currency conversions are calculated at an exchange rate of £1=£14.21, the live mid-market exchange rate on 12/10/2006 (XE.com, 2006 (Last Accessed 13/10), The Universal Currency Converter (Website). www.xe.com.)
† Source: Introductory Household Survey

has not been determined due to the small sub-sample of individuals receiving positive remittances i.e. 18% of the total sample of individuals reported receiving positive remittances.

2.1.1.b)   Receipt of Government Grants

Receipt of government grants was relatively low with only 6.97% of all respondents claiming to receive any form of grant from the government. 8.5% and 4.8% of female and male respondents respectively, claimed to receive a grant. Old age pensions were the most commonly received grants as shown in the following table. Significance tests have not been calculated on these differences due to the small sample bases.

Table 6.1: Receipt of Government Grants by Gender[‡]

Government grant (Q1.19)	Gender of Household Member (Q1.5)		
	Male	Female	Total
Old age pension	4	11	15
Column %	*1.9*	*3.8*	*3.0*
Disability pension	3	3	6
Column %	*1.4*	*1.0*	*1.2*
Child support grant	0	4	4
Column %	*0*	*1.4*	*0.8*
Other government grant	3	7	10
Column %	*1.4*	*2.4*	*2.0*
No government grant	199	268	467
Column %	*95.2*	*91.5*	*93.0*
Total	209	293	502
Column %	*100*	*100*	*100*

Amongst the high TB population groups, 9.5% of Coloured respondents and 4.2% of Black/African respondents received any form of grant from the government. As before, old age pensions were the most commonly received grant as demonstrated in the table below. Again, significance tests have not been calculated on these differences due to the small sample bases.

‡ Source: Introductory Household Survey

186

Table 6.2: Receipt of Government Grants by Population Group[§]

Government grant (Q1.19)	High TB Prevalence Population Groups		
	Black/African	Coloured	Total
Old age pension	6	9	15
Column %	*2.5*	*3.72*	*3.1*
Disability pension	3	2	5
Column %	*1.3*	*0.83*	*1.0*
Child support grant	0	4	4
Column %	*0*	*1.65*	*0.8*
Other government grant	1	8	9
Column %	*0.4*	*3.31*	*1.9*
No government grant	230	219	449
Column %	95.8	90.5	93.2
Total	240	242	482
Column %	*100*	*100*	*100*

2.1.1.c)   Employment Income

53% of respondents claimed to have worked for any form of payment in the last 12 months and mean individual monthly employment income was R1249.39. However, individual employment income varied significantly[**] by gender and population, with females and respondents describing their population group as Black/African, earning less on average than males and those describing their population group as Coloured. These data are summarised in the table below.

Table 6.3: Individual Employment Income[tt]

Summary Statistics for Individual Income (in ZAR)					
	Obs	Mean	Std. Dev.	Min	Max
Total sample	494	1249.39	2402.64	0	17001
By population group:					
Black/African	237	390.64	789.22	0	5000
Coloured	237	2087.31	3104.47	0	17001
By Gender:					
Male	205	1734.99	2916.45	0	17001
Female	289	904.92	1889.43	0	16000

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§ Source: Introductory Household Survey
** Significance in this case is calculated using the z-test for the difference of means at the 99% confidence level.
tt Source: Introductory Household Survey

2.1.2) HOUSEHOLD INCOME

2.1.2.a)   Calculating Monthly Income

Monthly household income was collected by asking the household respondent to specify the amount of money the household received in a typical month from all household members, including all earnings, pensions, grants and so on. Using this metric, the mean monthly household income for the total sample of households was R4855.67 and, as with individual income significant differences existed between population groups. In this dataset, language is used as a proxy for population group as population group was not collected at the household level. It is likely that Xhosa households are most likely to classify themselves as Black/African, while the English and Afrikaans households in this sample are most likely to classify themselves as 'Coloured'.

Table 6.4: Household Income[ǂ]

Summary Statistics for Household Income (in ZAR)					
	Obs	Mean	Std. Dev.	Min	Max
Total sample	141	4855.67	5556.65	0	27501
Main household language					
English	34	8307.91	5621.01	0	19001
Xhosa	70	1698.29	2330.39	50	18740
Afrikaans	37	7656.78	6480.64	50	27501

2.1.2.b)   Household crowding

Household crowding is presented here as an alternate measure of household resources. If household income was to be shared by a larger number of household members, there may be fewer resources to meet individual health needs.

The mean number of household members per household was 4.2. There was no significant variation in household size by main household language (a proxy for population group). The mean number of rooms per household is 4.3 however, for this variable there is significant variation by language group. English and Afrikaans speaking households have a mean of 5.3 and 5.5 rooms respectively while Xhosa speaking households have an average of 3 rooms per household.

These data were used to create a measure of crowding which calculated the number of people per room in a household. The mean crowding ratio was 1.2 people per room. Xhosa speaking households had the highest mean level of crowding at 1.7 people to a room compared to 0.75 and 0.84 in English and Afrikaans speaking households respectively. Although this 'density' factor does not reflect on the stretching of a household's financial resources, it may

reflect exposure to pathogens i.e. more crowded living conditions facilitate the spread of TB bacilli. The limitations of these data however, do not allow the corroboration or rejection of this possibility.

2.1.2.c) Medical Aid Coverage§§

In the sampled populations, coverage by medical aid/insurance was approximately 23%, compared to a national average of 14.9% (Statistics South Africa, 2003). However, there was a gender disparity in medical aid/insurance coverage with women less likely to be covered by medical aid/insurance. 58.5% of those not covered by medical aid/insurance were female. Similarly, 26.8% of men in the sample were covered by medical aid/insurance, compared to 19.9% of women. These differences are statistically significant at the 90% confidence level.

Figure 6.2: Medical Aid Coverage by Gender[***]
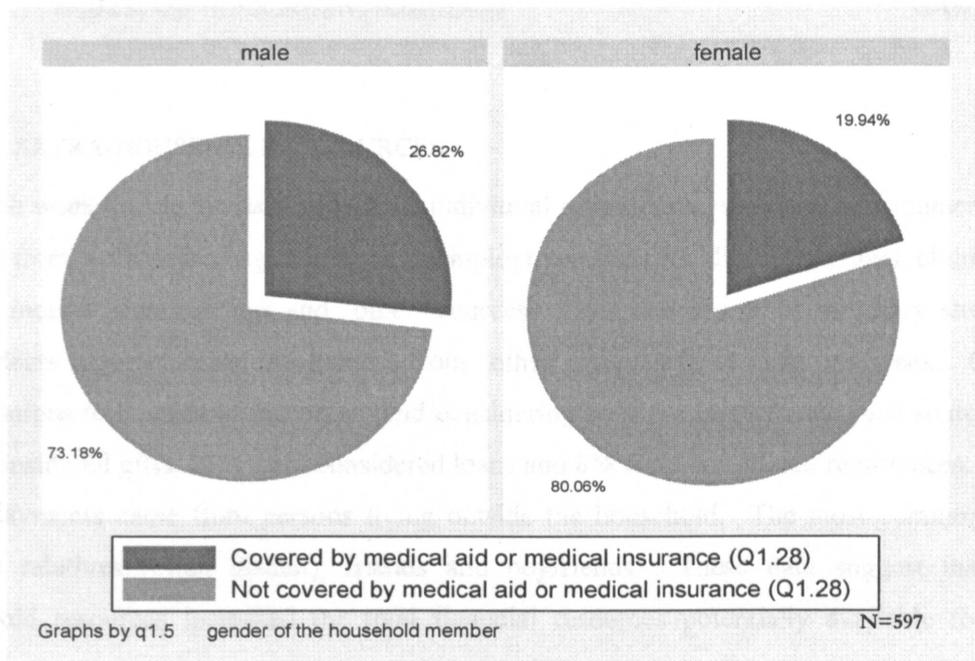
Differences in medical aid/insurance coverage are even more marked between the high TB prevalence population groups. As Figure 6.2 shows, 41% of Coloured respondents are covered by medical aid/insurance compared with 4% of Black/African respondents. These differences are statistically significant at the 99% confidence level.

189

Figure 6.3: Medical Aid Coverage by Population Group
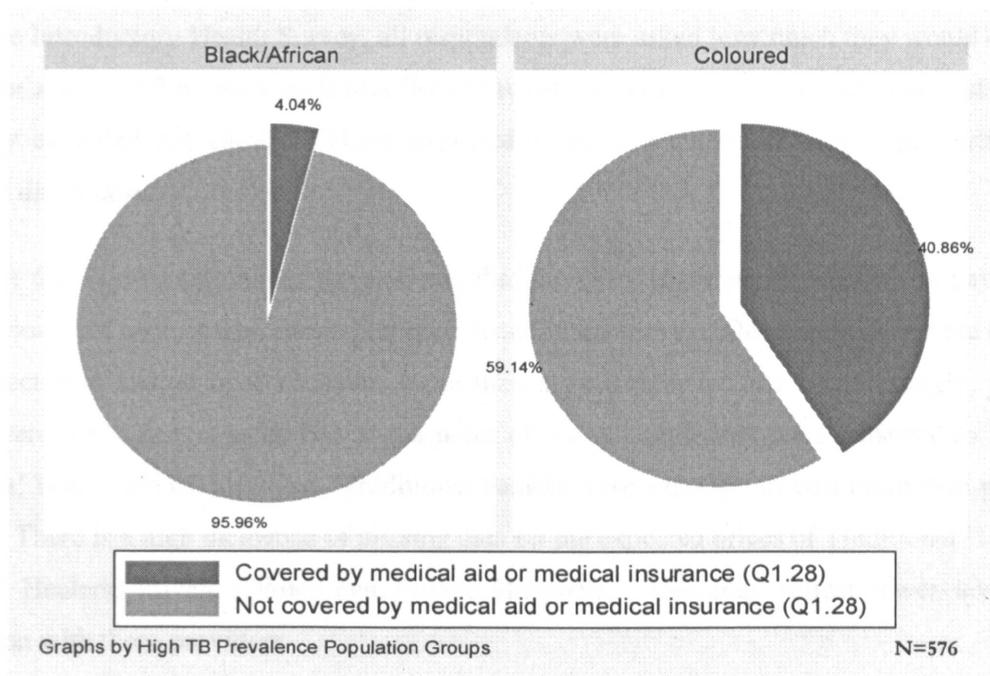
2.1.3)   EXTRA-HOUSEHOLD RESOURCES

Each week during the data collection, individual respondents were asked to enumerate their income from work or trading, pensions, unemployment benefits, disability grants, child welfare grants, income from savings and 'other' sources. Over the course of the diary studies, all respondents reported receiving income from 'other' sources in at least one week. Of these contributions to household resources (and considering only the largest additional source), 79% were considered gifts, 13% were considered loans and 8% were considered remittances. 62% of these payments came from persons living outside the household. The most common payers include relatives (often distant), friends and boyfriends. These data suggest that extra-household resources increased the total financial resources potentially available for health seeking.

2.2)   DIRECT COSTS OF HEALTH SEEKING

The following analysis shows the expected price of health care consumption. Actual prices paid for medical care are then analysed, including diagnostic tests and drugs where relevant. Finally, travel costs are incorporated as direct costs of care seeking.

2.2.1) EXPECTED PRICE OF A PROVIDER CONSULTATION

In the Introductory Health Survey, all respondents were asked how much they would expect to pay for a consultation with each of a list of providers. Transport costs and drug costs were explicitly excluded for clarity. These expected costs thus represent only a proportion of expected direct costs.

Table 6.5 below summarises the amounts that the diary participants expected to pay for a consultation with each of the service providers listed in the survey. On average, a private doctor was expected to charge over six times more than a government clinic. Interestingly, public clinics were not expected to be free at the point of use although they were expected to be the 'cheapest' health service provider. Traditional healers were expected to cost more than private doctors. There is a high incidence of missing data on the expected prices of Traditional Healers, Spiritual Healers, Private Clinics and Private Hospitals. This may reflect lower levels of interaction with these providers.

Table 6.5: Expected Price of a Consultation (N=250)

Variable	Obs	Mean	Std. Dev.	Min	Max
Public/Government Hospital	226	R 46.94	R 107.97	0	1000
Public/Government Clinic	224	R 15.06	R 32.91	0	250
Private Hospital	181	R 173.11	R 307.97	0	3000
Private Clinic	177	R 155.85	R 308.42	0	3000
Private Doctor/Specialist	235	R 95.61	R 81.41	0	1000
Traditional Healer	82	R 108.38	R 178.50	0	800
Spiritual Healer	103	R 35.40	R 103.54	0	800
Pharmacy/Chemist	182	R 44.34	R 57.16	0	500

2.2.2) OVERVIEW OF DIRECT HEALTH EXPENDITURE

Approximately 31% of respondents consulted a health service provider at least once during the period of the health diary placement. Approximately 40% of first consultations resulted in at least one further consultation and almost 5% of initial consultations resulted in more than 5 repeat consultations (to the same or different service providers). Interestingly, a certain 'determination' factor seems to emerge; up to the 6th visit, the probability of an additional consultation increases with each successive revisit to a provider. After 6 visits, the sample sizes become too small for reliable analysis. This pattern may indicate a dynamic commitment problem i.e. once patients have invested in the initial visit, the only way to recoup that investment is to keep seeking help until cured. Non-price determinants of multiple-care seeking were discussed in considerable detail in the previous chapter.

Overall, there were 324 episodes when at least one health service provider was consulted. For each consultation, respondents were asked to specify the amount spent on the consultation, the amount spent on travel to the visit and the amount spent on drugs or medicines. The following tables are calculated only for those respondents who visited at least one service provider during the diary placement period.

Table 6.6: Average Direct Health Expenditure

Overview of Direct Health Expenditure (in ZAR)					
	Obs	Mean	Std. Dev.	Min	Max
Direct health expenditure	324	90.75	266.36	0	4100
Transportation costs	324	12.48	51.16	0	600
Consultation costs	324	45.33	239.17	0	4000
Drug Costs	324	32.94	80.62	0	770

Consultation costs comprised approximately 50% of average direct health expenditure, while drug costs comprised approximately 36% and travel costs approximately 14% of average direct health expenditure (Table 6.7). Gender differences in drug costs are significant at the 90% confidence level, with men having paid significantly more for drugs than women. No other significant gender differences in direct costs were observed. Differences in direct costs/expenditure by population group as shown in Table 6.7 were however, more marked. Overall differences in direct costs by population group are significant at the 90% confidence level, as are differences in transportation and consultation costs. Differences in drug costs are significant at the 95% confidence level, with respondents classifying their population group as Black/African having spent significantly less on drugs than those classifying themselves as Coloured.

Table 6.7: Average Direct Health Expenditure by Population Group

Direct Health Expenditure by Population Group						
	Population Group	Obs	Mean	Std. Dev.	Min	Max
Direct health expenditure	Black/African	208	65.37	147.77	0	1040
	Coloured	97	138.41	427.36	0	4100
Transportation costs	Black/African	208	15.30	63.01	0	600
	Coloured	97	7.13	12.73	0	80
Consultation costs	Black/African	208	23.55	86.47	0	1005
	Coloured	97	87.15	412.37	0	4000
Drug costs	Black/African	208	26.52	86.57	0	770
	Coloured	97	44.13	64.75	0	360

2.2.3) INDIRECT COSTS OF HEALTH SEEKING

The only indirect cost enumerated in the survey was waiting time. Respondents were asked how long they spent waiting at each provider visited that week. These waiting times are summarised below. The longest average waiting time was observed for traditional healers, public clinics and other public sector providers, while the shortest waiting time was observed for pharmacies or chemists.

Table 6.8: Average Waiting Time by Provider

Average waiting time per provider (in hours)					
Provider	Obs	Mean	Std. Dev	Min	Max
Public/government hospital	30	2.8	3.0	0	9.8
Public/government clinic	106	4.1	5.4	0	45
Other public sector provider	5	4.2	3.7	0	9.8
Private hospital	14	2.8	3.2	0	9.8
Private clinic	7	3.5	3.2	0	9.8
Private doctor/specialist	78	2.3	4.1	0	28.8
Traditional healer	6	4.8	3.7	0.3	9.8
Spiritual or alternative healer	30	2.8	3.2	0	16
Pharmacy/chemist	107	0.7	1.3	0	5.8
Health facility provided by employer	2	2.0	2.1	0.5	3.5
Other private health service provider	11	1.7	2.5	0	7.5
Health treatment/advice from a friend	67	2.9	6.6	0	45

There was no variation in average waiting times by gender however, respondents who identified themselves as 'Black/African' waited significantly longer on average than respondents who identified themselves as 'Coloured' (p=0.05).

Table 6.9: Average Waiting Time by Demographic Group

Average waiting time by demographic group (in hours)					
Demographic group	Obs	Mean	Std. Dev	Min	Max
Male	71	2.0	2.4	0	10.6
Female	253	2.0	4.0	0	45
Black/African	208	2.9	4.3	0	45
Coloured	97	0.5	1.1	0	8

The waiting time was converted to a monetary equivalent using an opportunity cost method. As data were available on both individual and household incomes, the opportunity cost of waiting times could have been calculated on an individual or household basis. The individual method biases against those whose work tasks may not generate income directly (e.g. women and the elderly) but whose activities are important for the generation of income by other household members. As such, a household income method is utilised here.

The household income method adopted in this analysis takes the total monthly household income and divides it by the total number of household members over the age of 18. This cut-off age reflects the age of legal consent and the age at which most South Africans would have completed their schooling. It is reasonable to assume that respondents above this age are expected to contribute either to the household income or to the running of the household. This method assumes that all household members over the age of 18 contribute equally to the earning power of the household as a unit.

Each individual's share of household income is reduced to an hourly equivalent and then multiplied by the reported waiting time in hours. The hourly equivalent is calculated by assuming a 30.5 day month, with 22.5 working days and 8 hours of work per working day. As expected, there was little variation by gender but significant variation by population group ($p=0.05$). The population group differential may stem from significant variation in household income by population group i.e. so-called Black/African households earned significantly less than their Coloured counterparts without having significantly fewer household members. As such, the opportunity cost of their time would be significantly less per hour.

Table 6.10: Opportunity Cost of Waiting Time by Demographic Group

Opportunity cost per hour by demographic group					
Demographic group	Obs	Mean	Std. Dev	Min	Max
Male	71	4.7	5.6	0	27.8
Female	250	4.6	7.1	0.1	47.2
Black/African	208	1.7	2.9	0	27.8
Coloured	96	9.9	9.0	0.5	47.2

2.2.4) TOTAL HEALTH EXPENDITURE

Total health expenditure is calculated as the direct cost of the consultation, drugs and transport, plus the indirect cost of the waiting time. Using this metric, direct costs of care seeking comprise 71% of total costs on average, while indirect costs comprise 29% of total costs (Table 6.11).

Table 6.11: Direct and Indirect Costs Relative to Total Health Expenditure

Overview of Health Expenditure					
	Obs	Mean	Std. Dev.	Min	Max
Total health expenditure	324	95.09	266.70	0	4100
Direct health expenditure	324	90.75	266.36	0	4100
Opportunity cost of waiting time	321	4.38	10.92	0	122.23
Direct health expenditure as a proportion of total expenditure	302	71%	0.40	0	1
Opportunity cost of waiting time as a proportion of total expenditure	300	29%	0.40	0	1

Calculating total health expenditure by population group then, we observe that there were significant differences in total health expenditure (p<0.10), direct expenditure as a proportion of total expenditure (p<0.05) and opportunity cost i.e. indirect expenditure as a proportion of total expenditure (p<0.05). Respondents identifying themselves as Black/African spent less on average than those describing themselves as Coloured, however the indirect opportunity cost of waiting time comprised a significantly greater proportion of total health expenditure for Black/African respondents. There were no statistically significant differences in total health expenditure by gender (Table 6.12).

Table 6.12: Costs Relative to Total Health Expenditure by Population Group

Health Expenditure by Population Group						
	Population Group	Obs	Mean	Std. Dev.	Min	Max
Total health expenditure	Black/African	208	69.57	148.97	0	1062.57
	Coloured	97	143.68	427.10	0	4100
Opportunity cost of waiting time	Black/African	208	4.20	7.26	0	62.5
	Coloured	96	5.33	16.82	0	122.23
Direct health expenditure as a proportion of total expenditure	Black/African	200	65%	0.41	0	1
	Coloured	87	82%	0.35	0	1
Opportunity cost of waiting time as a proportion of total expenditure	Black/African	200	35%	0.41	0	1
	Coloured	87	18%	0.35	0	1

2.2.4.a)   Expenditure by Socio-Economic Status

To facilitate analysis by socio-economic status, household income was used to calculate income quintiles. Table 6.13 demonstrates that mean total health expenditure increased for higher quintiles of household income. Conversely, waiting times decreased for higher quintiles of household income. This may be indicative of increased private sector use by higher income households.

Table 6.13: Health Costs by Income Quintile

Expenditure, Waiting Time and Opportunity Cost by Income Quintile					
	Average Total Health Expenditure				
Income Quintile	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
One (lowest)	106	52.04	98.86	0	700
Two	63	67.03	123.17	0	708.33
Three	60	84.53	209.68	0	1062.57
Four	57	124.52	155.34	0	830
Five (highest)	34	132.37	141.19	0	485
	Average Waiting Time				
One	106	2.68	3.65	0	28.75
Two	63	3.12	5.91	0	45
Three	60	1.97	2.48	0	9.75
Four	57	0.35	0.77	0	3
Five	35	0.74	1.67	0	8
	Average Opportunity Cost				
One	106	0.82	0.61	0	2.53
Two	63	1.40	0.79	0.51	4.17
Three	60	3.27	1.26	1.38	6.25
Four	57	9.23	7.17	3.15	30.56
Five	35	16.85	9.48	5.00	47.22

The following graph is a concentration curve of total health expenditure amongst users of health services (including those who did not have to pay for the services they used). The graph indicates for instance, that 60% of the population accounts for 40% of the total expenditure.

Figure 6.4: Concentration curve of Total Health Expenditure
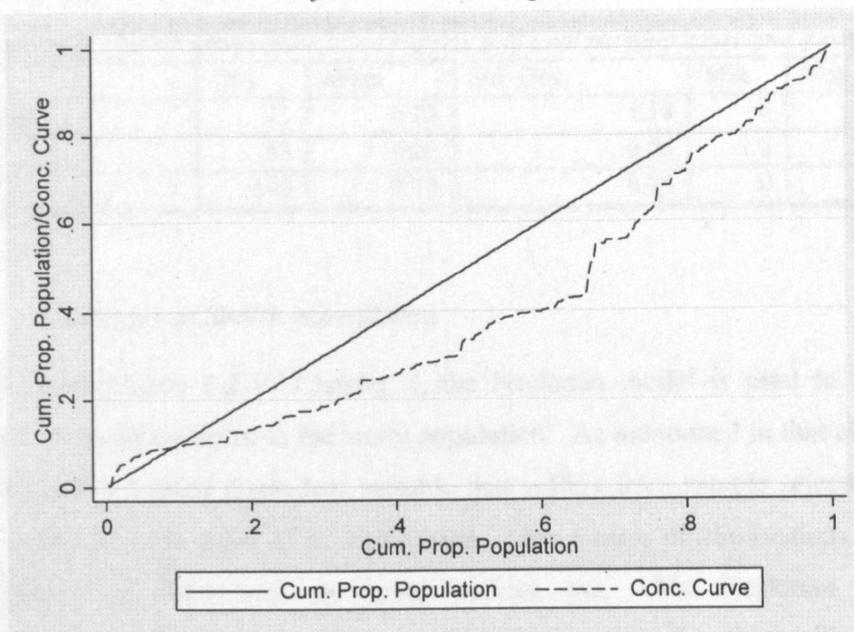
To calculate total health expenditure as a proportion of monthly household income it was necessary to transform individual health spending into a household level variable. This was done by adding the health expenditures for all participating household members over the course of the diary placements. As the length of the diary placement was 8 weeks, this total figure was halved to obtain an estimate of total monthly health expenditure. This was then calculated as a proportion of monthly household income and the summary statistics for this figure are summarized in the table below. On average, total monthly health expenditure comprises 14% of monthly household income. There is a significant difference between population groups however, with Black/African households spending an average of 25% of monthly household income and Coloured households spending an average of 2% of monthly household income (p<0.10). Health spending by Black/African households would be considered catastrophic by this metric (Russell, 2004). Calculating similar proportions using only direct health spending yields little difference in the findings.

Table 6.14: Health expenditure as a proportion of household income

Total monthly health expenditure as a proportion of total monthly household income					
Variable	Obs	Mean	Std. Dev.	Min	Max
Black/African	71	0.25	1.19	0	9.73
Coloured	63	0.02	0.06	0	0.44
Total	140	0.14	0.85	0	9.73

Table 6.15: Total monthly health expenditure as a proportion of total monthly household income

Direct monthly health expenditure as a proportion of total monthly household income					
Variable	Obs	Mean	Std. Dev.	Min	Max
Black/African	71	0.25	1.18	0	9.66
Coloured	63	0.02	0.06	0	0.43
Total	140	0.13	0.85	0	9.66

2.2.4.b) Predictors of health expenditure

As described in Section 3.2 of Chapter 3, the Heckman model is used to analyse the determinants of health expenditure in the study population. As mentioned in that chapter, total health expenditure is a limited dependent variable that suffers from sample selection bias i.e. despite being continuous for much of its distribution, it has a mass of observations at zero and positive expenditure is determined by health service use. The Heckman model can accommodate zero expenditure among users who did not pay for that utilisation, quite separately from non-users of health services who did not spend. It can also accommodate the fact that some variables will impact expenditure through their impact on service use. The

specification below is generated using the maximum likelihood estimation procedure with robust standard errors, adjusted for clustering at the household level.

As explained in Chapter 3, the Heckman model consists of a selection and regression equation where the independent variables in the selection equation are expected to affect the probability of health service use but not the total health expenditure itself. This selection equation is very basic compared with the more detailed demand model constructed in Chapter 7 however, this reduced model of utilisation is appropriate for the current purpose as applied on pooled data. The independent variables used in the regression and selection models are described and summarised in Table 6.16 over the page.

Table 6.16: Summary of Independent Variables used to Predict Health Expenditure

VARIABLE NAME	DESCRIPTION	VALUES FOR CATEGORICAL VARIABLES	N	MEDIAN	MEAN	STD DEV.	MIN.	MAX.
		Individual level variables (Characteristics of the chooser)						
age	Age at last birthday in years	-	250	35.5	36.78	14.38	18	74
age2	Square of age at last birthday in years	-						
female	Categorical variable for female	Male=0, Female=1	250	1	0.7	0.46	0	1
black	Dummy variable for population group identified as Black/African	Black=1 if respondent identifies themselves as Black/African, Black=0 if respondent identifies themselves as Coloured, Black=. if respondent identifies themselves as White or Indian.	240	1	0.58	0.49	0	1
medaid	Coverage by medical aid or insurance	Medaid=1 if covered, Medaid=0 if not covered	247	0	0.26	0.44	0	1
edyears	Education in years	-	250	10	9.88	2.7	1	16
shareofhhinc	Per capita household income (in ZAR)	-	246	566.67	1189.99	1482.70	0	8500
pcs_8	An index of physical health status varying between 0-100 as calculated by the SF8 method	-	1775	53.85	49.89	10.45	11.22	67.27
mcs_8	An index of mental health status varying between 0-100 as calculated by the SF8 method	-	1775	53.92	50.67	10.57	11.33	65.41
extrafunds	Access to irregular extra-budgetary fund from outside the households	Extrafunds=1 if respondent has access to extra-budgetary funds, Extrafunds=0 if respondent does not have access to extra-budgetary funds	2000	0	0.09	0.29	0	1
remit	Receipt of regular remittances from extra-household sources	Remit=1 if respondent receives remittances, Remit =0 if respondent does not receive remittances	2000	0	0.11	0.31	0	1
		Household level variables (Characteristics of the chooser)						
stokvel	Member of a community savings scheme such as a stokvel	Stokvel=1 if respondent is a member of a scheme, Stokvel =0 if respondent is not a member of a scheme	144	1	0.64	0.48	0	1
finsit	Self reported financial situation of the household generally	Very comfortable=1, Comfortable=2, Just getting by=3, Poor=4, Very Poor=5	144	3	3.40	1.23	1	5

VARIABLE NAME	DESCRIPTION	VALUES FOR CATEGORICAL VARIABLES	N	MEDIAN	MEAN	STD DEV.	MIN.	MAX.
crowding	A ratio calculated by dividing the number of rooms in a house by the number of household members.	-	144	1	1.24	0.97	0.14	6
Provider related variables (Characteristics of the choice)								
eprice_pubhosp	Expected price of a consultation at a public hospital	-	226	25	46.94	107.97	0	1000
eprice_pubclin	Expected price of a consultation at a public clinic	-	224	0	25.10	168.60	0	2500
eprice_privhosp	Expected price of a consultation at a private hospital	-	181	120	173.11	307.97	0	3000
eprice_privclin	Expected price of a consultation at a private clinic	-	177	100	155.85	308.42	0	3000
eprice_privdoc	Expected price of a consultation at a private doctor	-	235	100	95.61	81.41	0	1000
eprice_pharm	Expected price of a consultation at a pharmacy	-	182	20	44.34	57.16	0	500
equal_pubhosp	Expected quality at a public hospital	-	243	4	3.79	1.26	1	5
equal_pubclin	Expected quality at a public clinic	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	243	3	3.19	1.28	1	5
equal_privhosp	Expected quality at a private hospital	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	216	5	4.51	0.58	2	5
equal_privclin	Expected quality at a private clinic	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	216	5	4.51	0.58	3	5
equal_privdoc	Expected quality at a private doctor	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	244	5	4.62	0.57	2	5
equal_pharm	Expected quality at a pharmacy	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	243	4	4.24	0.72	1	5

Table 6.17: Summary of Imputed Variables

VARIABLE NAME	DESCRIPTION	VALUES FOR CATEGORICAL VARIABLES	N	MEDIAN	MEAN	STD DEV.	MIN.	MAX.
eprice_privhosp	Expected price of a consultation at a private hospital	-	250	115.74	164.68	265.48	0	3000
eprice_privclin	Expected price of a consultation at a private clinic	-	250	100	150.46	263.07	0	3000
eprice_pharm	Expected price of a consultation at a pharmacy	-	250	35.56	44.61	49.20	0	500
equal_privhosp	Expected quality at a private hospital	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	250	4.61	4.53	0.54	2	5
equal_privclin	Expected quality at a private clinic	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	250	4.61	4.52	0.54	3	5
Pcs_8	Physical Health Index	-	2000	52.46	49.86	9.93	11.22	67.27
Mcs_8	Physical Health Index	-	2000	52.55	50.57	10.05	11.33	65.41

As Table 6.16 illustrates, a number of variables have missing values, particularly the expected price of a consultation at private hospital, the expected price of consultation at a private clinic, the expected price of a consultation at a pharmacy, the quality of a private clinic, the quality of a private hospital, physical health and mental health. These observations may be missing due to attrition or item non-response. Although the Heckman model used in this chapter is being run on a pooled sample, the random effects panel models used in the next chapter are computationally intensive models that use a large number of degrees of freedom in the calculation process and will drop an individual from the dataset entirely if the values for any variable at any time point are missing. As such, these missing values can have a significant destabilising effect on the models and two choices are thus presented to the analyst: drop the variables with high numbers of missing values from the specification altogether, or impute the missing values and continue to use the variables in the specifications. Imputation is likely to have a lesser effect on the models than the omitted variable bias caused by dropping the variables altogether. As such, missing values for price and quality were imputed by age gender and population group. The health status variables were similarly imputed by age, gender, population group and household income. The new summary statistics for the imputed variables are reported in Table 6.17.

Table 6.18 summarises the results of the Heckman model. The Wald chi-squared test rejects the null hypothesis that the coefficients of the regressors are all zero, indicating the model's overall statistical significance. A t-test on the statistical significance of lambda rejects the null hypothesis of no selection effect and confirms that the estimated selection coefficient is significant. This indicates that the Heckman model is the appropriate specification for the current purpose and that the coefficients must be adjusted for the selection effect before they are interpreted. The negative sign on the selection coefficient indicates that observed health expenditure is biased downwards by the selection effect and that an individual with sample average characteristics spends less on health than an individual with population average characteristics. The sample consists only of those who have used health services while the population consists on both users and non-users of health services. This may suggest that the average service user is more likely to use public services which are free at the point of use and are possibly located close to home, thus avoiding both the costs of consultation and the costs of transport. The public provider accessed by the average user may also have sufficient drug stocks to provide drug treatment without requiring the patient to pay for drugs from a private chemist. This may also indicate barriers to accessing 'quality' public care if the total sample does not have an equal probability of using these services and hence spending less on health.

The variables in the selection equation are not interpreted as this is not intended as a comprehensive model of service utilisation but rather a control on selection bias in total health expenditure[ttt]. As such, the emphasis is placed on the significant predictors of total health expenditure in the expenditure equation. These significant predictors include age, access to extra-budgetary funds from outside the household, and the expected price of a consultation at a pharmacy. Age has a positive but diminishing effect on total health expenditure in the sample population (p<0.01), increasing total expenditure by an average of R14.30 (£1) per year. Access to extra-budgetary funds also has a positive effect, increasing expenditure by approximately R47.18 (£3.33) on average (p<0.1). Finally, the expected price of a consultation with a pharmacy has a positive effect on total expenditure with a high expected price predicting higher total health expenditure (p<0.1).

Table 6.18: Regression Analysis of Total Health Expenditure

HECKMAN MODEL OF HEALTH EXPENDITURE		
Expenditure equation: Total Health Expenditure (incl. Waiting Time)		
	b	*t*
Age at last birthday	14.30***	(3.10)
Age in years squared	-0.16***	(-3.06)
Log of Household Income	15.86	(1.22)
Crowding	7.58	(0.53)
Covered by medical aid/insurance	2.79	(0.06)
Years of Education	-1.10	(-0.28)
Black/African	4.70	(0.13)
Financial situation	19.17	(1.48)
Female	9.58	(0.30)
Received Extra-budgetary Funds from Outside the Household	47.18*	(1.87)
Participates in community savings scheme	7.73	(0.34)
Receives remittances	53.60	(1.37)
Expected price of consultation at a public hospital	0.08	(1.24)
Expected price of consultation at a public clinic	-0.00	(-0.33)
Expected price of consultation at a private hospital	0.17	(0.97)
Expected price of consultation at a private clinic	-0.20	(-1.08)
Expected price of consultation at a private doctor	0.26	(0.85)
Expected price of consultation at a pharmacy	1.03*	(1.77)
Overall quality expected from a public hospital	-0.11	(-0.01)
Overall quality expected from a public clinic	6.04	(0.84)
Overall quality expected from a private hospital	-15.47	(-1.16)
Overall quality expected from a private clinic	-21.58	(-1.28)
Overall quality expected from a private doctor	3.85	(0.27)
Overall quality expected from a pharmacy	8.73	(0.69)
Constant	-359.15	(-1.82)
Selection Equation: Used a health service provider in the last week		
Age at last birthday	-0.04*	(-1.71)
Age in years squared	0.00	(1.58)
Female	0.24*	(1.69)
Crowding	-0.19***	(-3.17)
Years of Education	0.04*	(1.68)

ttt For a full analysis of health service use see Chapter Seven of this thesis

Black/African	0.25*	(1.74)
Mental Summary Measure	-0.02***	(-3.47)
Physical Summary Measure	-0.06***	(-9.96)
Constant	2.77***	(4.36)
Diagnostic statistics		
Wald Chi-Squared Test	34.12	
LR test	2.251	
Rho	-0.18	
Sigma	127.43	
Lamda	-22.81	
No. of cases	1660	
No. of cases	1660	

The regression specified above was estimated using a bottom up or simulated stepwise approach. This helped to identify the effect of each successive independent variable on the regression as a whole. Independent variables were added in the order that they appear in the table above. Each successive variable reduced the adjusted standard error of the expenditure equation, without impacting on the significance of the overall estimation.

Interestingly, the log of household income was a significant indicator of total health expenditure ($p < 0.05$) until the addition of the medical aid variable at which point neither household income nor medical aid were significant indicators of total health expenditure suggesting multicollinearity. Furthermore, while household income was a significant predictor of service expenditure, crowding was not a significant indicator of service use. With the addition of the medical aid variable into the regression/expenditure equation, crowding becomes a significant predictor in the selection equation ($p < 0.01$).

Despite the use of the stepwise approach and the inclusion of all variables one might expect to impact total health expenditure, the adjusted standard error of the expenditure equation remains large. This problem does not appear to be remediable but the inefficiency of the model is noted, as is the limitation in its explanatory power that results

This section considers insights from the group discussions that inform the way in which the budget constraint i.e. price and income considerations, may impact health seeking behaviour. As mentioned in Chapter 3 of this thesis, the focus group discussions were allowed to flow naturally with the assistance of a discussion guide to ensure that all major points were covered. Comments regarding health expenditure were raised during a broader discussion of participants' last illness episode[‡‡‡]. Respondents generally mentioned what aspects of care seeking required out of pocket payments, and whose money was used to meet those payments. The actual amounts paid were mentioned in most instances.

The analysis follows a similar structure to the quantitative data analysis, considering both direct costs and indirect costs. This section extends the quantitative data analysis by providing more detail on expected direct costs. Indirect costs are also analysed further to identify productivity losses aside from the cost of waiting times that may impact on individual or household resources. Before concluding the analysis of costs, the unexpected or uncertain nature of health costs is considered. This is followed by a detailed analysis of coping strategies that gives some insight into whether health care is consumed out of individual, household or extra-household resources and how households survive if and when those resources are exceeded. The qualitative data provide an opportunity to explore how basic and additional resources are mobilised.

3.1)   DIRECT COSTS

The most common direct costs for health seeking as mentioned by respondents during the discussion were provider fees (or consultation costs), drug costs and transport costs.

3.1.1)   CONSULTATION COSTS

Focus group participants displayed a ready familiarity with service prices in both the private and public sectors. They appeared to recall both the cost of their last provider visit and how that cost was met. Only when a medical aid company met the cost was an individual unaware of the price of services and these instances were rare.

These respondents expected that a visit with a private general practitioner would cost between R100-R120. While fees for primary care in the public sector were not considered the norm, the quote below shows that, if a fee was paid, it was approximately R8. The reported fee

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[‡‡‡] The full discussion guide is provided in Appendix 1

for a tertiary hospital stay in the public sector was variable within a narrow bound and the quoted figures ranged between R53 and R80. Only one respondent was hospitalised in a private hospital. This was for an appendectomy and it was paid for by his parent's medical aid so the respondent was not aware of the cost.

> "Moderator: [D]id you pay fees when you went to the [private] doctors?[§§§]
>
> Respondent: Yes, R110
>
> Moderator: Who paid?
>
> Respondent: I did
>
> Moderator: [And did you have to pay...] At the clinic?
>
> Respondent: I didn't pay a cent
>
> Respondent: Groote Schuur [the tertiary public hospital] sent me an account but I guess that's because I slept there for a month
>
> Moderator: OK. Did you settle the account?
>
> Respondent: Yes. Mom went to them and asked to pay the money in instalments until it was paid up." Group 6, Female, TB affected

> "Moderator: Is it not free now, the public side?
>
> Respondent: It is free but they sometimes ask whether you have a job or not. But if you're unemployed they help you anyway. The clinic I used to go to that's here in town used to charge me R8." Group 8, Male, TB affected

Another direct cost mentioned in one group was the cost of interest payments on unpaid bills in the public sector. This was mentioned in reference to hospital bills particularly and is not given further attention here due to the focus on care seeking for primary services. There were no instances in which respondents mentioned leaving private sector bills unpaid.

3.1.2) DRUG COSTS

Although respondents did not mention paying for drugs at clinics, drug shortages frequently forced patients to purchase drugs from private pharmacies or chemists. In those instances when respondents were prepared to return to a clinic multiple times before obtaining the required medication no direct cost appears to have been incurred, however it is likely that a larger indirect cost will have been incurred and this is discussed in more detail in the next section. Patients who felt they had little choice but to purchase the medication at a private chemist incurred a direct cost for the medicines purchased.

[§§§] This quotation has been re-ordered to facilitate understanding out of context.

"Moderator: On that note, what can you tell me about medication at these [public clinics/day hospitals]?

Respondent 1:   There are none. The doctor will write down what I should get, I get to their dispensary, there is none. I will be told to come back the next day, it is the same all the time.

Respondent 2:   Sometimes, you get to the doctor's room and you are coughing, before he or she can say anything, she tells you, there are no cough mixture. You get to the clinic on Friday, you do not get what the doctor said you should have and that means, having to wait until Monday. You are in pain, you need something but you have to wait for Monday.

Moderator   Is that a common problem?   Clinics running short of medication?

Respondent: Very much so". Group 2, Female, not TB affected

"Moderator: [Name], did you get medication when you were sick?

Respondent: I got them, to drink and I had to go and take tablets from the hospital but as time went on, I stopped going there I bought from the chemists because at times, there were none at the hospital." Group 4, Male, not TB affected

A number of participants spoke of private doctors dispensing drugs directly; in fact this seemed to be considered the norm.   When respondents spoke of the fee for a private consultation, the fee was a single fee that generally included the medication.   Respondents did not distinguish between the consultation cost and drug cost in these instances, both services were considered a single package with a single fee.   When sharing the experience of their last illness, respondents who used private providers and obtained medicines from those providers directly reported paying fees ranging from R110-R150.

"Moderator: So the Doctor gave you medicine and you took it?

Respondent: Yes

Moderator: Did you have to pay for it?

Respondent: Yes, you pay for it, yes. You pay 150 or something and he gives you that "dinguses" [generic] medicine." Group 3, Male, not TB affected

TB affected respondents only reported receiving their medication from public clinics. No mention was made of paying for these drugs in any of the groups.

3.1.3) TRAVEL COSTS

Walking was the most common mode of transport for accessing public clinics even when severely ill. If respondents were particularly weak they would have a family member – usually a mother or sister – accompany them for the journey. These companions were more common for male than female participants.

> "*Moderator: How do you feel about the pills and the injections?*
>
> *Respondent: It is for your own best health.   Not a problem to me.   I walked to the clinic".   Group 5, Female, TB affected*

> "*Respondent: [My family] took it well. They support me. In fact, when I was really ill my elder sister used to accompany me to the clinic.   Nyanga clinic is quite a distance from where I live and there were times when I could hardly walk."   Group 8, Male, TB affected*

> "*Respondent: [My sister] took me to the clinic in Nyanga.   Samples of my sputa were taken. I couldn't walk. She had to carry me on her back. My pants would slide to the floor, I was that skeletal."   Group 8, Male, TB affected*

Ambulances were also frequently used, particularly by TB-affected participants before their first successful diagnosis, but also but other participants. Ambulances transported patients to day hospitals, tertiary hospitals and were also used by clinics to transfer patients if referred between public providers (most commonly from primary to tertiary).

> "*Respondent: I coughed a lot... My aunt and cousin went to phone the ambulance. They took me to the day hospital and they took x-rays of my lungs. Group 5, Female, TB affected*

> "*Moderator: Who took you?*
>
> *Respondent 1:   The ambulance.*
>
> *Respondent 2:   I was in the yard. I couldn't get up. The ambulance came and they picked me up – put me in the chair."   Group 7, Male, TB affected*

Other forms of transport mentioned by participants included taxis, public transport (buses) and family members with cars. Less commonly mentioned forms of transport included paying a neighbour or other person to provide a lift, or using clinic run transport services[****]. Paid

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[****] Clinic run transport services were only mentioned by one group. This did not appear to be a widely available or widely utilized service.

208

neighbours were almost exclusively used as a means of getting to tertiary hospitals rather than primary care providers.

> *"If my sister couldn't [walk] with me she'd give me a taxi fare. I could get a taxi just next to my place. The first weeks I couldn't even walk up the stairs. I had to use a wheelchair."* Group 8, Male, TB affected

Walking, public ambulances close family members with cars and clinic supplied transportation were the only forms of transport that did not necessarily incur a direct cost. Although all other forms of transport would have incurred a cost, and respondents did speak of that cost in broad terms, the exact sum of that cost was seldom if ever mentioned.

3.2) INDIRECT COSTS

The indirect costs of care seeking mentioned by the group participants pertained primarily to time spent accessing services and productivity losses (either at home or at work). Respondents did not mention time spent travelling to service providers however waiting times were a dominant theme. All respondents mentioned some productivity loss even for the most minor illness if they were unable to perform their usual household chores or responsibilities. TB affected respondents reported significant productivity losses as most lost or left their jobs when they were diagnosed with TB.

Interestingly, indirect costs were not incurred only by the patient or sufferer. Frequently, other household members would accompany the health seeker to a service provider, visit the service provider in place of the patient to collect chronic medicines (particularly TB medication), take on the domestic tasks that the sick person was unable to perform, take on the role of full time carer or even 'subsidise' the illness financially. These roles were normally taken on by a female family member, usually a mother or a sister.

Each indirect cost, and the implications for both patient and carer, is discussed in more detail below.

3.2.1) WAITING TIMES

Waiting times have already been given some attention in the previous chapter, when unpleasant or frustrating waiting was discussed in considerable detail. In this section, we restrict the analysis to the duration of waiting and the burden of waiting on a carer where appropriate.

Most respondents complained about lengthy waiting times in public clinics and day hospitals both for their own general illnesses and when they had to visit clinics with, or on behalf of, others. The impact of waiting times on carers accompanying respondents during an illness episode was not mentioned.

> *"Respondent 1: If you go to the day hospital you have to sit and wait for 3 to 4 hours. Then they still show you away because you might not have enough money or the doctor can't see you.*
>
> *Respondent 2: Sometimes you might sit there for the whole day. Last time I had to spend 5 hours in that queue.*
>
> *Respondent 3: You are sometimes very ill and then you have to sit there and wait for your turn.*
>
> *Respondent 4: I had to collect the old lady's pills. I didn't go myself – only had to go and fetch the old lady's pills. I have to get someone to look after her. I couldn't believe my eyes – it was 3h00 in the afternoon – I had to leave without the medicine. I had to leave the next morning at 5h00 to get her medicine. They only gave me some of the pills when I got there." Group 1, Female, not TB affected*

TB-affected respondents had the additional cost of waiting for medication daily for the full duration of the treatment. However, this was not always perceived as a burden as respondents seemed aware that this was their only hope of treatment and that they would not have to pay for the treatment. This regular waiting only became 'problematic' for respondents when the drugs were not ready or available at the times specified for collection. TB affected respondents who were too ill to collect their own medication would attempt to enlist the help of others to collect the medication.

> *"So my boyfriend went with me to the clinic and I was diagnosed with TB. He was very supportive, encouraging me to take treatment. When I couldn't go to the Centre myself he'd go and fetch my treatment from [the clinic] himself. Sometimes I would ask someone who was going to the Centre to get my treatment for me." Group 6, Female, TB affected*

3.2.2) JOB LOSS

Actual job loss was only mentioned by those respondents affected by TB however almost all respondents in any form of employment were concerned about – or affected by – temporary

absence from work for health seeking. In the latter case, respondents sought to minimise the impact of health seeking on their work by using service providers who were available out of work hours e.g. chemists rather than doctors or clinics.

> "*Respondent: Yes and besides, when I'm working, I can't take off. I don't want to stay out of work.*
>
> *Moderator: So you would have gone to the Chemist, because he would have given you a "Quick fix"*
>
> *Respondent: Yes, he would have given me something good. I don't know, I really don't know why that always happens, but the Chemist will give me something.*
>
> *Moderator: And it will be fixed?*
>
> *Respondent: And yes, he'll tell me, "Okay, this is more expensive, but this will help you very quickly."*
>
> *Moderator: And that means you're not taking off work?*
>
> *Respondent: Yes and that I can do after work. Like if I get at home, I get at home say round about 7 or 6."* Group 3, Male, not TB affected

With the exception of only one respondent, every TB affected participant in employment left that employment when they were diagnosed with TB. In some instances the employer initiated the split however, in the majority of instances there seemed to be an acceptance that you could not work while on medication. This was largely attributed to the fact that medication needed to be collected daily. The one respondent who was able to/chose to stay in formal employment during his TB treatment had his treatment brought to him daily by community care workers – he was the only person to mention receiving such care. Most of these participants believed they would be able to return to work on completion of the treatment.

> "*Moderator: Did you work before you got sick?*
>
> *Respondent: I am a brick-layer.*
>
> *Moderator: And now?*
>
> *Respondent 1:   I can't get work. The doctor told me that I am not allowed to work – the dust – the cement dust is very dangerous. I can't work now.*
>
> *Moderator: Did you still work at that stage?*
>
> *Respondent 2:   Yes. That is before I went to the doctor."*   Group 7, Male, TB affected

"Moderator: You worked at that stage. What happened at work?

Respondent: When I heard that it was positive they told me to go for an injection. I must be there every day.

Moderator: Did it take up all your time?   Did you have to leave work because of this?

Respondent: I didn't work there for long – say about a month.

Moderator: You don't earn any money now?

Respondent: No. " Group 5, Female, TB affected

"Respondent: Yes, they were supportive, very supportive. I went to mom when I first went to the hospital to see what was wrong and also when I went to get the results she was with me. I was still working at the time. [My mother] was the one who took my letter of resignation to work. To this day she ensures that I take my tablets. " Group 6, Female, TB affected

3.2.3)   OTHER PRODUCTIVITY LOSSES

The most common form of productivity loss due to all illnesses was the inability to take on normal household responsibilities. In these instances, inter- or intra-household substitution of labour frequently took place to ensure tasks were completed. This responsibility for this substitution most commonly fell on female household members, particularly sisters and mothers. In some instances however, the role fell onto a male partner (or in one instance a brother) who would take on the respondent's domestic tasks.

"Moderator: What did you do at home then – what was your job?

Respondent: I had to help my mother.   I got ill and I couldn't help her anymore. I just wanted to sleep. I couldn't do the work anymore.

Moderator: Anyone else helped you?

Respondent: My mother did - she was always there for me. " Group 5, Female, TB affected

"Moderator: OK. Were you still able to keep doing household chores?

Respondent: No. In the first weeks I felt weak and I vomited all the time even though I wasn't eating anything. The tablets also did make me throw up. But I gradually felt better

Moderator: Who was doing your chores then?

Respondent: *My sister did. " Group 6, Female, TB affected*

As mentioned in the section on waiting times above, many respondents were accompanied to a health service provider by a family member. Again this family member was usually female i.e. a sister or mother, but occasionally partners filled this role for female respondents. Male respondents were more likely to be accompanied than female respondents but some female respondents did mention receiving assistance. These companions would also have incurred productivity losses such as time away from their own domestic responsibilities or even time taken off work.

> *"Respondent: [My auntie] rushed me to the Day-Hospital and from there they*
> *sent me to Groote Schuur. " Group 3, Male, not TB affected*

> *"Moderator: [Your mother] went with you?*
> *Respondent: Yes, she did. We went to 'Site B'. She took me to the doctor*
> *who treats her. " Group 6, Female, TB affected*

Aside from intra- or inter-household labour substitution and providing companionship/assistance during the health seeking event, family members also frequently acted as carers. This role entailed collecting medication, ensuring medication was taken correctly and providing general domestic and nursing assistance such as feeding and bathing. Again, the role of carer most commonly fell to female family members.

> *"Moderator: Do you go to fetch the pills?*
> *Respondent: No, my mother gives it to me. I am at home now.*
> *Moderator: Your mom has to give you the pills. You are not working now?*
> *Respondent: No. " Group 7, Male, TB affected*

> *"Moderator: And what did the people at home say, did they care?*
> *Respondent: They did, they were worried. My granny fetched her sister to*
> *come and help with looking after me. They both took care of me. " Group 4,*
> *Male, not TB affected*

3.3)   UNEXPECTED COSTS

Information asymmetry or shortages appear to play an important role in determining both the direct and indirect cost of care seeking. Although most respondents had some expectation of the cost of a single visit to any one provider, they seldom knew how many visits, to which

providers, would be required to effect a cure. In the groups not affected by TB, private or public providers were able to conduct both the full diagnosis and treatment. In those groups, public providers were still the most common 'first choice' provider, however, private chemists were sometimes necessary to supplement public services if drugs were not available.

> *"Moderator: [D]id you get medication when you were sick?*
>
> *Respondent: I got them, to drink and I had to go and take tablets from the hospital but as time went on, I stopped going there. I bought from the chemists because at times, there were none at the hospital." Group 4, Male, not TB affected*

Among TB affected respondents the pattern was markedly different. The protracted nature of many of the diagnoses highlighted much more complex health seeking behaviour that often involved multiple care seeking both within and between sectors. This has already been discussed in some detail in the previous chapter on preference set formation. An additional point relevant to this chapter however, is that each of these visits will have incurred some form of direct or indirect cost. As such, TB affected respondents appeared to face larger and more uncertain costs than respondents seeking care for other general illnesses.

3.4)   COPING STRATEGIES

In general, respondents appeared to seek help until a successful diagnosis or treatment was obtained. This section of the analysis considers how the expenses of that treatment seeking behaviour related to available financial resources. There is a particular emphasis on coping strategies in those instances where health seeking may have strained or exceeded household resources. Ethnic and gender differences in coping strategies are also briefly explored.

Common strategies for coping with health expenditure included negotiating prices (or avoiding payment), trading service quality for a lower price and drawing on extra-household resources. Aside from these factors, which are discussed in more detail below, provider choice was also influenced by whether or not an employer or other unrelated third party was footing the bill. However, the low incidence of formal employment in all groups made it difficult to explore this phenomenon thoroughly and it receives no further attention in this chapter.

3.4.1) MANIPULATING PRICES

Evidence from these discussions suggests that means testing[tttt] was seldom formally applied in the public sector. Respondents referred to public services as 'free' services. This was in spite of respondents' employment status and likely eligibility to pay for services. Where payment was requested by public service providers, respondents commonly resisted meeting those payments.

> *"Respondent: They [i.e. the public clinic] insisted that I pay. I told them that if they do not want to help me, they can say so. They treated me.*
>
> *Moderator: And what about your eye operation [at a public hospital]?*
>
> *Respondent: I did not pay. We heard last year that we were not supposed to pay. My sister in-law has high blood [pressure] and what have you and she goes and never pays at the clinic. For the fact that I go to the clinic, it means I do not have money because if I had, I would have gone to see a private doctor and pay the R100 or R120. We did not get along with the sisters when they say I should pay because I do not have, they insist that one pays." Group 4, Male, not TB affected*

By comparison with the public sector, prices in the private sector were seen as fixed and non-negotiable.

> *"You pay a doctor's fee whether you like it or not." Group 6, Female, TB affected*

3.4.2) THE PRICE/QUALITY TRADE-OFF

User fees were the most commonly cited difference between public and private health care providers. The quote below demonstrates how group participants explicitly considered the cost of services when assessing their service access options.

> *"If you have the money you can go to a private doctor but if you don't have the money then you should go [to the public clinic]." Group 1, Female, not TB affected*

[tttt] Aside from particular groups that are exempt from paying user fees, such as pregnant women, public service providers should conduct means tests to determine patients' eligibility to pay. In practice however, means tests are seldom conducted and most services are free at the point of use.

Although public providers were seen as lower quality providers,[####] group participants were prepared to compromise on service quality in order to reduce the direct cost of care seeking. Interestingly, participants seemed prepared to absorb higher direct costs in order to defray higher indirect costs as the following quote demostrates.

> *"Respondent: But I'd say the reason private health service providers are expensive is because they are more knowledgeable about illnesses. You also find that private health service providers help more than clinics. Not all clinics make people better. At some clinics you arrive at 5:00 in the morning and wait the whole day for help. You leave without getting any. So, sometimes you go to a doctor because they give you better care there" Group 6, Female, TB affected*

3.4.3) EXTRA-HOUSEHOLD RESOURCES AND SUPPORT NETWORKS

While avoiding payment for services and accepting lower levels of quality may have affected the prices that group participants faced, these strategies did not affect the financial and other resources available for health seeking. Available resources were most commonly expanded by intra-household substitution and temporarily increasing the effort of existing household members, or drawing on extra-household resources.

Respondents across all groups described some form of a sick role either for general illnesses, injuries or TB. Whatever forms the sick role took, it appeared to be facilitated by a number of support networks. The networks or support systems described during the group discussions provided four commonly mentioned forms of support i.e. financial, practical, advice/ information and emotional support. This discussion focuses only on those forms of support that impacted on a household's ability to cope with the direct and indirect costs of care seeking, either by providing 'income' through financial support or by helping to lower the 'price' of care seeking. The financial and practical support networks described by group participants served these functions.

Financial support networks were both formal and informal. Common examples of informal financial support include the lending of money between family members and the provision of food and accommodation. Lending of money is most commonly done through direct payments to service providers. Although this is referred to as 'lending,' there seemed to be little expectation that this money would (or indeed should) be repaid. As these payments were

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[###] See the extensive discussion on service quality in Chapter 5.

irregular and were commonly considered hypothecated, they may not be captured by household surveys collecting data on remittances or inter-household transfers.

Khayelitsha/Nyanga women in particular reported ready and repeated consultation with private providers. This was despite the fact that most of the respondents from these areas were unemployed. It seemed acceptable for relatives to pay the bill for private providers and in fact relatives were the ones suggesting, prompting and encouraging the use of these providers. Khayelitsha/Nyanga men also reported higher usage of private providers than their Mitchell's Plain/Oostenberg counterparts although there was some reported use of private providers amongst Mitchell's Plain/Oostenberg men. This explains how some poorer respondents coped with the high direct costs of care seeking.

Family members (both in the household and outside the household) were the most common source of this support.

> *"My family has been really supportive. In fact, I get financial support from them. My nephew inquires when I will be going for treatment and he gives me money." Group 8, Male, TB affected*

> *"Moderator: ...and did you have to pay for the medication?*
> *Respondent: Yes.*
> *Moderator: And where did the money come from?*
> *Respondent: From my mother". Group 3, Male, not TB affected*

Financial support from state institutions also played a role, most commonly in the form of free access to health services (i.e. no user fees§§§§), and social grants. Employer-provided benefits, particularly medical aid (insurance), were mentioned by the few respondents in permanent formal employment but these respondents were in the minority.

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§§§§ In theory, public services are automatically free only to pregnant women and children under 6 years of age. All other patients should be means tested. Although some respondents did report paying user fees (particularly for hospital services), the majority claimed that their lack of employment exempt them from paying fees. There was considerable resistance to the payment of fees in the public sector and there is some question about the effective administration of the means test.

"Respondent: [Sister], to us clinic is the most helpful service of them all because some of us wouldn't be aware of their illness if there were no clinics because we can't afford to visit doctors as most of us are unemployed. Clinics have been very helpful to us. We get given tablets for free and you get them anytime. Besides, every Tuesday you get bread with peanut butter or margarine or bread rolls. We also get fruit, sometimes eggs. At other times people are given clothes. You are also able to speak to your doctor so that he recommends a health grant for you if you don't have a job.

Moderator: How much is this health grant?

Respondent: R700, for us invalids. So clinics are most beneficial to all of us, people who are unwell. You don't need to have money to go to the clinic and you do get help from them, even if sometimes they tell you to come back the next day" Group 6, Female, TB affected

Practical support networks usually assisted with chores and daily functioning, the collection of medication and transport as mentioned in the section on the indirect costs of care seeking. Again, immediate family members (living within the household) were the most likely to provide this type of support but one group did mention the role of NGOs. These support networks helped to reduce or to spread the indirect costs of health seeking; particularly the cost of transport to the facility, the cost of a care giver at home and the opportunity cost of time spent at the facility. Of course in those instances where the 'carer' accompanied the patient to clinic visits, they actually increased the total burden of the waiting time as both individuals would have incurred productivity losses.

Advice/information and emotional support networks did not have an obvious impact on the direct or indirect costs of care seeking, except in the instances where they guided care seeking and may have reduced the costs of multiple care seeking. Table 6.19 over the page summarises the manner in which financial and practical networks support the sick role. These support networks have the effect of making the 'hard budget constraint' less binding.

Table 6.19: Patient support systems mentioned by group participants

Common types of support	Family	Friends/ Neighbours/ Community	NGOs and similar institutions	State
Financial support	1) Sharing social grants 2) Sharing employment income 3) Loans 4) Out of pocket payments for healthcare	-		Provision of social grants (disability and pension)
Practical support	1) Child care 2) Accommodation 3) Food 4) Employment 5) Collection of medication 6) Ensuring medication is taken 7) Taking over chores 8) Nursing	1) Transport 2) Advice on effective care seeking	1) Child care 2) Home based care and deliver of medication	Home care, particularly delivery of medication by social or clinic workers.

Stigma or perceived stigma appeared to play a role in limiting access to support networks and thus limiting available coping strategies. For example, if respondents did not want to be seen attending clinics (usually TB clinics) they are unlikely to ask a neighbour for a lift to the clinic or to use public transport to the clinic. In the following quotation, some perception of stigma appears to increase the indirect costs of treatment seeking by increasing the walk to the clinic among TB affected patients.

"Moderator: You say some doesn't want to go [to the TB clinic] because they are shy.

Respondent 1:   Yes.   Some will walk in a different direction – so the people don't know they are going to the clinic.

Respondent 2:   People are very shy.

Moderator: What happens if they don't go?

Respondent 1:   They will get worse.   Some of them die." Group 5, Female, TB affected

During the personification game respondents frequently mentioned that the TB sufferer would not tell his/her neighbours and that it would be their 'secret'. The result in the personification game was common across all groups, not just the TB affected groups.

3.4.4) GENDER DIFFERENCES IN COPING STRATEGIES AND EXPENDITURE

3.4.4.a)   Delays in treatment seeking

In general, females seemed to be more effective monitors of their own health and were more sensitive to small changes in capacity/wellness. Males by comparison tend to be less effective monitors, requiring more obvious and objective evidence before an illness episode was identified. This particular difference in male/female health seeking behaviour seemed to result in men generally delaying treatment for longer than women.

> *"Respondent: It was October last year.   Just finished working.   I got home*
> *and brought up blood for a whole week, but I didn't worry to go to the hospital.*
> *Moderator: Did you tell anyone?*
> *Respondent: No*
> *Moderator: Why not?*
> *Respondent: I didn't tell anyone.   Kept it for myself.   That was December*
> *last year – the Thursday I felt bad and I decided to go to the day hospital.*
> *Moderator: Did you decide yourself to go to the day hospital?*
> *Respondent   Yes... " Group 7, Male, TB affected*

3.4.4.b)   Informal care and self treatment to 'save' money

The women in these focus groups appeared more likely to self treat illnesses. Self treatment usually involved the use of homemade remedies (honey, lemon juice etc), over the counter medication kept on hand in the home and, less frequently, medicines purchased from chemists. The primary motive for women seems to be saving money and time i.e. reducing direct and indirect costs.

> *"Some people use self-medication.   They don't like to go to the doctor all the*
> *time, because it is quite expensive if you don't have medical aid... If you have*
> *to go to the doctor every time and the doctor prescribes medication – you might*
> *as well do it yourself.   Go to the pharmacy and these are my symptoms – do*
> *you have anything for me?   It is quicker that way and it is cheaper also. "*
> *Group 1, Female, not TB affected*

As mentioned in the previous chapter, male participants were only likely to self treat if prompted and guided by a female family member. The exception to this rule regards injuries, which featured much more strongly as a theme in the male groups. Males appeared comfortable

self treating injuries for which they were unlikely to seek formal care unless absolutely necessary. Their primary motive for self-treatment appeared to be avoidance of treatment perceived to be unpleasant rather than avoidance of expense.

> *"Respondent: My girlfriend's niece's boyfriend, threw a brick on me. I had blood all over my face. I was scared to be stitched and I never went to the hospital. I treated myself.*
>
> *Moderator: What did the people say at your home?*
>
> *Respondent: I treated myself." Group 4, Male, not TB affected*

3.4.4.c) Women more likely to be the payers for direct costs

Interestingly, women were more likely to be the payers for health services for both male and female group participants. It was not clear in every instance whether the funds were coming out of the women's own resources, out of communal financial resources or from extra-household resources that had been mobilised or the purpose. It was clear however, that these female payers were able to make the decisions about this spending.

> *"Respondent 1: Yes. Mom went to them and asked to pay the money in installments until it was paid up*
>
> *Moderator: Until it was paid*
>
> *Respondent 1: Yes, mom made a deal with them*
>
> *Moderator: OK. Who else paid?*
>
> *Respondent 2: I paid the private doctor I consulted in Nyanga" Group 6, Female, TB affected.*

Although less common, males did play a role in paying for the direct costs of health seeking. Uncles and nephews were mentioned as an extra-household payer, meeting the cost of the payment with the provider directly or through a senior female household member.

> *"Respondent 1: My uncle sent me to another doctor in Nyanga." Group 6, Female, TB affected.*

The qualitative and quantitative evidence presented in this chapter suggest that, in this setting at least, individuals give some consideration to direct prices, indirect prices and income when seeking health care. Direct costs included consultation, drug and transport costs while indirect costs included waiting time, job losses and other productivity losses. Respondents did seem to consider both direct and indirect costs of care seeking, as well as their available budget, before seeking care. However, this behaviour was not uniform across population groups groups, within population groups or across illnesses. The following discussion highlights the differences in this decision-making behaviour, while also triangulating the findings from the qualitative and quantitative data analysis. All findings are contextualised within the literature on health seeking, while the broader discussion is framed within relevant theories on the topic.

4.1)   SUMMARY OF DIRECT COSTS

Although respondents appeared to have a 'realistic' expectation of direct prices i.e. the prices they expected to pay approximated the prices actually paid for a single consultation, respondents did not commonly know the quantity of services required to affect a cure and as such could not accurately estimate the total direct cost. As such, respondents in both the qualitative and qualitative datasets were ill equipped to anticipate direct health expenditure and to adjust consumption accordingly.

The question also arises whether knowing the likely direct expenditure for an episode of ill health would indeed enable respondents to adjust consumption. Certainly in the qualitative data, respondents seemed to feel they had little choice regarding the total quantity of services consumed. Instead of reducing quantity, the more common strategy to reduce direct expenditure was to substitute lower quality services for higher quality services. This was highlighted in the analysis of coping strategies.

However, this price quality trade-off was not applied by all respondents and the qualitative data indicated that Black/African respondents were more likely to pay for private health services than their Coloured counterparts. This appears to contradict the findings of the quantitative data, which showed that Coloured respondents incurred higher average direct expenditure on health. Aside from the fact that TB-affected respondents constituted 50% of the qualitative respondents and a very small minority of the quantitative respondents, a number of other factors may explain this contradiction. Firstly, Black/African respondents may be more willing to pay for private care when TB is the suspected cause of ill health. This is corroborated by the finding

in Chapter 5 that TB affected respondents prioritised privacy when seeking care for suspected TB and that private providers offered higher levels of perceived privacy. Secondly, Coloured respondents' average expenditure may be affected by outliers in the quantitative data.

In their review of the economic consequences of paying for health services, McIntyre et al. speak of the *"forced use of private providers due to poor quality of publicly funded services such as unavailability of essential medicines"*(pg 2). This casts the price/quality trade-off in a slightly different light, by suggesting that patients may actually feel they have no choice but to pay more (or to pay something) for a minimum level of quality.

Perhaps the most striking finding regarding direct costs is the ethnic or population group differences in direct costs as a proportion of household resources. On average, Black/African households spent 25% of household income on direct health expenses while Coloured households spent an average of 2% of their household income on direct health costs. Health spending was thus catastrophic for these Black/African households where catastrophic health expenditure is defined as 10% of household income or above (Russell, 2004). This may reflect the study's focus on poor urban communities with endemic TB and, in the case of the Black/African communities, high HIV prevalence. In their study of health care expenditure, Makinen et al. estimated that direct health expenditure as a proportion of household income was 4.9% for South Africa as a whole - although their study included only medical expenses and not transport costs (Makinen et al., 2000). These findings reinforce the regressive nature of direct costs (Russell, 2004).

4.2)   SUMMARY OF INDIRECT COSTS

In general, the focus group respondents were more sensitive to direct than indirect costs – often substituting higher indirect costs to reduce direct costs by even a small amount. However, the most significant finding regarding indirect costs is that they are grossly underestimated in the quantitative dataset. Waiting times of the patient alone frequently represent only half the cost of waiting times to the household as patients are often accompanied by a female family member. Aside from waiting times, the qualitative data suggests that carers and other family members also incur significant other productivity losses. Even focussing the analysis on the patient alone, the quantitative dataset fails to quantify the productivity losses of ill health outside of the health seeking episode. Similarly, the consequences of job loss are not explored.

That said, even by the conservative measure of indirect cost proffered in the quantitative dataset, indirect costs vary significantly between population groups. Black/African respondents

have higher waiting times and, although those waiting times are valued at a lower cost, they constitute a higher proportion of total expenditure on health. Although no significant gender differences in indirect costs were observed in the quantitative dataset, inclusion of 'carer time' in the calculation of indirect cost is likely to create significant gender differences. The qualitative data highlighted the fact that female household members are most likely to take on the role of carer and to compensate for the productivity loss to the household of a sick individual. This finding is corroborated by Attanayake et al. who concluded that women were more likely to take on the role of carer in their study of the household costs of malaria morbidity in Sri-Lanka (Attanayake et al., 2000).

Notably, Attanayake et al. highlight the concern that different methods for measuring of indirect costs can have significant implications for findings. Their call for further methodological research in this area is seconded by this dissertation (Attanayake et al., 2000).

4.3) DO INDIVIDUALS CONSUME OUT OF INDIVIDUAL, HOUSEHOLD OR EXTRA-HOUSEHOLD RESOURCES?

As mentioned in the introduction, Russell proposes that "*the household is the preferred unit of analysis for assessing the costs of illness because decisions about treatment and coping are based on negotiations within the household*" (pg 147 Russell, 2004). The findings of this study, and particularly the qualitative data analysis, are consistent with the notion that household decision making regarding health seeking is a more common phenomenon than individual decision-making for this purpose.

However, while decision making may occur at the household level, the physical provision of resources (financial and labour) frequently took place at an extra-household level in this study. This has direct implications for the measurement of the budget constraint and emphasises the need for quantitative studies to collect data on inter-household transfers. Collecting data on remittances – where these are defined as regular and predictable payments to an individual or household - will not capture the *ad hoc* transfers more commonly used to meet health payments. They will also fail to capture the value of labour transfer between households.

The quantitative dataset for this study attempts to capture infrequent financial transfers between households and these should be appropriately incorporated into the demand model constructed in Chapter 7 of this thesis. Unfortunately, the quantitative dataset fails to capture labour transfer between households.

4.4) COPING STRATEGIES AND THE MEDICAL POVERTY TRAP

Choice of provider aside,***** multiple care seeking incurs multiple costs and even a single instance of health seeking can create unexpected costs. The budget constraint as an accounting frontier may be hard to estimate when one cannot anticipate the likely costs of a treatment seeking episode – or series of treatment seeking episodes. The question therefore arises, if these costs (or the probability of these costs) are not built into the *ex ante* budget constraint, how do patients cope with the resultant problems of scarcity and what is the likely implication for the structure of the budget constraint? Three options are possible:

1. The initial budget constraint includes a variable that captures the probability of additional expenditure.

2. Each successive step in the healthcare consumption strategy is seen as a discrete purchase decision with its own budget constraint. Each successive budget constraint would be affected by the outcome of the preceding point of consumption (e.g. available financial resources will shrink with each successive point of consumption).

3. The decision to finance a health seeing strategy is seen as a single purchase decision regardless of the number of interim steps or unanticipated costs. The initial strategy for this singular purchase is entered into with some consideration for a budget constraint that excludes unexpected costs. Each successive point of consumption is seen as 'mandatory' and patients do not feel they have a choice in the purchase decision. The budget constraint is not reconsidered. Instead, patients must respond to the unexpected cost by findings ways to increase their income in the short term. The income might be increased by increasing the size of the available financial pot (perhaps by calling on more distant family members), or by reducing other demands on that financial pot.

Evidence from the focus groups suggests that the third model is the most appropriate for this study. Once a health seeking strategy has commenced respondents would continue to seek advice or care until an effective treatment was obtained. There were no instances of health seeking ending abruptly because the successive step in the 'consumption chain' was seen to be too expensive. Similarly, respondents did not appear to factor unexpected costs into their treatment seeking strategies at the outset. Instead, the burden of unexpected costs was generally compensated for during or after the health seeking event.

Aside from the burden of unexpected costs, this study also found that even potentially expected costs can strain household resources and that this is seldom sufficient to dissuade health seekers from accessing services entirely. Evidence from the quantitative dataset succinctly corroborates this argument. According to these data, 59% of respondents had ever used a private provider. This was despite the fact that only 53% of respondents claimed to have worked for any form of payment in the last 12 months and private providers charge user fees. One might argue that private sector use occurred during some preceding period of employment however, given those levels of unemployment, only 4.4% of the sample claimed that they would never consider using a private doctor because they are too expensive. Similarly, 4.8% of the sample claimed that they would never consider using a private doctor/specialist. Of these, 92% claimed the provider was too expensive, while 8% claimed they did not trust the provider and 8% claimed they would never have a need for this provider. If less that 5% of the sample would never consider using either of these providers, we can deduce that perceived costs (direct and indirect) seldom result in the elimination of consumption from any one provider. It is more likely that the impact is more subtle, reducing consumption rather than removing it or forcing household to mobilise extra resources to meet these costs. This further reinforces McIntyre et al.'s concern regarding 'forced' utilisation of private service providers (McIntyre et al., 2006).

The findings above suggest that health expenditure is likely to strain or even exceed household resources, and this in turn raises the question: how do households cope? The qualitative data for this study have identified a number of coping strategies including intra-household labour substitution, drawing on extra-household resources to increase income and offset productivity losses, manipulating prices by avoiding payment or negotiating reduced payment, and trading off quality for price. The analysis also identified the range of networks that supported these common coping mechanisms and highlighted the concern that stigmatised illnesses (such as TB) may reduce care seekers access to support.

Russell categorises coping strategies into those that mitigate direct costs, those that mitigate indirect costs and those that prevent or manage costs (Russell, 2004). This study has identified strategies in each of these categories that are generally consistent with the findings of similar studies in the broad literature on economic burden of illness and coping. For example Sauerborn et al. conclude that "intra-household labor substitution was the main strategy to compensate for any labor lost due to illness" (pg 291 Sauerborn et al., 1996) and Gertler and Gruber reach a similar conclusion (Gertler and Gruber, 1997). As far as the mobilisation of networks is concerned, Cattell highlights the mediating role that social networks can play, while

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***** The choice of providers was discussed in more detail in Chapter 5

expressing some concern that *"perceptions of inequality could be a source of social capital as well as demoralization"* (pg 1501 Cattell, 2001).

Coping strategies identified by others studies but not clearly or commonly present in this study include delays in obtaining medication (Barnett, 2001), seeking financial assistance from GPs (Barnett, 2001), diversifying productive and reproductive activities (Rakodi, 1995), avoidance of fee charging service providers (Mbugua et al., 1995), sale of assets (Sauerborn et al., 1996) and insuring to smooth health spending (Gertler and Gruber, 1997).

Finally, Whitehead and Diderichsen express some concern that coping strategies can lead households into a medical poverty trap. They highlight untreated morbidity, reduced access to care, long term impoverishment and irrational drug use as the main effects of the medical poverty trap (Whitehead and Diderichsen, 2001). Although the duration of this study was insufficient to prove long term impoverishment, the high levels of health spending identified in this study raise the possibility that Black/African households in this setting may already be in – or at least vulnerable to – a medical poverty trap.

4.5) FINDINGS IN THE CONTEXT OF THEORY AND METHODOLOGY

Section 4.1 of Chapter 2 described a model referred to as the soft budget constraint. In that discussion SBC syndrome is credited with the following behavioural effects:

- A reduced incentive to minimise costs (or maximise profits)
- Reduced responsiveness to changes in the prices of inputs and outputs
- The inflation of demand for inputs that have a price of zero (or for which actors can avoid payment)

A number of participants in this study exhibited little incentive to minimise costs or respond to differences in the price of different health services, if not to changes in the price of any single health service provider. However, there is no evidence that this resulted in the inflation of demand for health services that individuals expected to be free at the point of use. Conversely, there is some evidence that the demand for private care i.e. fee-for-service care for which payment could not easily be evaded, was inflated beyond the level one would expect to observe if patients consumed only out of individual or household income[†††††]. As this latter observation is consistent with the broader theory of the SBC, the model appears to warrant further investigation and a more formal application to the demand for health services.

[†††††] The determinants of provider choice are discussed in detail in Chapter 5.

CHAPTER SEVEN:

AN ECONOMETRIC MODEL OF THE

DEMAND FOR HEALTH SERVICES

1)   INTRODUCTION

The aim of this chapter is to draw together the findings from the analyses in Chapters 4 to 6 to construct an econometric model of demand that reflects the features of health seeking behaviour that were observed in earlier chapters. Particularly, the specifications in this chapter will aim to incorporate the following potential determinants of demand:

- The impact of perceived health need on demand identified in Chapter 4
- The formation of the choice set and the iterative nature of care seeking described in Chapter 5
- Health service users may be users of multiple health services including private and public services as discussed in Chapter 5
- The constraints to health seeking analysed in Chapter 6
- Extra-budgetary contributions to health expenditure identified in that Chapter 6.

In addition, by allowing mental and physical health status to fluctuate over time along with health seeking behaviour, this analysis attempts to capture the fact that provider use, the choice of a particular provider and even the number of visits to any provider are framed within a dynamic context as described in Chapter 5, which outlined the monitoring process and highlighted a general distrust of self-assessed need. That changing context of health seeking may well impact on the ordering of preferences of, for example, low cost over low quality thus impacting on the ultimate observed behaviour.

Demand has been modelled in a number of ways in the empirical literature using alternative specifications of the dependent variable. For example, some researchers aimed to predict medical expenditure (see for example Buntin and Zaslavsky, 2004), others to predict discrete provider choice (such as Bolduc et al., 1996) and still others to measure the frequency of visits to any provider (for example Deb and Trivedi, 2002). A full review of this literature is provided in Chapter 2. In this chapter, demand is specified in three stages. Firstly, the analysis predicts the likelihood of becoming a user of any service provider in the study setting, compared with being a non-user, using illness as an explanatory or independent variable rather than modelling usage conditional on ill health. Then, the chapter analyses the number of visits to any provider. Finally, provider choice is modelled among service users only. Provider choice is not

specified as a multinomial model but rather as a set of binary choices as the choice of provider is not mutually exclusive in this dataset. This is a key departure from the conventional empirical literature and an attempt to capture multiple care seeking i.e. to allow respondents to make multiple visits to multiple providers.

Health expenditure is not modelled due to the absence of user fees in public clinics which may bias the analysis and would certainly reduce the meaningfulness of the specification. As the conventional nested model specification cannot cope with the combination of continuous and discrete dependent variables necessary for the analysis in this chapter, the methods used in this chapter merely approximate the nested specification by appropriately limiting the estimating sample and explicitly discussing potential interaction between the models.

Aside from the choice of dependent variable, there has been considerable discussion in the literature regarding the statistical and econometric techniques used to estimate demand. This discussion has highlighted a number of common challenges to that estimation and these generally include identification, misspecification, multicollinearity and simultaneity. For particular forms of demand specification, the independence of irrelevant alternatives can also prove to be an overly restrictive property. Most of these challenges are easily corrected, however, one common misspecification and a related case of simultaneity are often overlooked. Specifically, many models fail to include an effective measure of perceived health, resulting in omitted variable bias. Those models that do include a measure of perceived health often fail to correct for the resulting endogeneity of its inclusion. This dissertation considers the impact of these shortcomings on applied demand models and the secondary effects of solutions commonly applied outside the health literature. The relevant challenges to this application of econometrics in health are discussed further in the next section of this chapter.

The empirical literature has also identified a number of likely predictors of health service demand or heath seeking behaviour. For clarity, these are divided here into characteristics of the choice and characteristics of the chooser. Characteristics of the choice commonly used in demand models include the quality of care or some component of service quality such as drug availability (see for example Mariko, 2003; and Sahn et al., 2003), the direct price of service use (see for example Chawla and Ellis, 2000; and Lavy and Quigley, 1993), travel time or distance to the facility (see for example Audibert, 1982; and Dow, 1996) and waiting time (see for example Ellis et al., 1994). Previous chapters in this dissertation have also suggested a number of additional choice variables, including the expected level of privacy at a provider and the expectation that a provider will have the correct diagnostic equipment. Characteristics of the chooser used in other studies commonly include age, gender, wealth or income, membership of a savings scheme and illness type, symptoms or severity (see for example Akin et al., 1986;

Bolduc et al., 1996; and Hotchkiss, 1993). Additional individual or household level variables identified in earlier chapters of this thesis include the perceived stigma of a suspected illness, access to extra-budgetary funds from outside of the household and available strategies/networks to ameliorate information shortages.

As far as the determinants or predictors of demand are concerned, this analysis departs from conventional empirical analysis in a number of ways. Firstly, the multiple dimensions of quality discussed in earlier chapters are included in the specification. Secondly, the expected privacy of a provider is included as an independent variable. Finally, only the ex-ante determinants of choice are used where possible. For example, the baseline perceptions of quality collected before health seeking takes place, are used as determinants of demand rather than perceptions of quality collected post utilization or supplier-provided data on quality that may not impact on ex-ante user perceptions. This strategy is motivated largely by the findings from earlier chapters which suggest that patients formulate their health seeking strategies on the basis of *ex ante* expectations formed on the basis of imperfect information. This is further motivated by the findings of Hanson et al. who found that interaction with a provider systematically changed the expectations of that provider – usually resulting in a positive bias in expectations (Hanson et al., 2004). In short, this chapter attempts to more accurately capture the latent, unobserved demand that underlies observed service utilisation.

Where possible, the independent variables suggested in the earlier analysis are included in the models specified in this chapter. However, in some cases, variables or likely predictors suggested by the qualitative data are not quantified or measured in the survey data. In these cases either a suitable proxy is used or the variable is not included in the model. Variables for which no data was collected and no suitable proxy can be constructed include expected waiting times, *ex ante* expectations of staff attitudes and the suspected illness for which health seeking takes place. The implications of this limitation will be discussed further in the final section of this chapter.

As in previous chapters, data are derived from a study set in four high TB prevalence communities in Cape Town, South Africa. Weekly health diaries were used to collect quantitative data from all adult members of 144 households over an eight week period. Self reported health status was collected weekly using the SF8 protocol, which measures both mental and physical dimensions of health. The study is deliberately conducted in an urban setting to control for the constraints on health seeking imposed by supply shortages or severe geographic barriers to treatment access.

The findings in this chapter draw solely on the primary quantitative data, although the analysis of that data, and particularly the selection of independent or predictor variables is

informed by earlier analysis of the qualitative dataset. The methods of analysis are discussed in detail in Section 3.2 of Chapter 3. The findings are presented with a section for each model specified i.e. use versus non-use, the number of visits to any provider and provider choice. Finally, the discussion section draws together the main findings, contextualises them within the results of earlier chapters and positions them within the broader literature on the empirical estimation of demand for health in South Africa and other developing countries.

2) QUANTITATIVE FINDINGS

2.1 DEMAND FOR HEALTH SERVICES: THE PROBABILITY OF ANY SERVICE USE

This section presents the findings from the estimation of service use, unconditional on illness. In this model service use is defined as at least one visit to any health service provider in each week over the period of the diary placements. As such, the dependent variable for service use is a binary variable equal to one if the respondent did use at least one provider and equal to zero if they did not use any provider. This may vary between weeks for a given respondent, for example a respondent using at least one service provider in week one would be a service user (equal to one) in week one, but in week two they may not visit a service provider and as such their user variable for that week would be equal to zero. The observed component of the dependent variable is health service use however, the probability of becoming a service user is the unobserved latent variable.

The independent variables used in this analysis are summarised in the Table 7.1. For clarity, they are divided into individual level variables for which each observation is particular to an individual in the sample, household level variables for which the same value has been assigned to each member of the household, and provider related variables i.e. expected price and quality for which there is one observation for each individual in the dataset for time period one. The individual and household level variables are characteristics of the chooser, while the provider related variables are characteristics of the choice. The provider related variables were collected in the Introductory Health Survey and are therefore static over the course of the panel. Some individual and household characteristics, such as gender and population group are also invariant over the course of the panel and as such there will only be one observation per individual. Where the observations vary across the panel there is one observation per individual per time period. There is a small risk of clustering at the household level, which would have the effect of underestimating the standard errors of the coefficient estimates. However, with an average of only two respondents per household in a sample of 144 households, this effect is unlikely to be significant.

Table 7.1: Summary of independent variables used to predict health service use

VARIABLE NAME	DESCRIPTION	VALUES FOR CATEGORICAL VARIABLES	N	MEDIAN	MEAN	STD DEV.	MIN.	MAX.
Individual level variables (Characteristics of the chooser)								
age	Age at last birthday in years	-	250	35.5	36.8	14.4	18	74
female	Categorical variable for female	Male=0, Female=1	250	1	0.7	0.5	0	1
black	Dummy variable for population group identified as Black/African	Black=1 if respondent identifies themselves as Black/African, Black=0 if respondent identifies themselves as Coloured, Black=. if respondent identifies themselves as White or Indian.	240	1	0.6	0.5	0	1
medaid	Coverage by medical aid or insurance	Medaid=1 if covered, Medaid=0 if not covered	247	0	0.3	0.4	0	1
edyears	Education in years	-	250	10	9.9	2.7	1	16
shareofhhinc	Per capita household income (in ZAR)	-	246	566.7	1190	1482.7	0	8500
pcs_8	An index of physical health status varying between 0-100 as calculated by the SF8 method	-	1775	53.9	49.9	10.5	11.2	67.3
mcs_8	An index of mental health status varying between 0-100 as calculated by the SF8 method	-	1775	53.9	50.7	10.6	11.3	65.4
extrafunds	Access to irregular extra-budgetary fund from outside the households	Extrafunds=1 if respondent has access to extra-budgetary funds, Extrafunds=0 if respondent does not have access to extra-budgetary funds	2000	0	0.1	0.3	0	1
remit	Receipt of regular remittances from extra-household sources	Remit=1 if respondent receives remittances, Remit=0 if respondent does not receive remittances	2000	0	0.1	0.3	0	1
Household level variables (Characteristics of the chooser)								
stokvel	Member of a community savings scheme such as a stokvel	Stokvel=1 if respondent is a member of a scheme, Stokvel=0 if respondent is not a member of a scheme	144	1	0.6	0.5	0	1
finsit	Self reported financial situation of the household generally	Very comfortable=1, Comfortable=2, Just getting by=3, Poor=4, Very Poor=5	144	3	3.4	1.2	1	5
crowding	A ratio calculated by dividing the number of rooms in a house by the number of household members.	-	144	1	1.2	0.97	0.1	6

VARIABLE NAME	DESCRIPTION	VALUES FOR CATEGORICAL VARIABLES	N	MEDIAN	MEAN	STD DEV.	MIN.	MAX.
Provider related variables (Characteristics of the choice)								
eprice_pubhosp	Expected price of a consultation at a public hospital	-	226	25	46.94	107.97	0	1000
eprice_pubclin	Expected price of a consultation at a public clinic	-	224	0	25.10	168.60	0	2500
eprice_privhosp	Expected price of a consultation at a private hospital	-	181	120	173.11	307.97	0	3000
eprice_privclin	Expected price of a consultation at a private clinic	-	177	100	155.85	308.42	0	3000
eprice_privdoc	Expected price of a consultation at a private doctor	-	235	100	95.61	81.41	0	1000
eprice_pharm	Expected price of a consultation at a pharmacy	-	182	20	44.34	57.16	0	500
equal_pubhosp	Expected quality at a public hospital	-	243	4	3.8	1.3	1	5
equal_pubclin	Expected quality at a public clinic	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	243	3	3.2	1.3	1	5
equal_privhosp	Expected quality at a private hospital	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	216	5	4.5	0.6	2	5
equal_privclin	Expected quality at a private clinic	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	216	5	4.5	0.6	3	5
equal_privdoc	Expected quality at a private doctor	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	244	5	4.6	0.6	2	5
equal_pharm	Expected quality at a pharmacy	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	243	4	4.2	0.7	1	5

As Table 7.1 illustrates, a number of variables have missing values particularly: the expected price of a consultation at a private hospital, the expected price of consultation at a private clinic, the expected price of a consultation at a pharmacy, the quality of a private clinic, the quality of a private hospital, physical health and mental health. These observations may be missing due to attrition or item non-response (see Table 3.4 in Chapter 3 for detailed attrition rates). As mentioned previously, random effects panel models are computationally intensive models that use a large number of degrees of freedom in the calculation process. Individuals are dropped from the dataset entirely if there are missing values for any variable at any time point. High numbers of missing values can thus destabilise a panel model and the analyst must either drop all variables with high numbers of missing values or impute the missing values and continue to use all necessary variables in the specification. As imputation is likely to have a lesser effect on the specification in this chapter than the omitted variable bias caused by dropping the variables altogether, the missing values for price and quality were imputed using models that incorporate variation by age, gender and population group. The health status variables were similarly imputed using models that incorporate variation by age, gender, population group and household income. The summary statistics for the variables that include imputed values, are reported in Table 7.2 below. These can be compared with the data presented in Table 7.1 above.

Table 7.2: Summary of Imputed Variables

VARIABLE NAME	DESCRIPTION	VALUES FOR CATEGORICAL VARIABLES	N	MEDIAN	MEAN	STD DEV.	MIN.	MAX.
eprice_privhosp	Expected price of a consultation at a private hospital	-	250	115.74	164.68	265.48	0	3000
eprice_privclin	Expected price of a consultation at a private clinic	-	250	100	150.46	263.07	0	3000
eprice_pharm	Expected price of a consultation at a pharmacy	-	250	35.56	44.61	49.20	0	500
equal_ privhosp	Expected quality at a private hospital	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	250	4.6	4.5	0.5	2	5
equal_ privclin	Expected quality at a private clinic	Very poor=1, Poor=2, Neither good nor bad=3, Good=4, Very good=5	250	4.6	4.5	0.5	3	5
Pcs_8	Physical Health Index	-	2000	52.5	49.9	9.9	11.2	67.3
Mcs_8	Physical Health Index	-	2000	52.6	50.6	10.1	11.3	65.4

The results of the random effects probit model of health service use versus non-use is presented in Table 7.3. These show that, in this sample, there are six statistically significant predictors of service use i.e. gender, crowding, mental and physical health, the receipt of extra-budgetary funds from outside of the household and the expected price of a private doctor. Female respondents have a higher predicted likelihood of becoming a service user while higher levels of crowding within the household decrease the probability of a household member becoming a user of any health services. Individuals with better physical and mental health are less likely to be health service users although the coefficient for physical health is more than three times the coefficient for mental health, suggesting that physical health has the greater impact on the likelihood of health service use. The receipt of extra-budgetary funds from outside of the household increases the likelihood of become a service user, while the expected price of a private doctor reduces the likelihood of becoming a user of any service (although the coefficient for this variable is approximately zero). Physical and mental health were tested for endogeneity in this model and were found not to be endogenous in this case. No correction was thus required.

In this model, the Wald chi-squared test rejects the null hypothesis that the coefficients of the regressors are all zero, indicating the model's overall statistical significance. Sigma_u gives the standard deviation of the common residuals (ui), while rho gives the proportion of the unexplained variance due to differences among units i.e. differences among the individuals. The likelihood ratio test of rho concludes that the rho statistic is significantly different from zero. A quadrature check revealed that the results of this model were nearly invariant to the number of quadrature points used. This indicates that the results are stable and can be interpreted with confidence.

Table 7.3: Random effects probit of health service use

RANDOM EFFECTS PROBIT ESTIMATION OF SERVICE USE		
	b	t
Age at last birthday	-0.00	(-0.32)
Female	0.29*	(1.76)
Per Capita Household Income	0.00	(0.29)
Crowding	-0.18**	(-2.14)
Covered by medical aid/insurance	-0.17	(-0.66)
Years of Education	0.03	(0.82)
Black/African	-0.09	(-0.33)
Financial situation	0.16	(1.65)
Mental Summary Measure	-0.02***	(-3.16)
Physical Summary Measure	-0.07***	(-11.18)
Received Extra-budgetary Funds from Outside the Household	0.52***	(3.18)
Participates in community savings scheme	0.11	(0.69)
Receives remittances	0.21	(0.98)
Expected price of consultation at a public hospital	0.0002	(0.39)
Expected price of consultation at a public clinic	0.0003	(1.07)
Expected price of consultation at a private hospital	0.001	(1.54)
Expected price of consultation at a private clinic	-0.001	(-1.34)
Expected price of consultation at a private doctor	-0.003*	(-1.77)
Expected price of consultation at a pharmacy	-0.0007	(-0.45)
Overall quality expected from a public hospital	-0.06	(-0.84)
Overall quality expected from a public clinic	-0.06	(-0.93)
Overall quality expected from a private hospital	0.07	(0.39)
Overall quality expected from a private clinic	-0.29	(-1.52)
Overall quality expected from a private doctor	0.04	(0.28)
Overall quality expected from a pharmacy	0.15	(1.35)
Constant	2.89**	(3.13)
Test Statistics		
lnsig2u (Constant)	-1.10***	(-3.78)
Wald Chi-Squared Test	227.97***	
LR test	35.35***	
Rho	0.25	
Sigma_u	0.577	
No. of cases	1552	
No. of groups	194	
Log likelihood	-474.27	

Significance: * p<0.10, ** p<0.05, *** p<0.01

2.2 ESTIMATING THE NUMBER OF VISITS TO ANY PROVIDER BY ALL RESPONDENTS

In this section we construct a model to predict the number of visits to any provider. At the outset, the number of visits is allowed to vary for each time period in the dataset and a random effects count model is used. This model is run for the total sample with the risk of bias due to zero-inflation. The variable used to measure the visit count for this estimation is summarised in the Table 7.4 below.

Table 7.4: Summary of weekly visit counts

VARIABLE NAME	DESCRIPTION	OBS	MEDIAN	MEAN	STD. DEV.	MIN	MAX
visitcount	Number of visits to any provider in a one week period	2000	0	0.27	0.91	0	12

A cross-sectional zero-inflated negative binomial is then specified to correct for the potential bias caused by zero inflation, without introducing additional bias through truncation as would occur if the panel model were restricted to users only. To facilitate this specification, the number of visits to any provider is calculated first on a weekly basis and then the total for each week is summed for the full eight week period of the diary placement. This treats the panel as a cross sectional study with a single time period. The measures for physical and mental health are similarly adapted by creating a single variable for each representing the mean value over the eight week diary placement period for any one individual. Table 7.5 summarises these new variables. This analysis is again run for the full sample.

Table 7.5: Summary of variables used to predict the number of visits

VARIABLE NAME	DESCRIPTION	OBS	MEDIAN	MEAN	STD. DEV.	MIN	MAX
totvisits	Total number of visits to any provider over the 8 week period	250	1.00	2.29	3.94	0	23
avgpcs	Average physical health over the 8 week period	250	51.84	49.64	7.92	23.91	63.70
avgmcs	Average mental health over the 8 week period	250	52.38	50.37	7.91	21.97	64.40

2.2.1) THE RANDOM EFFECTS NEGATIVE BINOMIAL MODEL

The results of the random effects negative binomial model without correction for zero inflation are presented below. This model demonstrates that gender, physical and mental health, receipt of extra funds and the expected price of a private doctor are all significant determinants of the number of visits to any provider. Significantly, these findings almost exactly match the predictors of service use versus non-use presented in the previous section. Only crowding is a significant predictor of service use but not of the number of visits to any provider as measured by this model. This strongly suggests that the model is suffering from zero-inflation and that the measurement of the number of visits to any provider is being dominated by the likelihood of any service use.

Table 7.6: Random Effects Negative Binomial Regression of the Number of Visits to Any Provider

RANDOM EFFECTS NEGATIVE BINOMIAL REGRESSION OF THE NO. OF VISITS		
Without correction for zero inflation		
	b	t
Age at last birthday	-0.00	(-0.56)
Per Capita Household Income	0.00	(0.17)
Crowding	-0.19	(-1.62)
Covered by medical aid/insurance	-0.38	(-0.96)
Years of Education	0.04	(0.89)
Black/African	-0.09	(-0.24)
Financial situation	0.21	(1.65)
Female	0.45*	(1.94)
Physical Summary Measure	-0.07***	(-12.27)
Mental Summary Measure	-0.03***	(-4.73)
Received Extra-budgetary Funds from Outside the Household	0.59***	(3.32)
Participates in community savings scheme	0.28	(1.24)
Receives remittances	0.23	(0.79)
Expected price of consultation at a public hospital	-0.00	(-0.15)
Expected price of consultation at a public clinic	0.00	(0.92)
Expected price of consultation at a private hospital	0.00	(1.06)
Expected price of consultation at a private clinic	-0.00	(-0.85)
Expected price of consultation at a private doctor	-0.00*	(-1.69)
Expected price of consultation at a pharmacy	-0.00	(-1.11)
Overall quality expected from a public hospital	-0.08	(-0.96)
Overall quality expected from a public clinic	-0.12	(-1.47)
Overall quality expected from a private hospital	0.04	(0.15)
Overall quality expected from a private clinic	-0.46	(-1.83)
Overall quality expected from a private doctor	0.24	(1.31)
Overall quality expected from a pharmacy	0.20	(1.35)
Constant	4.00**	(3.18)
Test Statistic		
Ln_rho (Constant)	1.64***	(7.12)
Ln_sigma (Constant)	0.54*	(2.15)
Wald Chi-Squared Test	312.81***	
LR test vs pooled	66.13***	
Rho	5.18	
Sigma_u	1.72	
Log likelihood	-797.85	
No. of cases	1552	
No. of groups	194	

*Significance: * $p<0.10$, ** $p<0.05$, *** $p<0.01$*

According to the results of the Durbin-Wu-Hausman Augmented regression test, physical and mental health are not endogenous to the count model of provider visits. The model is significant overall and the likelihood ratio test of the model versus a pooled specification indicates significant individual level heterogeneity and the appropriateness of the random effects specification. However, as mentioned previously, zero-inflation may bias the estimators. As such, we now present the results of a zero inflated negative binomial model of the number of visits to any provider.

2.2.2) THE ZERO-INFLATED NEGATIVE BINOMIAL MODEL

This zero-inflated negative binomial model is run as a cross sectional specification for which the dependant variable is the total number of visits over the full eight week placement period. The significant predictors of service use presented earlier in this chapter are used as predictors of zero inflation in this model i.e. gender, crowding, mental and physical health, receipt of extra-budgetary funds and the expected price of a private doctor.

The results of the zero-inflated negative binomial model are presented in Table 7.7. These findings indicate that physical health is a significant predictor of zero inflation i.e. respondents with better physical health are more likely to be 'true' zeros and not to have latent or unobserved demand. With this correction, the significant predictors of the number of visits to any provider are quite different from the predictors of service use versus non-use and the predictors of the count model without correction for zero-inflation. The following variables all significantly predict the number of visits to any provider in the zero-inflated negative binomial model:

- Higher per capita income predicts a higher number of visits although the coefficient is approximately zero as the model is capturing the effect of a R1 increase in income.

- Higher levels of household crowding predict a lower number of visits

- Coverage by Medical Aid/Insurance predicts a lower number of visits

- The poorer the perceived financial situation of the household, the higher the number of predicted visits

- Higher average mental health over the eight week period predicts a lower number of visits

- Receipt of extra-budgetary funds from outside the household predicts a higher number of visits

- The higher the expected price of a private clinic, the lower the predicted number of visits (although the coefficient is approximately zero)

- The higher the expected price of a private doctor, the lower the predicted number of visits (although the coefficient is approximately zero)

- The higher the expected quality of a private clinic, the lower the predicted number of visits

- The higher the expected quality of a pharmacy, the higher the predicted number of visits

Table 7.7: Zero Inflated Negative Binomial Regression

CROSS SECTIONAL NEGATIVE BINOMIAL MODEL		
With Correction for Zero Inflation		
	b	t
Age at last birthday	0.01	(0.90)
Per Capita Household Income	0.00*	(1.78)
Crowding	-0.26**	(-2.28)
Covered by medical aid/insurance	-1.05**	(-2.59)
Years of Education	0.03	(0.66)
Black/African	-0.24	(-0.62)
Financial situation	0.25*	(1.96)
Female	0.07	(0.31)
Average physical health over the eight week period	-0.02	(-0.77)
Average mental health over the eight week period	-0.06***	(-2.72)
Received Extra-budgetary Funds from Outside the Household	1.27***	(4.40)
Participates in community savings scheme	0.09	(0.40)
Receives remittances	0.30	(0.99)
Expected price of consultation at a public hospital	0.00	(0.57)
Expected price of consultation at a public clinic	0.00	(0.44)
Expected price of consultation at a private hospital	0.00	(1.67)
Expected price of consultation at a private clinic	-0.00*	(-1.91)
Expected price of consultation at a private doctor	-0.00*	(-1.75)
Expected price of consultation at a pharmacy	-0.00	(-0.19)
Overall quality expected from a public hospital	-0.06	(-0.73)
Overall quality expected from a public clinic	-0.01	(-0.14)
Overall quality expected from a private hospital	-0.01	(-0.06)
Overall quality expected from a private clinic	-0.43*	(-1.74)
Overall quality expected from a private doctor	0.25	(1.48)
Overall quality expected from a pharmacy	0.36**	(2.54)
Constant	2.71*	(2.05)
Inflate (Probit model)		
Female	-0.36	(-0.54)
Crowding	-0.54	(-1.14)
Average physical health over the eight week period	0.73***	(2.97)
Average mental health over the eight week period	0.01	(0.15)
Received Extra-budgetary Funds from Outside the Household	1.92	(1.83)
Expected price of consultation at a private doctor	0.00	(0.38)
Constant	-41.76**	(-3.07)
Test Statistics		
lnalpha (Constant)	-0.48*	(-2.23)
McFadden's R2	0.18	
McFadden's Adj R2	0.09	
Maximum Likelihood R2	0.51	
Cragg & Uhler's R2	0.52	
LR Chi-Squared Test	90.48***	
LR test of alpha=0	70.74***	
Log likelihood	-316.72	
Vuong test of zinb vs. standard negative binomial	3.13	
No. of cases	194	
Nonzero obs	107	
Zero obs	87	

*Significance: * p<0.10, ** p<0.05, *** p<0.01*

The significant likelihood ratio (LR) test of alpha rejects the null hypothesis of no over dispersion, indicating that the zero inflated negative binomial regression improves goodness-of-fit over the equivalent zero inflated Poisson model. The Vuong test statistic of 3.13 is greater than 1.96, suggesting that the zero inflated negative binomial regression is preferred to the equivalent negative binomial regression model (without zero inflation). The LR Chi-squared test shows that the model is significant over all.

2.3 PROVIDER SELECTION BY HEALTH SERVICE USERS

This section presents the findings from the estimation of provider choice by respondents who used any health service provider during the diary placement period. Provider choice is not mutually exclusive in this dataset as data was captured on all health visits taking place in each week and respondents could have used more than one provider type in any week. As such, provider choice cannot be modelled using a multinomial specification without limiting the analysis to either the first or last visit and thus losing the information regarding multiple patient-provider interaction. A series of random effects binomial probits is therefore used to model:

- The choice of a public service provider versus any other provider
- The choice of a private service provider versus any other provider
- The choice of a pharmacy versus any other service provider

In any one week of the placement then, a respondent might be a public service user, a private service user, neither or both. A respondent's status as the user of a particular type of service may also vary between the weeks of the diary placement. If for example, a respondent visited a health service provider (or a number of heath service providers) in week one, but did not visit a health service provider of any kind in week two they would be considered a service user in week one but not in week two. Similarly, if a respondent visited a private provider (only) in week three and a public provider (only) in week four, they would be considered a user in both weeks but a private user in week three and a public user in week four.

In these models, a public service user is defined as such if they used any public service provider at least once during the week of the diary placement. Similarly, private and pharmacy users are defined as such if they used any private service provider or a pharmacy at least once during any given week of the diary placements. As such, the dependent variable for public service use is a binary variable equal to one if the respondent did use at least one public service provider and equal to zero if they did not use any public service provider. The observed

component of the dependent variable is public, private or pharmacy service use while the probability of becoming a public, private or pharmacy service user is unobserved. The use of 'other' service providers is not analysed separately as these providers are considered too heterogeneous for any meaningful estimation.

As in the earlier specifications in this chapter, provider choice is modelled as a function of individual, household and provider-related characteristics i.e. characteristics of the choice and characteristics of the chooser. Most of these variables were summarised previously in Table 7.1. The independent variables used in this analysis but not used earlier in the chapter are summarised in Table 7.8. All new variables used in this estimation are provider related variables. However, as the survey did not include a question asking respondents which provider they would associate with privacy or with a thorough examination (for example), it was necessary to construct a proxy indicator for these variables. These proxy variables are constructed from the final section of the Introductory Health Survey where respondents are asked which providers they would recommend for a series of illnesses and why. If a provider was recommended for the treatment of any of these illnesses because of a given characteristic, then the expectation of the provider meeting/having that characteristic would equal one for that provider. Otherwise, the expectation of the provider having that characteristic would equal zero.

Given the nature of the data, these constructed variables are likely to underestimate the extent to which a provider is associated with a given characteristic. This effect can be illustrated using a simple example: When asked which provider they would recommend for the treatment of flu, a respondent answers 'a private doctor'. When asked why they would recommend this provider, the respondent answers 'because they will have the necessary drugs'. Although the provider is recommended because they will have the right drugs, this does not necessarily mean that the private doctor is not also associated with high levels of patient privacy. The respondent may simply not consider privacy to be an important factor in provider choice for flu. This downward bias in the 'association factor' of these variables is somewhat mitigated by the spread of diseases for which respondents are asked to recommend a provider. These include suspected flu, TB, HIV, injury and childhood immunisation. Continuing the example then, the respondent in question may not recommend a private provider for flu because of privacy, but privacy may be a more important provider selection criterion for TB and/or HIV. If the respondent recommends a provider for reasons of privacy for any of these diseases, then the privacy variable for that provider (and that respondent) will equal one. These variables do

not vary with time as they are expected characteristics that precede any health seeking during the diary placement period.

2.3.1) PUBLIC SERVICE CHOICE

Physical health, mental health and the expected quality of service providers were all tested for endogeneity in the models of provider choice. Although the expected quality of a public clinic and a public hospital were not found to be endogenous to public service choice, both physical and mental health were found to be endogenous ($p < 0.01$ in both cases). This was corrected using the modified instrumental variable approach described in Chapter 3 and detailed below.

The first step of the instrumental variable approach requires that at least one variable which significantly predicts the endogenous variable in the auxiliary regression, be excluded from the main model i.e. if the number of independent variables in the auxiliary regression equals N, then the number of independent variables in the main regression should equal N-1. The omitted variable must be exogenous to the main model. In the auxiliary regression for physical health, age and mental were the only significant predictors of improved health ($p < 0.05$ and $p < 0.01$ respectively). Omitting mental health from the main regression of public service choice was likely to introduce significant omitted variable bias into the model and would not meet the requirement that the omitted variable be exogenous to the main model. As such, age was selected as the variable for omission.

Table 7.8: Summary of Additional Independent Variables

VARIABLE NAME	DESCRIPTION	VALUES FOR CATEGORICAL VARIABLES	N	MEDIAN	MEAN	STD DEV.	MIN.	MAX.
priv_pharm	Privacy expected from a Pharmacy	priv_pharm=1 if privacy expected, otherwise 0	250	0	0.00	0.06	0	1
priv_pub	Privacy expected from a public provider	priv_pub=1 if privacy expected, otherwise 0	250	0	0.05	0.21	0	1
priv_priv	Privacy expected from a private provider	priv_priv=1 if privacy expected, otherwise 0	250	0	0.03	0.17	0	1
drug_pharm	Expect pharmacy to have the necessary drugs	drug_pharm=1 if drugs expected, otherwise 0	250	0	0.09	0.29	0	1
drug_pub	Expect public provider to have necessary drugs	drug_pub=1 if drugs expected, otherwise 0	250	0	0.45	0.50	0	1
drug_priv	Expect private provider to have necessary drugs	drug_priv=1 if drugs expected, otherwise 0	250	0	0.10	0.31	0	1
equip_pharm	Expect pharmacy to have the necessary equipment	equip_pharm=1 if equipment expected, otherwise 0	250	0	0.00	0.06	0	1
equip_pub	Expect public provider to have necessary equipment	equip_pub=1 if equipment expected, otherwise 0	250	0	0.40	0.49	0	1
equip_priv	Expect private provider to have necessary equipment	equip_priv=1 if equipment expected, otherwise 0	250	0	0.06	0.23	0	1
exam_pharm	Expect pharmacy to give a thorough examination	exam_pharm=1 if exam expected, otherwise 0	250	0	0.01	0.09	0	1
exam_pub	Expect public provider to give a thorough examination	exam_pub=1 if exam expected, otherwise 0	250	0	0.50	0.50	0	1
exam_priv	Expect private provider to give a thorough examination	exam_priv=1 if exam expected, otherwise 0	250	0	0.28	0.45	0	1

In the auxiliary regression for mental health there were a number of significant predictors including whether or not a respondent identified themselves as Black/African (p<0.01), the perceived financial situation of the household (p<0.01) and the physical health of the respondent (p<0.01). Physical health had already been shown to be endogenous to public service choice and as such this could not be a candidate for omission. There was also a reasonable expectation, based on the theory and the earlier findings in the qualitative data analysis, that population group/ethnicity, the expected price of a consultation and the financial situation in the household may all be significant exogenous predictors of public service choice and, as such, their omission would be likely to cause omitted variable bias. At the risk then of introducing omitted variable bias into the equation, the perceived financial situation of the household was omitted as the effects of this bias would be more easily predicted than the effects of omitting the ethnicity/population group variable. For example, one might expect the coefficients of per capita income to be inflated due to the omission of perceived financial situation variable. However, as the following regression results show, omitting the perceived financial situation of the household has little or no impact on the coefficients of any of the independent variables. This suggests that any omitted variable bias introduced is negligible.

The second step of the instrumental approach requires the use of the predicted rather than observed values for the endogenous variable in the main regression equation. The predicted values of the endogenous variable are obtained from the auxiliary regression, which must contain all likely predictors of the endogenous variable and all likely predictors of the dependent variable for the main regression i.e. public provider choice in this case.

The models of public service choice with and without correction for endogeneity are shown in Table 7.9 below. Before correction for endogeneity, ethnicity i.e. whether or not a respondent identifies themselves as Black/African is the only significant predictor of public service choice. Black/African respondents are more likely to select public services. Ethnicity remains a significant predictor of public service choice after correction for endogeneity, albeit with a smaller coefficient.

The quadrature checks reveal that the results of both models are nearly invariant to the number of quadrature points used. This indicates that the results are generally stable and can be interpreted with confidence. Similarly, the Rho statistic in both models suggests that there is significant individual level heterogeneity in the specifications. However, the Wald chi-squared test for both models cannot reject the null hypotheses that the coefficients of the regressors are all zero (i.e. p>0.1). As such we cannot have confidence in the overall statistical significance of either specification, the implications of which are reviewed in the discussion section.

Table 7.9: Random effects probit of public service use

RANDOM EFFECTS PROBIT OF PUBLIC SERVICE CHOICE AMONGST USERS				
	Without Correction for Endogeneity		*With Correction for Endogeneity*	
	b	t	B	t
Age at last birthday	0.00	(0.18)	-	-
Per Capita Household Income	-0.00	(-0.30)	-0.00	(-0.13)
Crowding	0.07	(0.30)	0.06	(0.25)
Covered by medical aid/insurance	-0.73	(-0.96)	-0.71	(-0.93)
Years of Education	0.02	(0.30)	0.00	(0.06)
Black/African	1.68***	(2.61)	1.31**	(2.50)
Financial situation	-0.21	(-0.96)	-	-
Female	0.45	(1.20)	0.46	(1.21)
Physical Summary Measure	-0.01	(-0.66)	-	-
Mental Summary Measure	0.01	(0.89)	-	-
Received Extra-budgetary Funds from Outside the Household	-0.29	(-0.91)	-0.31	(-0.91)
Participates in community savings scheme	0.20	(0.60)	0.27	(0.77)
Receives remittances	0.01	(0.03)	0.16	(0.33)
Expected price of consultation at a public hospital	0.00	(0.80)	0.00	(0.86)
Expected price of consultation at a public clinic	-0.01	(-1.50)	-0.01	(-1.59)
Overall quality expected from a public hospital	-0.03	(-0.25)	-0.07	(-0.54)
Overall quality expected from a public clinic	0.17	(1.36)	0.19	(1.46)
Expected price of consultation at a private doctor	0.01	(1.66)	0.01	(1.60)
Privacy expected from any public service provider	-0.23	(-0.43)	-0.17	(-0.31)
Expect drugs to be available at any public service provider	0.09	(0.28)	0.06	(0.19)
Expect equipment available at any public service provider	-0.30	(-0.89)	-0.41	(-1.26)
Thorough exam expected at any public service provider	-0.09	(-0.25)	-0.22	(-0.65)
Predicted physical health	-	-	0.02	(0.75)
Predicted mental health	-	-	-0.02	(-0.96)
Constant	-2.36	(-1.37)	-2.30	(-1.37)
Test Statistics				
lnsig2u (Constant)	-0.26	(-0.50)	-0.26	(-0.49)
Wald Chi-Squared Test	22.83		22.82	
LR test of rho=0	11.84***		11.90***	
Rho	0.434		0.434	
Sigma_u	0.876		0.876	
Log likelihood	-142.28		-142.56	
No. of cases	259		259	
No. of Groups	107		107	
* p<0.10, ** p<0.05, *** p<0.01				

*Significance: * p<0.10, ** p<0.05, *** p<0.01*

2.3.2)   PRIVATE SERVICE CHOICE

As before, health status and service quality were tested for endogeneity in the model of private provider choice. The expected quality of a private hospital, clinic or doctor was not found to be endogenous to the main model i.e. the estimation of private provider choice. Similarly, physical health was not endogenous to private provider choice although mental health was and as such, the necessary corrections were required.

In the auxiliary regression for mental health, the following significant predictors of mental health were identified:

- Ethnicity (whether or not a respondent identified themselves as Black/African ($p<0.05$))
- The perceived financial situation of the household ($p<0.05$)
- Physical Health ($p<0.01$)
- Participation in a community savings scheme ($p<0.10$)
- The expected quality of a private hospital ($p<0.05$)
- The expected quality of a private clinic ($p<0.01$)
- The expected quality of a private doctor ($p<0.01$)

For consistency and to reduce the impact of potential omitted variable bias, the perceived financial situation of the household was again selected for omission from the main model when correcting for the endogeneity of mental health. As for the model of public service use, the predicted value of mental health replaced the observed values of mental health in the main regression i.e. the model of private service choice. As before, this predicted measure of mental health is derived from auxiliary regression equation.

The estimations of private service choice with and without correction for endogeneity are presented in Table 7.10. Before correcting for endogeneity, per capita monthly household income, ethnicity, physical and mental health, participation in a community savings scheme, the receipt of remittances and the overall quality expected from a private doctor are all significant predictors of private service use. After correction for endogeneity however, only the following variables significantly predict the likelihood of using a private provider;

- Higher levels of per capita household income predict a higher likelihood of private service use (although the coefficients for this variable are approximately zero)
- Participation in a community savings scheme increases the predicted likelihood of private service use
- The receipt of remittance increases the predicted likelihood of private service use

- The higher the expected quality of a doctor (overall) the higher the predicted likelihood of private service use

Table 7.10: Random effects probit of private service use

RANDOM EFFECTS PROBIT OF PRIVATE SERVICE CHOICE AMONGST USERS				
	Without correction for endogeneity		With correction for endogeneity	
	b	t	b	t
Age at last birthday	-0.01	(-0.57)	-0.00	(-0.19)
Per Capita Household Income	0.00**	(2.08)	0.00**	(2.32)
Crowding	-0.26	(-1.15)	-0.24	(-1.12)
Covered by medical aid/insurance	0.34	(0.63)	0.16	(0.29)
Years of Education	0.02	(0.27)	0.02	(0.29)
Black/African	1.33*	(1.88)	0.66	(1.14)
Financial situation	-0.21	(-1.00)		
Female	-0.46	(-1.26)	-0.32	(-0.93)
Physical Summary Measure	-0.03**	(-2.54)	0.00	(0.09)
Mental Summary Measure	-0.03***	(-2.80)		
Received Extra-budgetary Funds from Outside the Household	0.19	(0.60)	0.25	(0.79)
Participates in community savings scheme	0.72*	(2.00)	0.89*	(2.10)
Receives remittances	0.72*	(1.82)	0.73*	(1.95)
Expected price of consultation at a private hospital	0.00	(0.81)	0.00	(0.75)
Expected price of consultation at a private clinic	-0.00	(-0.35)	-0.00	(-0.28)
Expected price of consultation at a private doctor	0.00	(0.30)	0.00	(0.26)
Overall quality expected from a private doctor	0.54*	(1.92)	0.74*	(1.81)
Overall quality expected from a private hospital	-0.50	(-1.33)	-0.20	(-0.47)
Overall quality expected from a private clinic	0.29	(0.71)	-0.09	(-0.19)
Overall quality expected from a public clinic	-0.16	(-1.41)	-0.19	(-1.51)
Privacy expected from any private service provider	-8.16	(-0.00)	-7.65	(-0.00)
Expect drugs to be available at any private service provider	0.29	(0.53)	0.32	(0.60)
Expect equipment available at any private service provider	-6.78	(-0.00)	-6.91	(-0.00)
Thorough exam expected at any private service provider	0.15	(0.42)	-0.00	(-0.00)
Predicted mental health			-0.09	(-1.33)
Constant	0.02	(0.01)	0.30	(0.16)
Test statistics				
lnsig2u (Constant)	-0.81	(-1.24)	-0.95	(-1.34)
Wald Chi-Squared Test	37.33**		37.16**	
LR test of rho=0	5.43**		4.25**	
Rho	0.31		0.28	
Sigma_u	0.67		0.62	
Log likelihood	-120.99		-125.27	
No. of cases	288		288	
No of groups	121		121	

*Significance: * p<0.10, ** p<0.05, *** p<0.01*

The Wald chi-squared test for both models indicates that they are significant overall. The LR test of rho also indicates that there is significant individual level heterogeneity in the model. The quadrature checks indicate that both models are largely invariant to the quadrature of

the adaptive Gauss-Hermite procedure used to fit both models. As such, the model is generally stable and can be interpreted with confidence. However, some caution should be shown when interpreting the coefficients of the level of privacy expected from a private provider and whether or not a provider is expected to have the correct equipment as these two variables are sensitive to the quadrature, despite attempts to increase the number of integration points from the default of twelve, to twenty.

2.3.3) PHARMACY SERVICE CHOICE

Neither health status nor expected service quality were found to be endogenous to the model of pharmacy choice amongst users and no correction was thus needed. However, the only significant predictor of pharmacy choice is the respondent's age. Younger members of the sample population have a higher predicted likelihood of using pharmacy services.

Table 7.11: Random effects probit of pharmacy use

RANDOM EFFECTS PROBIT OF PHARMACY CHOICE AMONGST USERS		
	b	t
Age at last birthday	-0.04**	(-2.79)
Per Capita Household Income	-0.00	(-0.66)
Crowding	-0.08	(-0.33)
Covered by medical aid/insurance	0.53	(0.92)
Years of Education	-0.08	(-1.10)
Black/African	-0.77	(-1.19)
Financial situation	-0.10	(-0.45)
Female	-0.03	(-0.07)
Physical Summary Measure	0.00	(0.31)
Mental Summary Measure	0.01	(0.93)
Received Extra-budgetary Funds from Outside the Household	0.08	(0.22)
Participates in community savings scheme	-0.21	(-0.61)
Receives remittances	0.66	(1.49)
Expected price of consultation at a pharmacy	0.00	(0.94)
Overall quality expected from a pharmacy	0.17	(0.75)
Expected price of consultation at a private doctor	0.00	(0.75)
Overall quality expected from a public clinic	-0.06	(-0.55)
Expect drugs to be available at a pharmacy	0.50	(0.92)
Constant	1.02	(0.59)
Test Statistics		
lnsig2u (Constant)	-0.06	(-0.12)
Wald Chi-Squared Test	22.22	
LR test of rho=0	15.46***	
Rho	0.49	
Sigma_u	0.97	
Log likelihood	-145.98	
No. of cases	287	
No. of groups	120	

Significance: *$p<0.10$, **$p<0.05$, ***$p<0.01$

As with the predicted choice of public providers, a problem is once again presented by the overall insignificance of the estimation. This is despite the fact that the LR test of rho indicates significant individual level variation within the model and the quadrature check indicates that the model is stable and can be interpreted with confidence. The implications of this are discussed in the next section.

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3) DISCUSSION

3.1 KEY FINDINGS

3.1.1) HEALTH SERVICE USE (VERSUS NON-USE)

The findings of this chapter are consistent with the findings from earlier chapters. In the analyses presented above, use (versus non-use) is predicted by gender, crowding, mental and physical health, the receipt of extra-budgetary funds from outside the household and the expected price of a consultation with a private provider. Although the findings with respect to gender and perceived health are unsurprising, a number of discussion points stem from the role of the crowding variable, the receipt of extra-budgetary funds and the expected price of consultation with a private provider.

The crowding variable is a ratio of the number of people per room in a household and, all else constant, a higher ratio reduces the likelihood of service use. Two primary hypotheses may explain this finding. The first is that more crowded households may have greater competition for resources in the same way that they have greater competition for physical space within the household. These resources may include informational resources among others and earlier chapters have shown how informational resources can be particularly important in guiding and initiating health seeking behaviour. The other household resources for which there may be greater competition are financial resources and this leads to the second hypothesis i.e. that, in these relatively poor, homogenous communities, household crowding is a more sensitive measure of relative poverty than is household income. There is also some correlation between household crowding and household income ($r=-0.33$, $p<0.05$), although this correlation is not high enough to raise significant concerns about multicollinearity in the model.

If these hypotheses hold true, then poverty does indeed act as a barrier to care in this setting both by limiting access to guidance regarding appropriate health seeking behaviour, and by limiting access to financial and other household resources that may facilitate health seeking.

The receipt of extra-budgetary funds from outside the household positively predicts service use. Earlier analysis of constraints to health seeking and possible coping mechanisms suggested that individuals were not constrained by the financial resources of the household and that the costs of health seeking commonly exceeded household resources in this sample. This raised some discussion of possible coping strategies and evidence from the group discussions suggested that accessing extra-household resources may be one such strategy. The findings in this chapter thus reinforce the role of that strategy in facilitating health seeking behaviour and overcoming financial constraints to health seeking however, an additional dimension is added i.e. that the possible access to extra-budgetary funds is considered before health seeking takes place. As such, this is not simply a *post hoc* coping strategy once household budgets have been exhausted, but an antecedent of health seeking behaviour.

Finally, the expected price of a private provider negatively predicts health seeking from any service provider. This suggests that if an individual believes they cannot afford to see a private doctor, they would prefer not to see any provider at all. This again reinforces earlier findings that respondents are prepared to pay for private services or for transport to reach public services outside of their immediate residential area. The primary reasons for this behaviour proffered in earlier chapters included poor perceptions of the quality of local public services and the desire for privacy when care seeking for particular diseases (such as TB). These findings are not borne out in the empirical analysis presented above, however this may be due to the manner in which these variables are measured in the quantitative dataset. As mentioned earlier in this chapter, only a very general measure of quality was collected in the survey. All other dimensions of quality raised in the group discussion, such as the expected thoroughness of the exam or the availability of drugs, were not collected directly and had to be measured with a proxy variable for the purposes of the analysis above. The same is true for the variable measuring the expected privacy at a particular provider. Measurement error in the independent variables biases the coefficient towards the null hypothesis of no effect. The proxy variables used in this analysis will thus tend to underestimate the extent to which a provider is associated with a characteristic. This may explain why these characteristics are not significant determinants of use overall.

3.1.2)   THE NUMBER OF VISITS TO ANY PROVIDER

In the count model not corrected for zero inflation, the predictors of the number of visits to any service provider are the same as those for use versus non-use discussed above. Only crowding is a significant predictor of use but not of the number of visits to any provider. These findings are likely to be biased by the zero inflation.

By comparison, in the model corrected for zero inflation, the number of visits to any provider is predicted by per capita household income, crowding, medical aid/insurance, the perceived financial situation of the household, mental health, the receipt of extra-budgetary funds, the expected price of a private clinic and doctor, and the expected quality of a private clinic and pharmacy. Physical health is a significant predictor of zero inflation but not of the number of visits to any provider.

Crowding and the receipt of extra-budgetary funds are likely to affect the number of visits to any provider through mechanisms similar to those described above. These two variables will not be discussed further here, nor will the expected price of a private clinic which is likely to impact the number of visits through the same mechanism as the expected price of a private doctor. However, the other findings warrant some discussion.

Per capita household income positively predicts the number of visits to any provider although the coefficient for this variable is approximately zero. This suggests that while income is not a predictor of use versus non use as an absolute entity, higher levels of income can enable more extended health seeking or higher quantities of consumption.

Interestingly, coverage by medical aid or insurance has a negative predictive effect on the number of visits to any provider. Patients covered by medical aid would not have to pay user fees to private providers as these fees are generally met in full by the third party payer or insurer. As such, these individuals may be more likely to use private services based on earlier qualitative evidence that private providers are generally preferred to public providers and quantitative evidence that private providers receive significantly higher ratings of overall perceived quality. While a higher rating of perceived quality may not necessarily be indicative of higher levels of technical quality at private providers, the finding that medical aid coverage reduces the number of visits to any provider raises the possibility that private providers do in fact offer better technical quality, which reduces the number of return visits to a provider required before a cure is realised.

According to the analysis in this chapter, households that perceive themselves to be in a poorer financial situation are likely to have higher numbers of visits to any provider. A number of factors may be driving this relationship, the most obvious being pessimism, greater health need of poorer households not captured by the SF8 index, the purchase of low cost/low quality services or delays in treatment seeking that exacerbate illness.

- Pessimism relates to the possibility that individuals who rate the financial situation of their household poorly may also take a pessimistic view of their health and as such, may be more likely to seek care. This is supported by the concurrent finding that poor mental health is also a significant predictor of higher numbers of visits to any provider although physical health is not.

- The link between poverty and health need has been widely expounded in the literature (see for example Holtgrave and Crosby, 2003; and Zere and McIntyre, 2003)). In this dataset, perceived physical and mental health are considered to be proxy variables for perceived health need and household income is positively correlated with both physical health (37%) and mental health (41%). The perceived financial situation of a household also has a 63% correlation with monthly household income ($p<0.05$). However, that correlation is not consistent or significant for all income quartiles. There is no significant correlation between the perceived financial situation and household income in the poorest quartile and although there is a significant correlation between household income and the perceived financial situation of the household in the wealthiest quartile, that correlation is lower than the mean at 36% ($P<0.05$) As such, while the poorer financial situation of a household may exacerbate health need and thus increase the number of visits to a service provider over any given period, the perceived financial situation of the household should not be read as a direct proxy for relative financial poverty. That said, physical health is not a significant predictor of the number of visits to any provider although it is a predictor of zero inflation. Although the regression analysis attempted to control for health need by including the SF8 summary scales as independent variables, the SF8 may not capture all dimensions of health need.

- Poorer households may only be able to afford lower cost services. If low cost providers are also providers of low technical quality then numerous follow up visits to a provider may be necessary before a cure can be realised. As this dataset only contains an *ex ante* expectation of overall perceived provider quality rather than an *ex post* evaluation of technical provider quality, we do not have the means with which to test this hypothesis. Even if some attempt were made to collect respondent perceptions of technical quality, it should be noted that technical quality can be difficult for patients to measure.

- Members of poorer households may feel forced by economic hardship to delay health seeking with its associated costs until illnesses are more severe. More severe illnesses may be more resistant to treatment or may create a sense of urgency that drives multiple care seeking if a cure is not promptly realised. This may drive up the number of visits to a provider. The correlation between the financial position of the household and the severity of the illness as captured by either mental or physical health has already been mentioned however, this correlation alone does not serve as unequivocal proof of this hypothesis.

Analyses in earlier chapters suggested that, while the lack of objective evidence of ill health (usually physical evidence) might delay the initiation of treatment seeking, once health seeking had commenced, subsequent iterations of health seeking faced lower constraints than did the initial consultation. Particularly, subsequent iterations may have required less reinforcement from external sources once suspected ill health had been 'validated' at the outset. This argument is corroborated by the findings in this chapter, that physical health is a predictor of zero inflation but not of the number of visits to any provider i.e. once health seeking is initiated, poor mental health is the only significant predictor of additional visits.

The expected quality of a private clinic and pharmacy have opposite signs in the findings presented in this chapter. While the expected quality of a private clinic negatively predicts the number of visits to any provider, the expected quality of a pharmacy positively predicts the number of visits to any provider. Although the reason for this difference is not entirely clear, it may be attributable to the difference in the services and a possible link with technical quality. For instance, if the overall quality expected from a private clinic increases the likelihood of visiting that provider, and that provider offers a high level of technical quality, then subsequent visits to that or any other provider may not be necessary. Similarly, as treatment from a pharmacist relies largely on self diagnosis or on diagnosis by a pharmacist without recourse to diagnostic tests, this consultation may offer lower levels of technical quality and as such, require further visits before a cure can be realised. The evidence regarding provider choice is examined further in the next section.

3.1.3) PROVIDER CHOICE

The analysis of service choice revealed that different variables predicted the use of different services. The findings regarding the choice of provider present a more complex picture than those for service use (versus non-use) or the number of visits to any provider. The primary concern is that the models of public service choice and pharmacy use are not significant

overall. Although this characterisation of provider choice is informed by the discussion of choice set formation in Chapter 5, this finding suggests that the variation in the sample, or in the users of these services as represented by this sample, is insufficient for a modelling exercise of this nature and may indicate that in fact this is not an appropriate characterisation of the provider choice problem in a multiple use dataset. This is supported by the fact that, in each of these specifications, only one significant predictor of provider choice was found. Only ethnicity/population group predicts public service use with Black/African respondents more likely to use public services than their Coloured counterparts. By comparison, pharmacy use was predicted only by age, with younger respondents more likely to choose pharmacy services.

Although the findings for public and pharmacy choice were not significant overall, the findings for private service choice were significant. Generally the predictors of private service use are financial or quality related. Financial predictors increasing the likelihood of private service choice include capita income, participation in a community savings scheme and the receipt of remittances. Similarly, the higher the expected quality of a private doctor overall, the higher the predicted likelihood of private service usage. These findings are unsurprising and support the findings from earlier chapters. They suggest that price is a potential barrier to care in the private sector and that individuals make a conscious cost-quality trade-off when electing to use private providers. The findings also suggest that private health care is a normal good as demand increases with income.

3.2 THE ROLE OF HEALTH STATUS IN PREDICTING USE, QUANTITY DEMANDED AND PROVIDER CHOICE.

The analyses presented above clearly illustrate the different roles of mental and physical health in predicting health seeking behaviour. For instance, although both physical and mental health are both significant predictors of service use versus non-use, the coefficient for the physical health variable is more than three times the size of that for the mental health variable. When modelling the number of visits to any provider, physical health was a predictor of zero inflation but not of the number of predicted visits to a provider. Mental health by comparison did not account for zero inflation but did account for the number of visits to a provider. As such it appears that physical health plays the more significant role in initiating health seeking behaviour while mental health plays the more important role in shaping that behaviour, and particularly the quantity consumed once treatment seeking is initiated. That said, neither physical nor mental health were significant predictors of service choice once the choice models had been corrected for the endogeneity of perceived health.

255

The significance of these health status variables in the regressions of service use detailed in Chapter 5 suggests that their omission would result in omitted variable bias. The likely result of this bias is uncertain but may result in inflated coefficients for other variables that positively predict use or the number of visits to a provider. For instance, if one population group under study is more prone to poor mental or physical health then the coefficient for that population group variable might be biased upwards. More concerning however, is how this bias might affect the analysis of socio-economic status and health seeking behaviour. We have already reported how monthly household income is correlated with mental and physical health, and that the perceived financial situation of the household is correlated with household income. Poorer households by either measure have poorer perceived health. By omitting a measure of health, the coefficients for these measures of poverty are likely to be biased upwards as they capture not only the effects financial status but also the effects of health status. Although we have not tried to estimate the price or income elasticity of demand in this study, it is clear that any bias in the coefficient of household income or expenditure is likely to bias the findings regarding demand elasticity, potentially resulting in falsely inflated measures of income elasticity of demand in particular.

Although the omitted variable bias caused by the omission of a health status variable has been overcome in this chapter, the inclusion of a mental and physical health variable introduced endogeneity into the models of provider choice presented above i.e. health status was not independent of provider choice and may even have been be correlated with unobservable variables in the error term. This form of endogeneity will not necessarily affect the consistency of the coefficients in the model but will increase the standard errors, thus increasing the chance of a type II error i.e. accepting a null hypothesis that is in fact false. This was borne out in the findings where the uncorrected models had more significant predictors of service choice than did those corrected for endogeneity. Correcting for this endogeneity however, may have introduced additional concerns regarding omitted variable bias. For instance, where physical health was endogenous, age was omitted from the main regression and where mental health was endogenous, the perceived financial situation in the household was omitted from the main model. However, any concerns regarding possible bias may be allayed by the fact that the coefficients of the main model corrected for endogeneity did not differ significantly from those in the model before the correction. One would expect the coefficients to change in the presence of omitted variable bias as the remaining (correlated) variables 'pick up' the effect of the omitted variable. In fact, the only significant change between the corrected and uncorrected specifications is in the size of the standard errors, which is a direct result of the correction for endogeneity.

3.3 CONTEXTUALISING THESE FINDING WITHIN THE APPLIED LITERATURE

3.3.1) THE DEMAND FOR HEALTH IN SOUTH AFRICA

Only one other study has attempted to empirically estimate the demand for health services in South Africa. Havemann and van der Berg constructed a multinomial logit using data from the 1993 Living Standards Measurement Survey (Havemann and van der Berg, 2003). The 1993 LSMS data is arguably the most complete dataset for the specification of demand for South African health services at the national level. The sample base is substantial and the questionnaire collects some information on pricing, travel time and provider quality. However, it is very dated in the South African context where significant restructuring of the health sector has taken place since Parliament passed a White Paper on Health in 1994 that aimed to reallocate significant portions of funding from tertiary to primary care, improve staffing in the public sector and improve the equity of health service distribution among other aims (National Government of South Africa, 1997).

The Haveman and van der Berg study cited above uses cross sectional data and the analysis concerns only the last (i.e. most recent) visit to a health service provider. The authors reduce the number of treatment categories i.e. the categories of the dependent variable, to four including; self treatment, primary care, private care and hospital care. By their definitions, the category 'primary care' in fact refers to primary public care in their analysis while private care refers to primary or tertiary private care. The independent variables were divided into three categories; respondent characteristics, factors related to care and the nature of the illness. Respondent characteristics included household income, race (or population group), location (province, metropolitan, former homeland) and whether or not the household had any insurance (as a proxy for medical aid cover). Factors related to care included time to get to the provider, price of the consultation (grouped into five categories) and the time to get treatment. Nature of the illness included duration and type (i.e. serious, flu or tuberculosis). The study found that private care was a normal good and public primary care was an inferior good. These findings were used to advocate for mechanisms to make the private sector more affordable, thereby increasing usage of the sector and (in theory) reducing the burden on the public sector.

In the Haveman and van der Berg study age, gender and the cost of medicine were not found to be statistically significant (Havemann and van der Berg, 2003). This is not entirely consistent with the findings from this study i.e. that gender is a significant predictor of service use (versus non use) and that age is a significant predictor of pharmacy choice amongst users of any service. The dataset for this study does not contain information on the expected cost of medicine however, the expected price of a consultation with a private provider is a significant

predictor of the use of any service, the number of visits to any provider and the choice of a private provider among service users.

As previously mentioned, the Haveman and van der Berg analysis did use some indicators of illness type and severity but did not use a detailed measure of health status *per se*. As such, the probability of becoming sick is omitted from their analysis. The findings presented in this chapter suggest that this may be a material oversight as household income may have a more significant impact on the likelihood of becoming ill than it does on the use of services when ill. As such, their conclusions regarding the impact of household income on pricing, which drive their conclusions regarding the type of good each provider constitutes, may in fact be biased.

Of the illness-type variables used in the Haveman and van der Berg analysis, only flu and TB were found to influence provider choice, with TB sufferers more likely to choose state hospitals above other types of care (Havemann and van der Berg, 2003). In 1993, the notion of the 'day hospital' for outpatient primary (and minor tertiary) care was in its infancy which may explain this finding. However, this behaviour was not corroborated by the focus group findings presented in Chapter 5 of this study, where patients claimed to visit clinics or day hospitals first, turning only to hospitals such as Groote Schuur if they failed to receive effective treatment at the primary provider. Unfortunately the quantitative data collected in this study and analysed in this chapter does not include information on disease type and as such, we can draw no empirical conclusions regarding the impact of illness type of service use or choice in this chapter.

3.3.2) THE DEMAND FOR HEALTH IN OTHER DEVELOPING COUNTRY SETTINGS

A number of other studies have attempted to empirically estimate the demand for health care in developing country settings. A complete review of these studies is presented in Chapter 2, while the studies cited in this section constitute only the more recent empirical analysis of demand in developing country settings. Although different functional forms, and indeed different choice sets, limit direct comparisons between these studies and the findings presented in this chapter, some attempt is made here to position the findings in this chapter alongside common findings in other settings.

A number of studies identified quality of services as a determinant/predictor of service use or selection. In Tanzania, Leonard et al. found that patients sought care from facilities offering high quality consultations, prescriptions and staff, with better stocks of basic supplies. They also found that the importance of each of these elements of quality differed by illness and that patients appeared to understand the relative importance of each aspect for a suspected illness (Leonard et al., 2002). Also in Tanzania, Sahn et al. found that the quality of services as

measured by the quality and availability of staff, drugs and the general clinic environment had significant effects on the demand for services (Sahn et al., 2003). A study set in Bamako, Mali, extends this analysis by segmenting quality into structural, process, and outcome components. Structural components include the availability of drugs, staff, equipment etc, while process and outcomes variables capture the processes followed by practitioners to effect a cure, and the treatment outcome. The author concludes that omitting the process aspects of quality from the demand model will bias the estimated coefficients for the price of services and for some of the structural quality variables (Mariko, 2003). In Nigeria, Akin et al. found that three significant aspects of exogenous provider quality collected from a provider survey including per capita health expenditure (by service providers), drug availability and the interviewers' assessment of the physical condition of the facility predicted provider choice(Akin et al., 1995). Conversely, Hodgkin's study of newborn delivery in rural Kenya found that the distance to a facility and whether or not a household member has insurance were important predictors of the use of formal care. This author argued that improvements in quality at existing facilities where unlikely to impact the use of those services (Hodgkin, 1996). The models presented in this chapter include both a general quality variable and variables that attempt to capture the structural aspects of quality such as drug availability, equipment etc. As such, these findings are unlikely to suffer from omitted variable bias that may impact on the price coefficient for services. However, the role of quality was not significant in all of the findings presented. Quality was only a predictor of private provider choice and of the predicted number of visits to any provider. This may be partly attributable to the limitations of the structural quality variables and this is discussed further in the next section.

A number of demographic attributes were also found to influence the demand for services. In their study of the use of postnatal care service in Bangladesh, Chakraborty et al. conclude that the mother's age at marriage and the husband's occupation both had a significant and positive impact on care use (Chakraborty et al., 2002). In Bolivia, Li found that education was an important determinant of the demand for care and that certain ethnic groups were more likely to self treat than seek formal care (Li, 1996). In this chapter, female respondents were more likely to use any health service, Black/African respondents were more likely to use public services than their Coloured counterparts and age was a significant, negative predictor of pharmacy use.

Findings regarding the impact of price on demand for care vary. Mariko concludes that price only has a minor effect on service use in Bamako, Mali (Mariko, 2003). Similarly, Chawla and Ellis conclude that an increase in formal user charges had an insignificant effect on service use in Niger. although they attribute this to greater positive effect of simultaneous improvements in quality that dominate any reduction in use caused by the introduction of

fees (Chawla and Ellis, 2000). Mocan et al. also found that the price elasticity of demand for medical care in China was low, although they conclude that elasticity is higher for poorer households (Mocan et al., 2004). In urban Bolivia, Li concluded that the demand for medical care was responsive to price changes but that price elasticities were generally very low. As with Mocan et al., price elasticity of demand was found to be higher for poorer households (Li, 1996). In Egypt, Nandakumar found that a significant proportion of the poor opted to use fee for service private providers despite government provision of service free at the point of use. Conversely, in rural Tanzania, Sahn et al. find that the own price elasticities of demand for all service are high, although they conclude that overall demand for care would be less elastic due to high levels of substitution between public and private serviced (Sahn et al., 2003).

Although the price elasticity of demand cannot be formally calculated using the data from this study, the findings in this chapter suggest that demand may be price-sensitive as the expected price of a private doctor is a significant negative predictor of the use of any service, while the expected price of a consultation at a private doctor and/or clinic is a significant negative predictor of the number of visits to any provider. That said, households that receive remittances or participate in community savings schemes are more likely to use private services and this may explain how households with little or no regular income are able to afford private fees. The fact that the higher expected price of a private doctor is not a significant positive predictor of public service use suggests that these services are not substitutes. Instead these services appear to be compliments as the demand for both goes down when the expected price of private care goes up.

3.4 SHORTCOMINGS OF THIS ANALYSIS

This analysis has attempted to move forward the methods of demand specification by more explicitly representing the latent, unobserved demand function that underlies observed use. However, the potential for these efforts to significantly impact the findings and applicability of empirical demand models is limited by the methods available for this specification. For example, the analysis of provider choice presented here does explicitly allow for patients to be users of both public and private services. This is more conceptually appropriate to the study data than conventional models that analyse only the last visit to a provider or a single visit to a provider thus ignoring the iterative nature of health seeking. However, while the analysis in this chapter allows respondents to use more than one provider, we are unable to explicitly model the interaction between these visits including the ordering, time between visits or how the outcome of one visit may affect the likelihood and nature of the next visit.

Similarly, although this analysis can incorporate changes in health for different individuals over multiple health time periods an additional dimension of the analysis is missing. Findings in earlier chapters suggest that these changes in health need to be placed in the context of a particular suspected illness as, for example, a change in health due to suspected TB might impact an individual's preferences differently from a change in health due to injury. The differences in these changes in preference may in turn significantly impact health seeking behaviour as measured by these empirical models. Unfortunately the primary quantitative data collected for the purposes of this study did not collected information on the nature of the suspected illness or symptom attribution and as such, this hypothesis cannot be tested empirically. This hypothesis is however, informed by the qualitative data analysed in earlier chapters of this thesis. It is recommended that future quantitative studies of this kind attempt to collect data on suspected illness or symptom attribution, although this data may only be analysed descriptively due to the limitations of existing empirical methods.

As mentioned in the previous section, the structural elements of quality such as drug availability were captured by proxy variables constructed after the completion of data collection. The variable for privacy was constructed in the same way. As such, these measures may lack the variation one might expect to see if the data had been collected expressly for this purpose. It is this lack of variability that may place a downward bias on these coefficients and increases the likelihood excluding a variable that is in fact significant. Failure to include the variables at all however, may have resulted in more serious omitted variable bias as discussed in earlier sections of this chapter. Future studies of this type should consider collecting quantitative data on general provider-attribute association, as well as the disease specific attribution collected in this study and used informatively in the descriptive analyses presented in earlier chapters.

Other variables that future studies should consider collecting include quantitative data on *ex ante* expectations of waiting times and staff attitudes which would be more likely to accurately predict health seeking behaviour than would the *ex ante* data on waiting times and staff attitudes collected in this study. In this study, these predictors of health seeking behaviour have only been analysed with the use of qualitative data and these variables could not be included in the empirical models presented in this chapter.

Finally, although not strictly a shortcoming of this study, it is important to note that the models presented in this chapter require a dataset collected expressly for the purpose of this specification. Many of the variables used in the analysis are unlikely to be contained in larger, readily available datasets from routinely conducted surveys such as the DHS. This limits

the extent to which analysis of this kind can be conducted without significant funding for primary data collection. In addition, the breadth of the findings from the earlier chapters that drew on both primary qualitative and quantitative data cannot be fully replicated with the empirical models presented here. As such, the collection of detailed quantitative data and the specification of complex empirical models is unlikely to substitute for complementary qualitative and quantitative data collection that enables the triangulation and expansion of empirical findings.

CHAPTER EIGHT:

DISCUSSION

1) INTRODUCTION

This thesis aimed to make a contribution both to the economic theory of demand for health and the empirical application of that theory. The discussion in Chapter 2 acknowledged that there will always be a tension between the need to construct a conceptual or empirical model of behaviour that accurately reflects reality in all its complex fluidity, and the need to construct one that is tractable, measurable, quantifiable and relatively easily applied. This chapter will consider the extent to which this study has achieved its aim of exploring that tension and improving our understanding of demand and its determinants in the developing country context. A review of the contributions to theory will be followed by a broad overview of the findings, relating those findings to the stated objectives of the study. These findings will serve as the foundation for the policy recommendations presented in the next chapter. This chapter ends with a comment on the validity of the findings and the limitations of the study.

2) CONTRIBUTION TO ECONOMIC THEORY

Chapter 1 stated that the primary aim of this study was to understand the determinants of treatment seeking behaviour and examine whether the complex and dynamic determinants of treatment seeking behaviour observed through qualitative and quantitative empirical research could be incorporated into and improve existing demand models. A secondary purpose of the research was to inform debates about how to improve people's effective use of health care (TB) services

Both the introductory chapter and the subsequent literature review in Chapter 2 explained how, according to neoclassical economic theory, price influences the quantity demanded i.e. the higher the price the lower the quantity demanded, individuals are assumed to have full information and to behave according to the axioms of rational behaviour, health needs are only incorporated implicitly insofar as they impact on the formation of the preference set and the social context of health seeking is largely omitted from the framework.

Chapters 4 to 6 of this thesis interrogated discrete facets of neoclassical demand theory using the primary data. This revealed that any attempt to explain the findings using neoclassical theory would result in significant omissions. For instance, in the setting of this study it was

clear that the law of demand did not operate entirely as expected, as discussed in Chapter 6. Furthermore, individuals neither had full information nor did they behave according to the standard axioms of rationality as discussed in Chapters 4 and 5. The assessment of health needs was discussed in detail in Chapter 4 and the impact of need on care seeking was measured in Chapter 7, concluding that not only did perceived need impact demand, but perceived mental and physical need affected demand for different services differently. As such, any theoretical construct of demand should explicitly incorporate an assessment of need. Finally, the social context of health seeking also seems to have a significant effect on the determination of health needs, the formulation of the choice set and even the extent to which price and income act as constraints to health seeking. As such, while it is understood that a model is intended to be an abstraction and a simplification of reality, this level of abstraction and simplification is likely to impact materially on the estimation of demand by any model based on these tenets.

The study also aimed to examine the appropriateness of other theories that may be better suited to the realities of care seeking in complex settings. New Institutional Economics (NIE) and Lancaster's adaptation of Neoclassical Theory were highlighted as potentially useful theoretical frameworks. NIE, and particularly principle agent theory, has already been used in other studies to explain patient/provider interactions and supplier induced demand. That said, it has not yet been used to explain health seeking generally in a setting such as this. This study focussed on the principles of satisficing and bounded rationality offered by NIE and three questions were explored. Firstly, did satisficing (or bounded rationality) appear to take place i.e. did individuals value information collection and processing costs highly and thus aim to 'do well enough' without full information rather than maximising their utility with full information? Secondly, if satisficing did appear to happen, what form did it take? Finally, what would this mean for our understanding of the demand for health services? Chapters 4 and 5 demonstrated that satisficing did indeed take place. Individuals were uncertain even as to the extent of their health need and as such, the demand decision, the formation of the choice set and the weighing up of constraints to health seeking involved a number of heuristics and decision making strategies that would fall well short of hyper-rational utility maximisation with full information. Satisficing frequently involved the dynamic formation of preference sets over a protracted period of health seeking, very often resulting in care seeking from more than one provider for a single illness episode and a greater financial burden of care seeking overall. Individuals clearly acted on less than full information and would even incur significant costs to bypass effective providers i.e. providers with the capacity to treat TB, in order to consult providers who did not have that capacity as discussed in Chapter 5.

A significant criticism of NIE however, is the fact that its theories are largely indeterminate.

Although Lancaster's adaptation of Neoclassical Theory still relies on the premise of objective or hyper-rationality i.e. strict utility maximisation with full information, it has the benefit of being determinate and still potentially offering some advantages over conventional neoclassical theory. Lancaster's theory has not yet been applied to demand in this manner and as such, this investigation was highly exploratory. The data did however, enable an investigation into whether it was more appropriate to define a preference set for demand as a ranked list of providers as per neoclassical theory, or a ranked list of provider characteristics as per Lancaster's theory. Chapter 5 outlines how patients are in fact more likely be able to rank the characteristics of a health care provider given a particular illness context, than to rank providers themselves. By defining the preference set as a list of characteristics rather than providers, patient behaviour also no longer appeared to violate the principles of completeness, transitivity and reflexivity. Unfortunately this study did not formally investigate which characteristics would be strictly attributable to which providers and as such, it is not possible to specify a Lancaster model within the bounds of this data. However, there is sufficient evidence to indicate that this approach has potential outside the domain of willingness to pay, and this is thus highlighted as an area for future work.

3) CONTRIBUTION TO THE EMPIRICAL APPLICATION OF ECONOMIC DEMAND THEORY

The extent to which this study achieves the five objectives laid out in Chapter 1, illustrates the contribution to the empirical application of demand. In short, through the analysis of applied primary data, Chapters 4 to 7 presented a detailed critical examination of the composition and use of economic demand models in the market for health services. In so doing, this thesis has considered how health seekers identify their health need, how they formulate the choice set for health care provision and how their budget constraint acts on the actual consumption of health services. These components were then combined in an attempt to extend the standard empirical demand model and estimate it econometrically using multiple regression analysis. These specifications compared the determinants of use versus non-use, with the determinants of the quantity consumed and the choice of provider amongst users.

Each of the preceding chapters incorporated a detailed discussion of the findings particular to that area of analysis, including discussion of any particular methodological limitations. All findings were contextualised within the general literature review presented in Chapter 2 of this thesis, as well as the applied literature relevant to particular findings or methods of analysis. The aim here is to review briefly each objective to provide an overview of the findings across chapters and to examine the extent to which the primary aim of the thesis has been achieved. To this end, each section will conclude with a brief overview of the variables derived from the

data that were distinct from those typically modelled by economists, identifying those selected for the demand modelling exercise in this study. The discussion of Objective Five in Section 3.1.5 will then consider the success with which these variables were integrated into the model and whether their inclusion, and other changes to the structure of the model, made a significant difference to the final results.

3.1)   MEETING THE STATED OBJECTIVES

3.1.1)   _Objective One: To understand how individuals assess their need for health care and identify the primary factors that impact that perceived need._

Chapter 4 discussed the integration of perceived health need into the demand framework. This discussion spanned the quantitative measurement of health status and perceived need, and the qualitative establishment of need for care and the rationalisation of that need. In addition, the chapter contained a detailed discussion of self rated health as a measure of perceived need, variation in perceived ill health, the socioeconomic inequality of health need and the location of health need within a broader concept of demand.

The measurement of health need was conducted in a number of ways in this thesis. In the quantitative data analysis, health need was assumed on the basis of ill health as measured by relatively low physical and mental health scores. Although respondents themselves provided the data on their own physical and mental health from which these indices were derived, they were never explicitly asked whether or not they considered their ill health to constitute a health 'need'. Instead, the qualitative dataset attempted to collect data on the determination of health need and the point at which ill health (either mental or physical) constitutes a health need, and the point at which that health need generated a concomitant demand for health services in any form. This analysis was greatly facilitated by the use of a multi-attribute measure of perceived ill-health that generated a sensitive, normalised index.

The qualitative data analysis highlighted a number of characteristics of health need in this context. Primarily however, patients distrusted their own interpretation of health need i.e. they themselves were unsure when physical or mental ill health constituted a need as such. As a result, objective signals of ill health that could be validated by other sources or compared across time periods (for example), were more likely to be identified as a health need. This phenomenon was described in detail in Chapter 4 and validated by the quantitative analysis of health service use in Chapter 7, where physical health had a larger effect on the likelihood of health seeking than did mental health – although both mental and physical health were significant predictors of the likelihood of care seeking.

The quantitative analysis identified a number of other factors impacting the perception of need including gender and ethnic differences in perceived ill-health, with women and Black/African respondents reporting significantly greater average ill health. Average physical health also decreased with age, while physical and mental health improved with increases in household income. Regression analysis found that age, household income and crowding were all significant predictors of SAH. The qualitative findings also identified gender differences in perceived health need. Importantly, the qualitative findings highlighted the idea that needs determination is not an exact science for the observer or the study subject. Among group participants, health monitoring was iterative - seeking events, corroboration or objective evidence to validate potential health needs. Even once a need was identified it frequently required justification and/or explanation to ensure that the sufferer was not blamed for the illness and received support in any health seeking efforts. This issue was also identified under Objective Four as discussed in Section 3.1.4..

Finally, analysing the inequality of health need required the use of the quantitative ill health variables and the imposition of the assumption that this ill health did indeed reflect health need. This assumption appeared to be justifiable in light of the qualitative findings, which suggested that there was a strong correlation between ill health and health need although no consistent criteria could be applied to determine when that illness constituted a need. Health inequality in this thesis was calculated using a concentration index. The unstandardised concentration index of physical health for the sample was 0.039 and the standardised concentration index was 0.015. The unstandardised concentration index of mental health for the sample was 0.044 and the standardised concentration index was 0.015. The literature shows how these concentration indices can be used to calculate the lump sum or linear distributions required to obtain health equality by socio-economic group (Koolman and van Doorslaer, 2004). However, as this study is based a sample of two urban communities which constitute the poorest segment of the national population, it makes little sense to suggest redistribution from one less poor group to a more poor group in order attain equality.

The literature review in Chapter 2 and the discussion in Chapter 4 have already identified how some conventional economic demand models have attempted to integrate perceived need through the use of simplistic univariate scales. The literature intended to improve the use of those scales by reducing the impact of cut-point shift and other forms of bias does not address the individual's uncertainty about their health state that is pervasive in these findings. The multi-attribute indicator of need used in the demand model generated by this study is more robust to these levels of individual uncertainty. In addition, while most conventional demand models use static cross-sectional methods that fail to account for treatment seeking behaviour as

an iterative process – driven in part by that individual uncertainty – the use of panel data methods in this study go some way towards addressing this shortcoming and measuring changes in health state over the period of data collection. Whether or not the panel data methods and inclusion of a multi-attribute measure of need made a significant difference to the findings of the model are discussed further in Section 3.1.5.

3.1.2) _Objective Two_: To explore how individuals formulate their choice set when seeking healthcare and which service providers are likely to be included or excluded from the choice set under different conditions.

In this setting, the choice set is highly sensitive to aspects of provider quality, the perceived level of privacy one might expect from a provider, the availability of the provider, the individual's working hypothesis regarding their illness, strategies used to overcome information shortages and demographic factors such as gender and ethnicity (or population group). Asymmetric information or information gaps result in preference sets that are formed dynamically during the health seeking process. The strategies used to fill these information gaps and/or shortcut the decision making process impact materially on the formation of the preference set and unobserved choice set variation may impact materially on any analysis of health service use in this setting.

From the data it appears that, in the sample population, price/quality trade-off is 'framed' within the complex context of health seeking, wherein quality is multi-dimensional. Of all the quality-related criteria, the availability of medication and the correct equipment to conduct diagnostic tests appeared to be the most influential non-price determinants of service use among the focus group respondents. In the quantitative dataset, public clinics were seldom recommended because they would have the necessary drugs and even in the case of flu, only 11% of respondents expected that they would have the necessary drugs.

Despite low expectations of drug availability, public clinics were used by a larger percentage of the quantitative sample population than any other service provider and were the most commonly recommended service provider for all illnesses listed in the survey. However, high levels of 'cross-usage' i.e. usage of both public and private providers were observed in both the quantitative and qualitative datasets and provider choice appeared to differ by TB status. In the groups not affected by TB, public providers were the most common 'first choice' provider but private providers – particularly private chemists – were commonly used to complement the public clinic visit. Amongst TB affected respondents, the cross-usage of public and private health service providers is much more complex and appears to be driven by two key

factors: the need for privacy on the part of the patient and/or failure to diagnose TB on the part of the service provider (public or private).

The cross sector usage for TB diagnosis has critical implications for effective TB treatment. The diagnostic delays resulting from cross sector use appear to be significant, and attempts to refer patients between sectors (and even within sectors) are largely ineffective. The implications of this cross sector usage were more strongly identified by respondents from Khayelitsha/Nyanga than those from Oostenburg/Mitchell's Plain. Respondents from Khayelitsha/Nyanga were more likely to initiate treatment seeking for suspected TB with a private provider, and private providers were more likely to misdiagnose TB than public clinics.

Cross sector usage is closely related to another care seeking phenomenon identified in the study: multiple care seeking i.e. visiting more than one provider for a single illness episode. Chapter 5 presented a detailed discussion of multiple care seeking and its determinants. The critical points worth revisiting are that:
- There are many drivers of multiple care seeking.
- Black/African respondents from Khayelitsha/Nyanga are likely to visit more providers before being put onto TB treatment.
- The primary reasons for this protracted care seeking include;
  o failure to diagnose TB on the part of health care providers, and
  o patients' tendency to visit private providers who are unable to treat TB.

This study identified numerous instances when both public and private providers failed to diagnose TB at the first opportunity. Failure by a public provider either resulted in further treatment seeking at a different public provider or further treatment seeking at a private provider. Similarly, when private providers failed to diagnose TB, patients sought help from different private providers or public providers. Occasionally, failure by a private provider would result in a repeat visit to that same provider.

The role of privacy was interesting in this study with private providers perceived to offer privacy and respondents incurring considerable expense to secure that privacy, particularly when care seeking for TB. This is not the first study to highlight patients' concerns with privacy when health seeking for suspected TB but it is the only study to do so in this setting.

In the model generated by this study, attempts were made to include a range of quality dimensions as predictors of demand. Similarly, ethnicity was used as an explanatory variable in an attempt to incorporate cultural difference in care seeking behaviour. Finally, cross use and multiple care seeking behaviour are explicitly analysed by using alternative formulations of the

dependent variable and running multiple iterations of the model with appropriate specifications. However, with the available data there was no way to incorporate potentially important dimensions of interpersonal quality into the model and privacy was incorporated using only a very simplistic measure of the variable. The merits and relative success of these efforts are considered at greater length in Section 3.1.5.

3.1.3) <u>*Objective Three*</u>*: To investigate price and income constraints to health seeking generally, and health seeking from particular providers, to understand the composition and role of the budget constraint.*

Chapter 6 investigated price and income constraints to care seeking. A number of interesting points emerged including:

1) Unit price versus total cost of care seeking
2) Direct versus indirect costs of care seeking and
3) The impact of catastrophic health expenditure

Each of these is briefly reviewed below.

Individuals appeared to consider direct prices, indirect prices and income when seeking health care. However, although respondents appeared to have a fairly accurate expectation of direct unit prices, they could not accurately estimate the total direct cost. However, even if they could estimate direct costs, the question arose whether they would adjust their consumption accordingly as respondents seemed to feel they had little choice regarding the total quantity of services consumed. Instead of reducing quantity, the more common strategy to reduce direct expenditure was to substitute lower quality services for higher quality services. This was highlighted in the analysis of coping strategies in Chapter 6 where it was also noted that this price quality trade-off was not applied by all respondents and the qualitative data indicated that Black/African respondents were more likely to pay for private health services than their Coloured counterparts.

Direct costs were not the only cost of health seeking, although the focus group respondents were more sensitive to direct than indirect costs, often substituting higher indirect costs to reduce direct costs by even a small amount. Black/African respondents had longer waiting times, which also constituted a higher proportion of total expenditure on health. However, the most significant finding regarding indirect costs is that the waiting times of the patient alone represent a small proportion of total indirect costs as carers and other family members, usually a female family member, also incur significant waiting time and other productivity losses. The

inclusion of 'carer time' in the calculation of indirect costs is likely to highlight significant gender differences in indirect costs of care seeking.

Although the analysis in Chapter 6 of this thesis did not find significant variation in total health expenditure within the sample population, there were significant differences in direct health expenditure as a proportion of household income. On average, Black/African households spent 25% of household income on direct health expenses while Coloured households spent an average of 2% of their household income on direct health costs. Direct health spending was thus catastrophic for these Black/African households, where catastrophic health expenditure is defined as 10% of household income or above (Russell, 2004).

Indirect health expenditure further exacerbated both the negative economic impact of health seeking for Black/Africa respondents and the inequality between Black/African respondents and their Coloured counterparts. Black/African respondents had higher waiting times and, although those waiting times were valued at a lower cost, they constituted a significantly higher proportion of total expenditure on health. This conclusion was reached despite the likely underestimation of indirect costs by current quantitative data collection methods that commonly focus on the waiting times and productivity losses of the patient, and neglect to collect data for the primary carer. Although no significant gender differences in indirect costs were observed in the quantitative dataset, inclusion of 'carer time' in the calculation of indirect costs is likely to create significant gender differences. The qualitative data highlighted the fact that female household members are most likely to take on the role of carer and to compensate for the productivity loss to the household of a sick individual.

Aside from the obvious impact of catastrophic health spending at the household level, there is also reason to believe that catastrophic health spending may impact extended family networks over multiple households. Substantial qualitative evidence is proffered to this extent and in the regression analysis of private service use presented in Chapter 7, the receipt of remittances is a significant predictor of private service use. Consistent with the observation by McIntyre et al. (McIntyre et al., 2006) that the poor quality of public health services can result in the *"forced use of private providers"*, Chapters 5 and 6 presented evidence that patients in the study setting may actually feel they have no choice but to pay more (or to pay something) for a minimum level of quality. Although there is evidence of a price/quality trade off as discussed in Chapter 6, it is important to note that in this quantitative study population, less that 5% of the sample would never consider a private providers suggesting that perceived costs (direct and indirect) seldom result in the elimination of consumption from any one provider. It is more likely that the impact is more subtle, reducing consumption rather than removing it or forcing household to

mobilise extra resources to meet these costs. This further reinforces McIntyre et al.'s concern..

However, while spending on private service providers, privately purchased drugs and transport costs for out of area public and private service providers may be one driver of catastrophic health expenditure, it is by no means the only one. Multiple care seeking both within and between sectors effectively multiplies the cost of health seeking and the consequent burden on household, and extra-household, resources. Evidence from the focus groups presented in Chapter 6 suggests that once a health seeking strategy has commenced, respondents would continue to seek advice or care until an effective treatment was obtained. There were no instances of health seeking ending abruptly because the successive step in the 'consumption chain' was seen to be too expensive. Similarly, respondents did not appear to factor unexpected costs into their treatment seeking strategies at the outset. Instead, the burden of unexpected costs was generally compensated for during or after the health seeking event.

Of course this raises the important question of how this burden is mitigated. Again, the qualitative data findings presented in Chapter 6 identified a number of coping strategies including: intra-household labour substitution, drawing on extra-household resources to increase income and offset productivity losses, manipulating prices by avoiding payment or negotiating reduced payment, and trading off quality for price. The analysis also identified the range of networks that supported these common coping mechanisms and highlighted the concern that stigmatised illnesses (such as TB) may reduce care seekers access to support.

In short then, high direct and indirect costs of health seeking drive catastrophic health expenditure among the poorest population groups and this effect is further exacerbated by multiple care seeking both within and between sectors. Addressing these phenomena is no simple task but a number of strategies may make a positive impact and these are discussed further in the next chapter.

This analysis suggests the inclusion of extra-household resources as a potential predictor of demand in the model generated by this study. Although the receipt of regular inter-household transfers are sometimes included in comparable analyses the receipt of irregular income is seldom included, partly because of the difficulty in collecting such data using cross-sectional household surveys.

3.1.4)   Objective Four: To probe the potential influence of the household, community and broader social setting in the individual assessment of need, the formation of the choice set and the impact of price and income constraints on health seeking.

Due to its multifaceted nature, this objective was addressed as a theme running through Chapters 4 to 7, rather than as a distinct chapter in its own right. As such, the preceding discussion has already touched on the manner in which the broader social context of care seeking can impact the determination of health need, the selection of health service providers and the manner in which price and income act as constraints to health seeking.

In short then, sampled individuals needed validation of health need before that need would translate into concomitant health seeking behaviour. They were more likely to get social validation of health need if the symptoms of illness were physical and thus observable. The flipside to this is that observable physical symptoms were more likely to carry a fear of stigma for illnesses such as TB. This may have strategically impacted the selection of health service providers into the choice set as individuals sought to minimise their exposure to the community by paying private providers or seeking care outside of their local community. Of course this extended health seeking behaviour carried a higher price and again the broader social context of care seeking played a role as individuals in the study setting frequently drew on extra-household resources to fund the substantial direct and indirect costs of care seeking.

Integrating broader community level variables into the demand model posed the greatest challenge of this study. The inclusion of variables such as ethnicity, access to extra-household resources and perceptions of provider privacy all represent an attempt to integrate the social context of treatment seeking behaviour into the formal model. However, as discussed at the conclusion of the next section, the greatest contribution of this analysis has arguably been less in the impact on the specific formulation of the model and more in the interpretation of that model's predictions.

3.1.5)   Objective Five: To develop an econometric model of health seeking behaviour

In Chapter 7 an econometric model of health was constructed that included all of the conventional expected predictors of demand, as well as explicitly incorporating perceived mental and physical health need, some basic dimensions of interpersonal quality, a proxy for the expected privacy of a provider and one of the indicators of social context identified as

important in earlier chapters i.e. access to extra-budgetary funds from another household. A number of different demand models were generated using the same data to enable the explicit analysis of cross-sector use and multiple care seeking and, where possible, these were structured as panel data models to incorporate the dynamic nature of care seeking as a process.

The model indicated that health service use versus non-use was predicted by gender, household crowding, mental and physical health, the receipt of extra-budgetary funds from outside the household and the expected price of a consultation with a private provider.

In so far as household crowding is an indicator of relative poverty then, even in this universally 'poor' population, poverty acted as a barrier to care seeking - perhaps by limiting access to guidance regarding appropriate health seeking behaviour, and by limiting access to financial and other household resources that may facilitate health seeking. Although both physical and mental health were significant predictors of service use, the coefficient for the physical health variable was more than three times the size of that for the mental health variable.

Access to extra-budgetary funds from other households was also a predictor of service use, and in such a way that the potential access to those funds is the pertinent factor rather than the size of funds actually received. This is therefore not simply a *post-hoc* coping strategy once household budgets have been exhausted, but an antecedent of health seeking behaviour.

In the model of the number of visits to any provider, corrected for zero inflation, the number of visits to any provider was predicted by per capita household income, crowding, medical aid/insurance, the perceived financial situation of the household, mental health, the receipt of extra-budgetary funds, the expected price of a private clinic and doctor, and the expected quality of a private clinic and pharmacy. Physical health was a significant predictor of zero inflation but not of the number of visits to any provider. As such, physical health appeared to play the more significant role in initiating health seeking behaviour while mental health played the more important role in shaping that behaviour, and particularly the quantity consumed once treatment seeking was initiated.

The analysis of service choice revealed that different variables predicted the use of different service providers. The findings regarding the choice of provider present a more complex picture than those for service use (versus non-use) or the number of visits to any provider. Although the findings for public and pharmacy choice were not significant overall, the findings for private service choice were significant. Generally the predictors of private service use were financial or quality related. Financial predictors increasing the likelihood of private service choice include capita income, participation in a community savings scheme and the receipt of

remittances. Similarly, the higher the expected quality of a private doctor overall, the higher the predicted likelihood of private service usage

Overall, variables not commonly incorporated into demand models were included with mixed outcomes. The multi-attribute indicators of need were easily incorporated into this form of analysis as was the measure of access to extra-household resources. Both were significant predictors of demand. However, as discussed at length in Chapter 7, the measures of interpersonal quality and perceived provider privacy were too rudimentary to be effective i.e. although they were not significant predictors of demand, we cannot be confident that this lack of significance is accurate and not due to the nature of their construction using proxy data. That said, the multiple iterations of the demand model did provide important insights into cross-use and multiple care seeking behaviour although the benefits of this analysis might have been further enhanced by a larger sample size and longer placement period for the diaries. The use of the panel data methods also delivered more robust predictions and greater confidence in the findings of the models. This level of confidence is perhaps the most significant overall contribution of these innovations. Without a benchmark against which to compare the findings of these models it becomes difficult to make definitive statements regarding significant modelling improvements in a statistical sense. However, we can say that some variables which are not normally included were found to be significant predictors of demand and, while these models remain imperfect and highly simplistic representations of a complex reality, we have enhanced our understanding of that reality. This has been partly accomplished through the process of deconstructing and critically analysing the constituent parts of the model, partly by contributing the data to specify that model and partly in aiding the interpretation of the models' predictions and understanding the limitations of those predictions.

4)   METHODOLOGICAL CONTRIBUTION TO THE ANALYSIS OF DEMAND

Aside from the theoretical and empirical contributions discussed above, the use of the health diary constitutes a methodological contribution worth noting. This is not the first study to utilise the diary method for collecting health expenditure data or even self assessed health. However, it is the first to combine health service use, expenditure and a multi-attribute measure of self rated health into a single health diary. It is also the first to use panel data methods to analyse the data from the diaries. This study further illustrates that health diaries do not require large research budgets and can be effectively used for smaller scale projects.

5.1) INTERNAL VALIDITY

The intention of this study was not to attribute causal relations between variables but to understand the relationships between potential independent, dependant and/or causal variables, for example the determinants of self-assessed health need as presented in Chapter 4, or demand as presented in Chapter 7. As such, internal validity is a lesser but still significant consideration. Particular aspects of this study that may reduce the internal validity of the findings include history, maturation, repeated testing and experimental mortality.

As far as history is concerned, the protracted nature of a panel means that outside events may influence subjects in the course of the study. To ameliorate this effect, specific questions were asked each week about possible outside events such as household shocks. Maturation refers to the possibility that subjects may change permanently or temporarily during the course of data collection. Again, the risk of maturation is higher with a panel study than a cross-sectional study but the questionnaire was expressly designed to reduce the impact of maturation on internal validity. Repeated testing refers to the fact that prior measurement of the dependant variable may affect results obtained from subsequent measurements. In this case it is more likely that the frequency of the measurements may actually increase internal validity over the full course of the study although this effect may not be uniform across subjects or consistent within each subject over time. Finally, experimental mortality refers to the fact that subjects may drop out over the course of the study. This is probably the greatest threat to internal validity in this study as a small number of subjects did leave the sample either permanently or temporarily, and these represented a non-random sample of the study participants. Imputation techniques were used to reduced the impact of this non-random behaviour on the findings of the study.

5.2) EXTERNAL VALIDITY

A fall in the value of the US Dollar as the project was going into field, combined with the expense of testing the health diary method for the first time in this setting, all placed considerable strain on the research budget. As a result, the diary placement period was reduced from 12 to 8 weeks and the sampling process was simplified to reduce the chance for error and to allow the field team to focus on applying the new diary method and retaining individuals recruited to the study. The simplified sampling procedures did not compromise the quality of the data collected but did have an impact on external validity as the data collected was not intended to be representative of the national or even the provincial population, but only of those particular communities under study. As such, the findings may only be strictly generalisable to

these or very similar communities. In the case of the quantitative data this refers to high TB prevalence communities in urban Cape Town.

While these findings are likely to hold in other urban settings in South Africa, it is questionable how applicable these findings might be to the national case or to poor urban communities in other countries. That said, some of the findings may well apply across settings although the reader is asked to apply caution when drawing firm conclusions for other contexts. This concern may apply differentially to the qualitative and quantitative data, however the general point remains that these data were collected to be representative of the communities studied.

6)   LIMITATIONS OF THE STUDY

As discussed above, this study has contributed to the understanding of both the theory of demand and the empirical application of that theory, while also making a methodological contribution through the use of the health diaries.   Through the careful selection and implementation of data collection and analysis methods, every effort has been made to ensure that these results are both reliable and replicable. That said however, the study has a number of weaknesses and limitations which should be noted.

In the first instance, the inductive approach to the critical analysis of existing theory and the highly exploratory approach to extending 'new' theory may limit the perceived usefulness of these findings.   Some readers may argue that the conclusions of the study were open to influenced by investigator bias. In anticipation of this argument, triangulation techniques were adopted to ensure that the findings are as little influenced by the investigator's perspective as possible. Of course this cannot remove every element of possible bias but it can reduce any likely effect.

It is commonly true with quantitative data that a larger sample would improve confidence in any the analysis. In this case it is particularly true as a larger sample would have ensured better stability in the panel data regression models and potentially removed need for imputation. Similarly, the duration of the panel would have benefited from extension as eight weeks was too short a time period to identify a meaningful number of new TB cases, or to follow new TB cases from onset, through diagnosis and treatment – even in these high prevalence communities. In this setting however, TB is not a seasonal disease and data collection was unlikely to be significantly impacted by seasonality in this urban setting where few households rely on subsistence farming and the temperate climate does not result in rainy and dry seasons. Of course the higher incidence of winter colds and flu, as well as the higher risk of paraffin-related

fires and inhalation can pose additional health risks in the winter, but these are unlikely to have affected the findings of the study significantly.

The internal and external validity of the data is discussed in the preceding section, however, aside from the general limitations of the methods, the analysis also identified some very specific limitations of the data. Chapter 7 contains a detailed discussion of the limitations of the econometric demand models generated in this thesis. In this chapter, we briefly highlight two limitations which have relevance for the research priorities highlighted in the next chapter. Firstly, only a very general measure of quality was collected in the survey. All other dimensions of quality raised in the group discussion, such as the expected thoroughness of the exam or the availability of drugs, were not collected directly and had to be measured with a proxy variable for the purposes of the analysis above. The same is true for the variable measuring the expected privacy at a particular provider. These proxy variables will tend to underestimate the extent to which a provider is associated with a characteristics and this may explain why these characteristics are not significant determinants of use overall. Secondly, the models of public service choice and pharmacy use were not significant overall. This may suggest that the variation in the sample, or in the users of these services as represented by this sample, was insufficient for a modelling exercise of this nature, or that this is not the optimal characterisation of the provider choice problem in a multiple use dataset.

CHAPTER NINE:

POLICY RECOMMENDATIONS AND

FUTURE RESEARCH PRIORITIES

1)   INTRODUCTION

The final stated objective of this study is to inform policy decisions around combining TB and HIV services. This chapter will thus draw together the findings from the preceding analyses to motivate appropriate policy recommendations aimed not only at the combination of TB and HIV service explicitly, but also at the effective delivery of TB services and the improvement of general health service delivery in TB endemic urban communities such as those under study.

The policy recommendations proposed in this chapter fall into two broad categories i.e. systems-related and patient-related recommendations, which may aim to improve the patient/system interface for example, or to reduce the negative economic and social impact of health seeking and the concomitant inequalities. Of course, all recommendations are based on the data collected and analysed for this study, all of which is patient-sourced. These recommendations are directed at Cape Town city officials primarily but will also have relevance for national and international policy makers.

Aside from appropriate policy recommendation, this chapter also aims to highlight areas of priority for future research that may further inform policy or improve the usefulness of applied demand research.

2)   POLICY RECOMMENDATIONS

2.1)   THE INEQUALITY OF HEALTH NEED

The measurement of health need has been conducted in a number of ways in this thesis. Analysing the inequality of health need required the use of the quantitative ill health variables and the assumption that this ill health did indeed reflect health need as discussed in Chapters 2 and 4. The unstandardised concentration index of physical health for the sample was 0.039 and the standardised concentration index was 0.015. The unstandardised concentration index of mental health for the sample was 0.044 and the standardised concentration index was 0.015. These indices point to an unequal distribution of health need even within these two relatively poor urban communities. Residents of these areas should therefore not be treated as an

homogenous group when deciding on policy strategies to meet the needs of the poor in urban Cape Town.

2.2)   THE COMPLEX TRADE-OFF BETWEEN QUALITY AND COST

As discussed in Chapter 6, any price/quality trade-off is 'framed' within the complex context of health seeking. Of all the quality-related criteria, the availability of medication and the correct equipment to conduct diagnostic tests appeared to be the most influential non-price determinants of service use among the focus group respondents. In the quantitative dataset, public clinics were seldom recommended because they would have the necessary drugs and even in the case of flu, only 11% of respondents expected that they would have the necessary drugs. The focus group participants also expressed considerable concern about the availability of drugs in public clinics. This concern, as with a number of other quality-related concerns, appeared to be more adamantly expressed by participants from Khayelitsha/Nyanga. The available data are unable to clarify definitively whether this perceived variation is geographic or ethnic but, in the case of staff attitudes at least, respondents attributed the 'poorer' treatment to their ethnicity rather than their locality.

These reported drug shortages and the differential perceptions of quality between areas and ethnic groups needs to be addressed as it is one of the drivers of multiple care seeking and higher treatment costs, as well as one of the drivers of observed inequality in this dataset. Records of drug availability are unlikely to be sufficient if healthcare workers are withholding drugs from certain patients or selling drugs out of the 'back door'. Spot checks or a very simple 'mystery patient' strategy might be more effective as an auditing system with a monitor tasked to pose as a patient needing treatment (Conteh and Hanson, 2003).

2.3)   THE ROLE OF PRIVACY IN HIGH TB/HIV CO-PREVALENT COMMUNITIES

Throughout this dissertation, privacy is discussed in some detail as a determinant of provider choice. In these densely populated settlements, patients are easily seen walking to and from clinics and are frequently known by the health care workers in clinics. All of this conspires to reduce any sense of patient privacy when seeking care for TB or other diseases which may carry social stigma. Strategies to improve patient privacy might include:

- Enabling patients to access public services outside of their residential area.
- Limiting the extent to which TB services are offered separately from other services.
- Switching to some form of community DOTS to reduce the number of times patients need to be seen walking to and from clinics.

- Rotating staff between clinics to ensure that they do not become so familiar with an area or a community that they are able to personally identify patients and their families[*].

Combining HIV services with TB services in a vertical clinic that is separate from other health services is likely to add to the privacy concerns of patients seeking treatment for TB.

2.4)   REDUCING DIAGNOSTIC DELAY IN THE PUBLIC SECTOR

In the discussion of provider quality in Chapter 5, a number of focus group discussants mentioned that public service providers in these high TB prevalence communities had failed to diagnose TB at the outset. This was commonly attributed to false negatives in the sputum test, failure to produce sufficient sputum for a test or patients presenting with unusual forms of TB such as 'stomach TB' or 'TB of the waist'. These problems are common challenges to the diagnosis of TB in HIV co-infected adults. It was clear that the focus group respondents were unaware of this potential link with HIV, although the Black/African respondents were very aware of the general association between the two diseases.

While it is perhaps unsurprising that focus group participants from these relatively impoverished urban areas lack this sophisticated knowledge, public health service providers seem either equally unaware of the link or are simply unwilling/unable to address the challenges posed to successful and prompt TB diagnosis. There appear to be no effective fail-safes in place in the public system to account for the challenges posed by co-infection – and the public sector is the sole provider of DOTS in the Cape Metropole. This could be addressed, in part at least, by attempting the following:

1) Increasing the speed of diagnostic results

2) Equipping clinic staff with consistent strategies for dealing with patients who cannot generate sputum

3) Giving staff consistent strategies for dealing with patients who present with TB symptoms but produce a negative sputum samples.

4) Improve the interaction/communication between public sector providers

Creating a platform for interaction between public and private providers, as discussed further in Section 2.5 below, would also go some way towards mitigating the other cause of diagnostic delay identified in this dataset i.e. the tendency of patients to switch between the

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[*] This recommendation should be weighed against the risks posed by reducing continuity of care between a patient and an individual health service provider, as well as concerns that staff may feel demotivated by regularly moving between work settings.

public and private sectors. This phenomenon is referred to throughout this text as cross-usage and amongst TB affected respondents the cross-usage of public and private health service providers appears to be driven by two key factors; the need for privacy on the part of the patient and/or failure to diagnose TB on the part of the service provider (public or private). These findings relate particularly to process of diagnosis and the use of both private and public services to obtain that diagnosis, as TB treatment cannot take place within the private sector in South Africa.

The diagnostic delays resulting from cross sector use appear to be significant, and attempts to refer patients between sectors (and even within sectors) are largely ineffective. The implications of this cross sector use were more strongly identified by respondents from Khayelitsha/Nyanga than those from Oostenburg/Mitchell's Plain. Respondents from Khayelitsha/Nyanga were more likely to initiate treatment seeking for suspected TB with a private provider, and private providers were more likely to misdiagnose TB than public clinics.

Policies to improve diagnostic methods in the public sector have been discussed earlier in this section, while policies to improve the interaction between the public and private sectors are discussed further in the next section.

2.5) REDUCING THE IMPACT OF CATASTROPHIC SPENDING

On average, Black/African households spent 25% of household income on direct health expenses while Coloured households spent an average of 2% of their household income on direct health costs. Direct health spending was thus catastrophic for these Black/African households. Aside from the obvious impact of catastrophic health spending at the household level, there is also reason to believe that catastrophic health spending may impact extended family networks over multiple households. Indirect health expenditure further exacerbated both the negative economic impact of health seeking for Black/Africa respondents and the inequality between Black/African respondents and their Coloured counterparts. Black/African respondents had higher waiting times that constituted a significantly higher proportion of total expenditure on health despite failing to account for carer time in the indirect costs of care seeking. Given that the qualitative data identified female household members as the most likely to take on the role of carer and to compensate for the productivity loss to the household of a sick individual, the inclusion of carer time would, in all likelihood, have identified gender disparities in indirect health expenditure.

One possible solution to reduce the impact of direct health expenditure would be to remove the perceived need to use private providers. This means removing the need to visit private pharmacies as well as private doctors. Reducing the need to visit private pharmacies would

necessitate better drug availability in public clinics. Reducing the need to visit private providers is a more complex problem however, better drug availability, shorter waiting times, faster diagnostic procedures in the case of potential TB cases, assistance for potential TB cases who cannot generate sputum, educating public providers about sputum-negative TB and improved patient privacy would go some way towards achieving this aim. Privacy could be improved simply by allowing patients to access services in any area, not only in the areas in which they are resident. Of course travelling out of area would increase the travel costs of care seeking but at present patients seem to be travelling out of their immediate area and accessing private providers.

Reducing waiting times would reduce the indirect costs of care seeking and would impact not only on the ethnic inequalities in the costs of care seeking but would also impact on the gender inequalities one would almost certainly observe if carer time were quantified in this study.

However, while spending on private service providers, privately purchased drugs and transport costs for out of area public and private service providers may be one driver of catastrophic health expenditure, it is by no means the only one. Multiple care seeking both within and between sectors effectively multiplies the cost of health seeking and the consequent burden on household, and extra-household, resources. Evidence from the focus groups presented in Chapter 6 suggests that, once a health seeking strategy has commenced, respondents would continue to seek advice or care until an effective treatment was obtained. Similarly, respondents did not appear to factor unexpected costs into their treatment seeking strategies at the outset. Instead, the burden of unexpected costs was generally compensated for during or after the health seeking event.

Multiple care seeking raises complex policy challenges in a pluralistic setting such as this. While improving privacy, increasing the speed of diagnostic results, providing assistance generating sputum and educating public providers about sputum-negative TB will reduce some amount of multiple care seeking, it is unlikely to halt the practice altogether. In addition, any reduction in multiple care seeking is likely to lag significantly behind policies to improve aspects of public service quality as perceptions of public services will take some time to change. Thus the immediate challenge to policy makers is how to minimise the adverse consequences of multiple care seeking as it stands. One clear way to do this would be to improve the integration between service providers so that patients do not have to begin the diagnostic process anew when they switch between the private and public sectors. This could be done either by creating a central data-bank that can be accessed by both public and private providers, or by having information move with patients in a format that is acceptable to both providers. As the

latter strategy would not require a substantial investment in infrastructure, it could be implemented fairly quickly. Furthermore, as patient-held records have been used in the past for childhood immunisation programs, they would be worth piloting in the study setting.

In short, high direct and indirect costs of health seeking drive catastrophic health expenditure among the poorest population groups and this effect is further exacerbated by multiple care seeking both within and between sectors. Addressing these phenomena is no simple task but a number of strategies may make a positive impact.

3) FUTURE RESEARCH PRIORITIES

3.1) COLLECTING MORE DETAILED DATA

Although this study made every effort to collect very detailed data on health seeking, data on a number of variables could have been improved. Firstly, the qualitative evidence suggests that a more detailed measure of quality would have improved the usefulness of the quantitative data analysis. Characteristics such as the expected thoroughness of an exam and the availability of drugs should be attributed to providers in a general manner as well as within an illness-specific framework. Furthermore, a matrix or conjoint analysis exercise attributing characteristics (including but not limited to quality-related characteristics) would enrich the quantitative analysis as a whole and facilitate the formal specification of a Lancaster Model. Formally specifying the Lancaster Model would help to establish whether that theoretical framework would in fact add significantly to our understanding of demand in the final analysis.

3.2) METHODS TO ACCOMMODATE DYNAMIC MULTI-ATTRIBUTE DECISION MAKING

Aside from a stationary or fixed Lancastrian approach, empirical modelling techniques are needed which can cope with dynamic multi-attribute decision making such as that identified in the process of health seeking. Decision field theory may have the potential to cope with this empirical challenge and Zanakis et al compare several methods for solving multi-attribute decision making problems (MADM), which they define MADM as one class of multiple criteria decision making models in which a limited number of pre-specified, discrete alternatives require "*inter or intra-attribute comparisons, involving implicit or explicit tradeoffs*" (Zanakis et al., 1998). Unfortunately these models could not be tested with the available data but this is highlighted as an area for future research.

3.3) UNDERSTANDING HOW HEALTH SPENDING IMPACTS MULTIPLE HOUSEHOLDS

Although this study has highlighted the fact that health spending drew on the financial resources of multiple households, this phenomenon is little understood. These data enable us to measure the impact on health seeking of available funds from other households, however, little is known about the generality of this finding and the wider economic impact of this phenomenon where it does occur. For example, does it result in multiple households being caught in a medical poverty trap or, by spreading health spending, does it spread the negative impact of health costs. Considerable further work is required in this area if the financial burden of care seeking is to be accurately measured.

3.4) INFLUENCE OF MULTIPLE CARE SEEKING ON THE DELIVERY OF STRUCTURED TREATMENT PACKAGES

Multiple care seeking i.e. seeking care from more than one health service provider for a single illness episode, can prolong illness, place a significant economic burden on households and undermine the treatment of diseases such as TB, Malaria and increasingly, HIV. Pluralistic health settings such as South Africa, Zambia and India offer the greatest opportunity for multiple care seeking. Government health services work alongside private providers, NGO-run services, church based services and even traditional healers. In some cases these providers offer different services but in many cases they treat the same illnesses at the primary care and outpatient level particularly.

While little is known about the reasons for multiple care seeking, this study has shown that perceptions of quality, stigma and the concomitant need for privacy or even simple geographic constraints may play an important role. However, with the growing emphasis on structured treatment protocols such as DOTS, usually offered through a single health service provider (public or NGO), there is a need to firmly understand the reasons for this behaviour and the implications for health service delivery at the local, national and international level if treatment is to be effectively delivered, without compounding the health inequalities already emergent in this and other similar settings.

The Stop TB Partnership estimates that, between 2000 and 2020, approximately one billion people will be newly infected with TB, 200 million people will become sick and 35 million people will die from the disease (The Stop TB Partnership, 2002). Malaria also causes more than a million deaths per year and the global malaria burden shows increasing levels of malaria morbidity and mortality (World Health Organization, 1998b; Ibid World Health Organization, 2005). In addition, an estimated 45 million people are infected with HIV worldwide and the disease has already killed more than 20 million people (The Global Fund to Fight AIDS TB

and Malaria, 2006 (Last accessed:05/10/2006)). These diseases disproportionately affect the poorest communities in the poorest countries in the world and this thesis provides evidence that, without a better understanding of demand-side barriers to effective diagnosis and treatment, curtailing the spread and impact of these diseases will be difficult if not impossible.

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287

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293

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301

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APPENDIX 1:
QUALITATIVE DATA COLLECTION INSTRUMENTS

Project Sahara Discussion Guide

1. Introduction and Warm-up (5 min)

> **Moderator**: Please ensure that the respondents feel comfortable, and understand that there are no right or wrong answers. We are only interested in their opinions etc.

Discuss:

- Marital status/relationships, children
- Hobbies, interests and backgrounds

2. Health Status (10 min)

> **Moderator**: We would like to understand how people stay healthy and which elements of their lifestyle might put them at risk of disease.

Please read:

We all get sick now and again but some times are worse than others. There are some things in our lives that increase our chance of getting sick and there are some things that help us to stay well. I would like you to think about your lives for a minute and think about these things.

> **Moderator**: Please divide a page on the flip chart into two columns, one for 'Makes us unhealthy/sick' and another for 'Keeps us healthy'. Record the following discussion on this page.

Discuss:

- What might make you sick
- What might stop you from getting sick

Probe briefly if not mentioned spontaneously:

- Diet
  - o *Do you have <u>enough</u> to eat?*
  - o *How is food <u>shared</u> in your household?*

- o *What is your idea of <u>healthy</u> eating?*
- Smoking
- Hygiene/ sanitation
- Exercise
- Stress
- Crowded living conditions
- Occupational hazards/ dangers in the workplace

3.   **Personal health-seeking behaviour (15 min)**

Moderator: We need respondents to talk through their last illness experience step by step. Some illnesses may be of a personal nature and respondents need to be reassured that if they are uncomfortable, they do not need to name the problem.

Probe:

I would like you to think about the last time you were ill...

- How long ago was this?
- How did you know you were ill?
- Did you tell anyone that you were not feeling well?
- How did they react?
- Where you able to carry on with your normal responsibilities while you were sick?
- Did anyone <u>inside</u> your household help you with your job or your chores while you were sick?
- Did anyone <u>outside</u> your household help you with your job or your chores while you were sick? **Probe for NGOs and broader community organisations**

Moderator: We are aware that people may try different things to feel better and we need to understand this process step by step.

Discuss:

Sometimes when we are sick, we have to try different things before we feel better. I would like you to think about all the things you did to feel better the last time you were sick.

- What was the first thing you did? And next? And next? Why?
- How did you know what to do?
- Did you take any medicine? Where did it come from?
- Did you have to pay any money to get well? Where did this money come from?
- Do you think you should have done anything differently?

4.   Perceptions of illness (15 min)

> **Moderator**: Please take care, someone in the group may have suffered from an illness that another member considers 'distasteful' you need to be on the lookout for these sorts of tensions.

Discuss:

Some sickness is very common and some sickness is very rare. Thinking now about yourself, your family and your community;

- Which illnesses would you say are very common? **Record on flip chart**
- Which illnesses would you say are very rare? **Record on flip chart**
- What illness do you and your family fear <u>most</u>? Why?
- What illness do you and your family fear <u>least</u>? Why?
- Would you be to blame if you caught any of these illnesses? Which? Why?
- Would any of these illnesses prevent people from speaking to you or treating you normally? Which? Why?

5.   Perceptions of TB (15 min)

> **Moderator**: We are now going to spend a short time talking about TB (Tuberculosis) in particular.

Probe:

- Have you ever heard of TB or Tuberculosis?
- How else would you speak about TB – does it have any other names?
- Is TB the same as any other sickness?
- Is TB the same as any other sickness? How is it the same? How is it different?

> **Moderator:** We are going to use a game to talk about TB. Please use the picture cards provided and start by acquainting the group with 'her/him' on a personal level before proceeding with the formal discussion.

Informal introduction:

Here is a picture of someone who might live in your neighborhood. What name should we give her/him? Do you think she/he works or not? Does she/he have children? How many? Is she/he married? What is her/his husband/wife like? What is her/his home like? (**Note that for male groups this picture will be of a man.**)

TB specific enquiry:

She/he thinks that she/he might have TB:

- What makes her/him think she/he might have TB?
- How does she/he feel emotionally? Worried? Scared?
- Does she/he tell her/his family about her thoughts? How would they react?
- Does she/he tell her/his neighbour her/his thoughts? How do they feel about her/him?
- Does she/he tell anyone else outside the household about her/his thoughts? **Probe for the expected reaction of health service providers (doctors, nurses etc), NGOs and broader community organisations.**
- What should she/he do?
- Will she/he get better?

6. Awareness and perceptions of health service providers (15 min)

Moderator: Some health service providers may already have been mentioned in the above discussion. Now we need to put together a list on the flip chart. We are going to play a word association game with these providers so leave space to do this.

All providers:

Please tell me abou all the health service providers that you know of or have ever heard of. **Write these onto the flipchart.**

- Go through each of these facilities and ask for words that respondents would use to describe these facilities – **write the descriptions onto the chart.**
- What facilities are available to the respondents and their communities?
- Are there any facilities/treatments that they need but do not have? Why do they think these facilities/treatments are not available?

Public versus private providers:

On a new sheet of the flip chart, create a circle for 'all government facilities' and 'all private facilities' but take care to use the language of the respondents when explaining these concepts.

- What words would the group use to describe each of these two types of provider? **Write in the circle for each provider.**

7.   Budget Game and Concluding thoughts (10 min)

Moderator: We have talked about some very serious issues. This section is an opportunity to leave the discussion on a lighter note and to get an idea of how respondents would like to see the health budget spent.

Budget Game: *(Divide the group into two)*

We have talked about sickness and health, we have talked about things that make us ill and ways to get better. Let us say that you are the Minister of Health for just one day, these eleven cents are your health budget *(give each group eleven cents).* I would like you to tell me how you would divide your money between the services we have listed on the chart **(turn to the full list of service providers).** You can ignore any services or add any to the list if you want – it is up to you!

Moderator: Give the groups 2 minutes to confer and then ask for their allocation – record on the flip chart so the two groups can be briefly compared. **Probe any large differences**

Concluding probe:

- If you could make just one change to South Africa's health system, what is the most important change that you would make? **Go around the table quickly.**
- Are there any thoughts you would like to add to our discussion here today?
- Have you found this discussion interesting?

Moderator: Thank respondents and close.

MARKINOR

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Tannery Park
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Rondebosch 7700
Tel: +27 21 680 9200

Information Letter and Consent Form
Focus Group Discussions

Dear Sir/Madam,

My name is .... and I work for a company called Markinor. We are assisting researchers from a number of Universities, including the University of Cape Town. We would like to invite you to take part in a group discussion on the.............................at...
We will provide transport to the venue and will provide transport home after the discussion. The group discussion itself will take no longer than 2 hours and we will provide drinks and snacks at the venue. Before deciding whether or not to attend, please note the following information about the project. If anything is unclear, or if you would like more information, please don't hesitate to ask. Your participation in this study is entirely voluntary and you may withdraw at any time.

The purpose of this study is to understand <u>how</u> people use health services, <u>which</u> health services people use and <u>why</u> they use those services. We also want to know which services people <u>don't</u> use and which services people would like to see offered to their community that are not currently offered. The results of this study will help to inform government planning in the Western Cape and in the rest of South Africa. The results will also help international institutions, such as the World Health Organisation, to understand how health service use differs around the world and how this affects the health of different populations.

The group discussions will be audiotaped and the tapes will be transcribed. All names will be removed from these transcripts. The tapes and transcripts will be stored with a principle investigator who will be the only person with direct access. The principle investigator will destroy the tapes six months after the completion of these focus groups. You and your household will not be identified in any report or publication. Your privacy will be carefully protected.

Please be aware that;
- Your participation is entirely voluntary. You may refuse to take part, and you may stop at any time if you do not want to continue. You also have the right to skip any particular question or questions if you do not wish to answer them.
- All information collected for this study will be kept strictly confidential. Your individual responses to our questions will never be made public in a manner which could identify you, and no information that could identify you or other household members will ever be released. The findings collected for each person will be combined and used only for research purposes.
- You have the right to ask questions at any point before the group discussion, during the discussion, or after the discussion is completed.
- You will receive a small token of our appreciation for your time.

By signing below, you signify that you agree to participate in the study, and that your participation is entirely voluntary. We will leave this information sheet with you. Should you require any additional information, please contact: ....

_____   _____
SIGNATURE   DATE

MARKINOR	EXECUTIVE: Melanie Woest	GROUP 8	SETFIELD 1 - 4 TYPEFIELD 79 –80	DP NUMBER:

RECRUITED BY: ....

DATE OF GROUP:..

DESCRIPTION OF GROUP RECRUITED FOR:

NAME: ....

SUBURB: ....AREA:..POSTAL CODE:....................................

TELEPHONE: HOME..WORK:...

CELL:...

My name is . . . I'm calling from Markinor, a marketing research company. May I please ask you a few questions?

A.	Have you been to a market research group discussion in the last 6 months?	1.	Yes	-1	CLOSE
		2.	No	-2	CONTINUE
B.	How would you describe your working status?	1.	Work part-time	-1	CONTINUE
		2.	Not working	-2	
		3.	Working full-time	-3	
C.	Which age group applies to you?	1.	Younger than 20 years	-1	CLOSE
		2.	20 – 29 years	-2	CONTINUE
		3.	30 – 39 years	-3	
		4.	40 – 49 years	-4	CLOSE
		5.	50 years and older	-5	
D.	In which of the following suburbs is your primary residence i.e. the home in which you sleep most nights?	1.	Athlone	-1	CLOSE
		2.	Goodwood	-2	
		3.	Khayelitsha	-3	CONTINUE
		4.	Mitchell's Plain	-4	
		5.	Nyanga	-5	
		6.	Oostenberg	-6	
		7.	Other	-7	CLOSE
E.	GENDER: INTERVIEWER TO RECORD WITHOUT ASKING.	1.	Male	-1	CONTINUE
		2.	Female	-2	CLOSE
F.	ETHNICITY: INTERVIEWER TO RECORD WITHOUT ASKING	1.	White	-1	CLOSE
		2.	Asian	-2	
		3.	Black	-3	CONTINUE
		4.	Coloured	-4	CLOSE

321

G.	What is your occupation?	Respondent:	RECORD
		Occupation:...............................	
		Company:.................................	
		Industry:.................................	

H.	In an average month, what is the combined income of all members of your household?		
		1. Less than R500	-1
		2. R500-R1 499	-2
		3. R1 500 - R2 999	-3
		4. R3 000 - R4 999	-4
		5. R5 000 - R9 999	-5
		6. R10 000 or more	-6
		7. Don't know	-7
		8. Refused	-8

I. When last, if ever, have you suffered from each of the following symptoms?

	Within the last 1-2 months	Within the last 6 months	Longer than 6 months ago	Never
1. Fever/ night sweats	1	2	3	4
2. Headache/Migraine	1	2	3	4
3. High/low blood pressure	1	2	3	4
4. Persistent coughing lasting more than 3 weeks	1	2	3	4
5. Nausea	1	2	3	4

J. When last, if ever, have you suffered from each of the following ailments/diseases?

	Within the last 1-2 months	Within the last 6 months	Longer than 6 months ago	Never	
1. Cold/Flu	1	2	3	4	
2. Bronchitis	1	2	3	4	
3. Tonsillitis	1	2	3	4	
4. Tuberculosis	1	2	3	4	CLOSE IF CODE 4 FOR TB
5. Measles	1	2	3	4	

Outcome of recruitment:

VISIT 1	VISIT 2	VISIT 3	VISIT 4	VISIT 5	VISIT 6	VISIT 7	VISIT 8	VISIT 9	VISIT 10
-1	-2	-3	-4	-5	-6	-7	-8	-9	-10

VISIT 11	VISIT 12	VISIT 13	VISIT 14	VISIT 15	VISIT 16	VISIT 17	VISIT 18	VISIT 19	VISIT 20
-11	-12	-13	-14	-15	-16	-17	-18	-19	-20

Results codes:
1. Refused – in principle. Does not participate in surveys/focus groups
2. Refused – time constraints
3. Refused – not interested in topic
4. Never available
5. Respondent too sick to leave the house
6. Completed
7. Other (specify)..

FINAL OUTCOME OF INTERVIEW - SEE RESULTS CODE AND RECORD

322

DECLARATION IF RECRUITMENT SUCCESSFUL:

I declare that the respondent (NAME AND ADDRESS ABOVE) recruited by me qualifies according to the criteria supplied to me by Markinor for this specific group. The respondent understands the content of the information letter and freely agrees to participate.

SIGNED:..

DATE:..

323

APPENDIX 2:
QUANTITATIVE DATA COLLECTION
INSTRUMENTS

INTRODUCTORY HOUSEHOLD SURVEY

STRICTLY CONFIDENTIAL

<u>INTERVIEWER READ OUT</u>:

THANK YOU FOR AGREEING TO PARTICPATE. THIS INFORMATION IS CONFIDENTIAL AND THE NAME AND ADDRESS OF THE RESPONDENT WILL NOT BE USED FOR ANY OTHER PURPOSE. NAMES WILL NOT BE LINKED TO THE INFORMATION GATHERED EXCEPT AS REQUIRED FOR THE PURPOSE OF FOLLOW UP IN THE STUDY, HANDLED ONLY BY PROJECT STAFF

DANKIE DAT U INGESTEM HET OM DEEL TE NEEM. HIERDIE INFORMASIE IS VERTROULIK EN DIE NAAM EN ADRES VAN DIE RESPONDENT SAL NIE GEBRUIK WORD VIR ENIGE ANDER DOELEINDES NIE. NAME SAL NIE VERBIND WORD MET DIE INFORMASIE WAT INGESAMEL IS NIE. DIT SAL NET GEBRUIK WORD VIR DIE DOELEINDES VAN DIE OPVOLG STUDIE EN NET DEUR PERSONEEL WAT DIE PROJEK VERWERK HANTEER WORD.

<u>NOTE TO INTERVIEWER</u>: Respondent should be:

1. 18 years or older/ **18 jaar oud of ouer**

2. Very knowledgeable about people living in the household/ **een wat die meeste weet van die mense wat in die huishouding bly**

ORIGINAL CONTACT DETAILS:

Name:		EA Number							
Community:		Household Number:							
Address:		Telephone (Work):							
Telephone (Home):		Cell Phone:							
Date:	_____/_____/2004 dd mm								

Contacts and Visits/*Kontakte en Besoeke*

INTERVIEWERS VISIT:

	VISIT 1		VISIT 2		VISIT 3		VISIT 4		VISIT 5	
Date Time Result										

RESULT CODES:		
	1. Completed	1
	2. Respondent not available	2
	3. Refused	3
	4. Partially completed	4
	5. Mentally unfit	5
	6. Deaf	6
	7. Ill (not temporary condition)	7
	9. Other: (GIVE REASON)	8
	....	9

INTERVIEWER NAME: _____   **CODE:** [ ][ ][ ][ ]

DATE COMPLETED INTERVIEW: [ ][ ] / [ ][ ] / [2][0][0][4]
d d   m m   y y y y

CHECKED BY SUPERVISOR (NAME): ....

DATE: [ ][ ] / [ ][ ] / [2][0][0][4]
d d   m m   y y y y

➤ INTERVIEWER: COMPLETE ON FINISHING THE QUESTIONNAIRE.	WRITE IN TOTAL NUMBER OF HOUSEHOLD MEMBERS	
	1. [ ][ ] Total	
	2. Number prepared to participate in the diary study	[ ][ ]
	3. Number unavailable at the time of interview	[ ][ ]
	4. Line number of respondent for household survey	[ ][ ]

326

1. Demographic characteristics of HH members

LINE NUMBER	NAMES OF PERSONS IN HOUSEHOLD	AGE	DATE OF BIRTH						GENDER		RELATIONSHIP TO RESIDENT HEAD OF HOUSEHOLD	POPULATION GROUP	MARITAL STATUS (AGE 12 OR OLDER)	LINE NO. OF SPOUSE	SCHOOL (AGE 5 OR OLDER ONLY)
1.1	1.2	1.3	1.4						1.5		1.6	1.7	1.8	1.9	1.10
	Beginning with yourself, please tell me the names of the people who usually live in this household. That is, they have lived in this household for more than 15 days of the last 30 days. Begin by uself, gee die name van die mense wat normaalweg in die huishouding bly. Dit is, hulle wat meer as 15dae van die laaste 30dae in die huishouding gebly het. FILL IN THE LIST OF NAMES BELOW	How old is [NAME] in years (at last birthday)? Hoe oud is [NAAM] (laaste verjaarsdag)?	What is [NAME]'s date of birth? Geboortedatum van [NAAM]? DOUBLE-CHECK CONSISTENCY WITH AGE (1.3.)						Is [NAME] male or female? Is [NAAM] manlik of vroulik?		What is the relationship of [NAME] to resident head of household? Wat is die verwantskap van [NAAM] met hoof van die huishouding? SEE 'A' CODES	What is [NAME]'s population group? Wat is [NAAM] se rassegroep? SEE 'B' CODES	IF AGE 12 OR OLDER: What is [NAME]'s current marital status? INDIEN 12 EN OUER: Wat is die [NAAM] se huwelikstatus? SEE 'C' CODES	If spouse/partner lives in this household, record spouse/partner's line number. Indien die eggenote/maat in hierdie huishouding bly, teken die lyn nommer van die persoon aan. SEE 'L' CODES.	What is [NAME]'s highest GRADE completed in school or post school? Wat is die hoogste graad op skool of na skool wat [NAAM] geslaag het? SEE SCHOOLING CODES
		Age	D D	M M	Y Y Y Y				M	F	CODE	CODE	CODE	CODE	CODE
1.									1	2					
2.									1	2					
3.									1	2					
4.									1	2					
5.									1	2					
6.									1	2					
7.									1	2					
8.									1	2					
9.									1	2					
10.									1	2					
11.									1	2					
12.									1	2					
13.									1	2					
14.									1	2					
15.									1	2					

1. Roster of Household Members

LINE NUMBER	NAME OF PERSONS IN HOUSEHOLD	NON RESIDENT BIOLOGICAL CHILDREN (ASK IF AGED 14 OR OLDER)			
1.11	1.12	1.13		1.14	1.15
	COPY NAMES FROM 1.2 ON THE FIRST PAGE. ENSURE THAT THE ORDER IS EXACTLY THE SAME I.E. THEY HAVE THE SAME LINE NUMBER ON ALL PAGES. SKRYF NAME VANAF 1.2 OP DIE EERSTE BLADSY OOR. MAAK SEKER DAT DIE VOLGORDE PRESIES DIESELFDE IS EN DAT ELKEEN DIESELFDE LYN HET.	IF AGE 14 OR OLDER, ELSE GO TO NEXT HH MEMBER. Does [NAME] have any biological children living in other households? Het [Naam] enige biologiese kinders wat in ander huishoudings woon?		How many biological children age 23+ are living in other households? Hoeveel Biologiese kinders ouderdom 23+ woon in ander verskillende huishousings? IF NONE RECORD "0"	How many biological children age 0 – 22 are living in other households? Hoeveel biologiese kinders ouderdom 0-22 woon in ander verskillende huishoudings? IF NONE RECORD "0" AND GO TO NEXT HOUSEHOLD MEMBER.
		Yes	No	D/K		
1.		1	2	-1		
2.		1	2	-1		
3.		1	2	-1		
4.		1	2	-1		
5.		1	2	-1		
6.		1	2	-1		
7.		1	2	-1		
8.		1	2	-1		
9.		1	2	-1		
10.		1	2	-1		
11.		1	2	-1		
12.		1	2	-1		
13.		1	2	-1		
14.		1	2	-1		
15.		1	2	-1		

328

1. Sources of Income

LINE NUMBER (1.16)	NAMES OF PERSONS IN HOUSEHOLD (1.17)	REMITTANCES (1.18)	GRANTS AND JOB SEARCH (Ask all aged 10 and older. If less than age 10, go to 1.25) (1.19)	EMPLOYMENT (1.20)			EMPLOYMENT (1.21)			EMPLOYMENT (1.22)		EMPLOYMENT (1.23)
	COPY NAMES FROM 1.2 ON THE FIRST PAGE. ENSURE THAT THE ORDER IS EXACTLY THE SAME I.E. THEY HAVE THE SAME LINE NUMBER ON ALL PAGES. SKRYF NAME VANAF 1.2 OP DIE EERSTE BLADSY OOR. MAAK SEKER DAT DIE VOLGORDE PRESIES DIESELFDE IS EN DAT ELKEEN DIESELFDE LYN HET.	During the last month, how much did [NAME] receive in remittances i.e. money/gifts from members of OTHER households? Gedurende die laaste maand, hoeveel het [NAAM] ontvang bv. geld/ geskenke van ander lede in die huishouding IF NONE, PLEASE FILL A ZERO ALONGSIDE THE NAME.	Does this person receive any form of grant from the government? IF YES: What is it? Kry hierdie persoon enige toelae vanaf die staat? INDIEN WEL: wat is dit? SEE 'K' CODES	During the past 12 months, did [NAME] do any work for pay or family gain, including payment in kind such as food or housing? Gedurende die afgelope 12 maande, het [NAAM] enige werk vir betaling of voordeel van die familie gekry, insluitend betaling in natura soos kos en huisvesting (nie geld nie)?			In the last month, what was [NAME]'s total salary/pay per month from all work? Employment income only. Including overtime, allowances and bonus (TAKE HOME PAY). In die laaste maand, wat was [NAAM] se totale salaris per maand al die werke ingesluit? Inkomste van werk alleenlik. Oortyd, toelae en bonusse ingesluit (GELD WAT HUISTOE GAAN) IF SELF-EMPLOYED, ASK ABOUT MONTHLY INCOME AFTER EXPENSES FOR BUSINESS ARE DEDUCTED.			ONLY ASK THIS QUESTION IF REFUSED IN 1.21, ELSE GO TO 1.23: Refering to the categories on the income card, what is [NAME]'s total salary/pay per month in all jobs? Verwys na die kategoriee op die inkomste kaart. Hoeveel is [NAAM] se totale salaris/loon per maand vir al die werke		Was [NAME] working full-time, part-time, on leave from full-time or part-time work or not working in the last seven days? Het [NAAM] voltyds of deeltydse werk, met verlof van voltydse of deeltydse werk, of het die laaste 7 dae nie gewerk nie? SEE 'F' CODES
		CODE	CODE	Yes	No	N/A	Refused	N/A		CODE	N/A	CODE
				1	2	-2	-3	-2	R		-2	
1.		R		1	2	-2	-3	-2	R		-2	
2.		R		1	2	-2	-3	-2	R		-2	
3.		R		1	2	-2	-3	-2	R		-2	
4.		R		1	2	-2	-3	-2	R		-2	
5.		R		1	2	-2	-3	-2	R		-2	
6.		R		1	2	-2	-3	-2	R		-2	
7.		R		1	2	-2	-3	-2	R		-2	
8.		R		1	2	-2	-3	-2	R		-2	
9.		R		1	2	-2	-3	-2	R		-2	
10.		R		1	2	-2	-3	-2	R		-2	
11.		R		1	2	-2	-3	-2	R		-2	
12.		R		1	2	-2	-3	-2	R		-2	
13.		R		1	2	-2	-3	-2	R		-2	
14.		R		1	2	-2	-3	-2	R		-2	
15.		R		1	2	-2	-3	-2	R		-2	

329

1. Sources of Income

LINE NUMBER 1.24	NAMES OF PERSONS IN HOUSEHOLD 1.25	EMPLOYMENT (CONTINUES) 1.26	1.27	MEDICAL AID / MEDICAL INSURANCE 1.28	

1.25 — COPY NAMES FROM 1.2 ON THE FIRST PAGE. ENSURE THAT THE ORDER IS EXACTLY THE SAME I.E. THEY HAVE THE SAME LINE NUMBER ON ALL PAGES.

SKRYF NAME VANAF 1.2 BLADSY OOR. MAAK SEKER DAT DIE VOLGORDE PRESIES DIESELFDE IS EN DAT ELKEEN DIESELFDE LYN HET.

IF LESS THAN AGED 10 GO TO 1.28.
IF OLDER THAN AGED 10 GO TO 1.26

1.26 — ASK ALL AGED 10+

IF CURRENTLY WORKING (CODE '1-6' IN 1.23, ELSE GO 1.28)

What kind of work does [NAME] do in his/her main current job?

Watter soort werk doen [NAAM] in die huidige betrekking wat beklee word?

WRITE DOWN OCCUPATION OR JOB TITLE. RECORD AT LEAST TWO WORDS SUCH AS: CAR SALESPERSON, OFFICE CLEANER, VEGETABLE FARMER, PRIMARY SCHOOL TEACHER, ETC.

FOCUS ON MAIN JOB.

1.27 — What is the main business at [NAME]'s place of work? What are its main functions?

Wat is die industrie van [NAAM] se werkplek. Die hoof funksie van die besigheid

MAIN INDUSTRY, ECONOMIC ACTIVITY, PRODUCT OR SERVICE OF THE EMPLOYER OR COMPANY: E.G. ROAD CONSTRUCTION, SUPERMARKET, POLICE SERVICE, HAIRDRESSING, BANKING, OR ACTIVITY OF PERSON IF SELF-EMPLOYED.

1.28 — ASK FOR ALL HOUSEHOLD MEMBERS:

Is [NAME] covered by Medical Aid or Medical Insurance?

Is [NAAM] onder die Mediese fonds of Mediese Versekering gedek?

Line	Names	1.26	1.27	Yes	No
1.				1	2
2.				1	2
3.				1	2
4.				1	2
5.				1	2
6.				1	2
7.				1	2
8.				1	2
9.				1	2
10.				1	2
11.				1	2
12.				1	2
13.				1	2
14.				1	2
15.				1	2

1.29 — Are there any other people such as small children or infants, foster children, or other people who usually live with you in this household that we have not listed?

Is daar enige iemand anders soos klein kinderjies of pasgebore babas, kinders wie u oppas of enige ander persoon wat deel is van die huishouding en nog nie hier gelys is nie?

1 = YES/ JA → RETURN TO 1.2 IN HOUSEHOLD ROSTER AND FILL OUT APPROPRIATE COLUMNS

2 = NO/ NEE

2. HOUSEHOLD EVENTS

I want to ask you now about events or situations that can sometimes happen to families and households. Have any of the following events occurred in this household over the past 12 MONTHS?
Ek wil u nou uitvra oor gebeurtenisse wat met enige huishouding kan gebeur. Het enige van die volgende gebeurtenisse die afgelope 12 maande met die huishouding gebeur?

2.1 ☞	Has this household experienced the death of a household member or other family member in the last 12 months? **Het die huishouding enige dood van enige lid van die huishouding of enige ander familielid gehad?**	1 = Yes 2 = No \ *SKIP TO Q2.4*	

2.2	IF YES: After this occurred, how did the household cope financially? Did the household: **INDIEN JA:nadat dit plaasgevind het , hoe het die familie dit finansieel gedoen?Het die huishouding** *MULTIPLE RESPONSE ALLOWED*	1 = Sell assets or use savings **Het goed verkoop of spaargeld gebruik** 2 = Borrow from a money lender or a Stokvel **Geleen by stokvel of geldvoorskieter** 3 = Take children out of school **Het kinders uit die skool gehaal** 4 = Get help from others **Het hulp van ander gekry** 5 = Use insurance **Het versekering gebruik** 6 = Nothing/ **Niks** -3 = Refused/ **Geweier** Other (Specify)_____

2.3	When did the death occur? **Wanneer het die persoon/ mense gesterf?**		MM	YY
		Person 1		
		Person 2		
		Person 3		

2.4 ☞	Has serious illness or injury kept a household member from doing normal activities in the last 12 months? **Het enige ernstige siekte of beserings 'n lid oorgekom wat hom/haar weggehou het van die normale aktiwiteite die afgelope 12 maande?**	1 = Yes 2 = No \ *SKIP TO Q2.8*	

2.5	IF YES: After this occurred, how did the household cope financially? Did the household: **INDIEN JA:nadat dit plaasgevind het , hoe het die familie dit finansieel gedoen?Het die huishouding** *MULTIPLE RESPONSE ALLOWED*	1 = Sell assets or use savings **Het goed verkoop of spaargeld gebruik** 2 = Borrow from a money lender or a Stokvel **Geleen by stokvel of geldvoorskieter** 3 = Take children out of school **Het kinders uit die skool gehaal** 4 = Get help from others **Het hulp van ander gekry** 5 = Use insurance **Het versekering gebruik** 6 = Nothing/ **Niks** -3 = Refused/ **Geweier** Other (Specify)_____

2.6	What is the name and line number of the person/people who suffered the illness/ injury? **Wat is die naam en die lynnommer van die persoon/persone wie aan die siekte of besering lei?**		Name	Line No.
		Person 1		
		Person 2		
		Person 3		

2.7	When did the illness/ injury occur? **Wanneer het die siekte /besering plaasgevind?**		MM	YY
		Person 1		
		Person 2		
		Person 3		

2.8 ☞	Has a household member lost a regular job in the last 12 months? **Het 'n lid van die huishouding sy/haar werk verloor die afgelope 12 maande?**	1 = Yes 2 = No \ *SKIP TO Q2.12*			
2.9	IF YES: After this occurred, how did the household cope financially? Did the household: **INDIEN JA:nadat dit plaasgevind het , hoe het die familie dit finansieel gedoen?Het die huishouding** *MULTIPLE RESPONSE ALLOWED*	1 = Sell assets or use savings **Het goed verkoop of spaargeld gebruik** 2 = Borrow from a money lender or a Stokvel **Geleen by stokvel of geldvoorskieter** 3 = Take children out of school **Het kinders uit die skool gehaal** 4 = Get help from others **Het hulp van ander gekry** 5 = Use insurance **Het versekering gebruik** 6 = Nothing/ **Niks** -3 = Refused/ **Geweier** Other (Specify)_____			
2.10	What is the name and line number of the person/people who lost their job? **Wat is die naam en lynnommer van die persoon/persone wat hul werk verloor het?**			Name	Line No.
			Person 1		
			Person 2		
			Person 3		
2.11	When did this occur? **Wanneer het dit gebeur?**			MM	YY
			Person 1		
			Person 2		
			Person 3		
2.12 ☞	Has this household experienced a cut-off or decrease in financial support from outside the household (e.g. government grants or money from family/friends who do not live here) in the last 12 months? **Het die huishouding enige tekorte of vermindering in finansiele bydrae vanaf buite die huishouding (soos Staatstoelae of geld van familie/vriend wat nie hier woon nie) in die afgelope 12 maande ondervind?**	1 = Yes 2 = No \ *SKIP TO Q2.16*			
2.13	IF YES: After this occurred, how did the household cope financially? Did the household: **INDIEN JA:nadat dit plaasgevind het , hoe het die familie dit finansieel gedoen?Het die huishouding** *MULTIPLE RESPONSE ALLOWED*	1 = Sell assets or use savings **Het goed verkoop of spaargeld gebruik** 2 = Borrow from a money lender or a Stokvel **Geleen by stokvel of geldvoorskieter** 3 = Take children out of school **Het kinders uit die skool gehaal** 4 = Get help from others **Het hulp van ander gekry** 5 = Use insurance **Het versekering gebruik** 6 = Nothing/ **Niks** -3 = Refused/ **Geweier** Other (Specify)_____			
2.14	What is the name and line number of the person/people who were receiving this financial support? **Wat is die naam en die lynnommer van die persoon/persone wie die finansiele ondersteuning gekry het?**			Name	Line No.
			Person 1		
			Person 2		
			Person 3		
2.15	When did the cut off take place? **Wanneer het die tekorte plaasgevind?**			MM	YY
			Person 1		
			Person 2		
			Person 3		

2.16 ☞	Has this household experienced abandonment or divorce in the last 12 months? **Het die huishouding enige verwerping ondervind of het iemand vanuit die huishouding geskei die afgelope 12 maande?**	1 = Yes 2 = No \ *SKIP TO Q2.20*	
2.17	<u>IF YES:</u> After this occurred, how did the household cope financially? Did the household: <u>INDIEN JA:</u>**nadat dit plaasgevind het , hoe het die familie dit finansieel gedoen?Het die huishouding** *MULTIPLE RESPONSE ALLOWED*	1 = Sell assets or use savings **Goed verkoop of spaargeld gebruik** 2 = Borrow from a money lender or a Stokvel **Geleen by stokvel of geldvoorskieter** 3 = Take children out of school **Kinders uit die skool gehaal** 4 = Get help from others **Hulp van ander gekry** 5 = Use insurance **Versekering gebruik** 6 = Nothing/ **Niks** -3 = Refused/ **Geweier** Other (Specify)_____	

2.18	What is the name and line number of the person/people who experienced the abandonment/divorce? **Wat is die naam en lynnommer van die persoon/persone wat die verwerping of egskeiding ondervind het?**		Name	Line No.
		Person 1		
		Person 2		
		Person 3		

2.19	When did this occur? **Wanneer het dit plaasgevind?**		MM	YY
		Person 1		
		Person 2		
		Person 3		

2.20 ☞	Has this household experienced serious theft, fire or destruction of household property in the last 12 months? **Het die huishouding enige ernstige diefstal, brand of verwoesting van die eiendom in die laaste 12 maande ondervind?**	1 = Yes 2 = No \ *SKIP TO Q2.23*	
2.21	<u>IF YES:</u> After this occurred, how did the household cope financially? Did the household: <u>INDIEN JA:</u>**nadat dit plaasgevind het , hoe het die familie dit finansieel gedoen?Het die huishouding** *MULTIPLE RESPONSE ALLOWED*	1 = Sell assets or use savings **Goed verkoop of spaargeld gebruik** 2 = Borrow from a money lender or a Stokvel **Geleen by stokvel of geldvoorskieter** 3 = Take children out of school **Kinders uit die skool gehaal** 4 = Get help from others **Hulp van ander gekry** 5 = Use insurance **Versekering gebruik** 6 = Nothing/ **Niks** -3 = Refused/ **Geweier** Other (Specify)	

2.22	When did this theft, fire or destruction take place? **Wanneer het die diefstal, brand of verwoesting plaasgevind?**		MM	YY

333

2.23 ☞	Has this household experienced the failure of business or bankruptcy of business in the last 12 months? **Het hierdie huishouding enige mislukkings van besighede of bankrotskap van enige besighede in die afgelope 12 maande ondervind?**	1 = Yes 2 = No \ *SKIP TO SECTION 3*	
2.24	IF YES: After this occurred, how did the household cope financially? Did the household: INDIEN JA:nadat dit plaasgevind het , hoe het die familie dit finansieel gedoen?Het die huishouding *MULTIPLE RESPONSE ALLOWED*	1 = Sell assets or use savings **Goed verkoop of spaargeld gebruik** 2 = Borrow from a money lender or a Stokvel **Geleen by stokvel of geldvoorskieter** 3 = Take children out of school **Kinders uit die skool gehaal** 4 = Get help from others **Hulp van ander gekry** 5 = Use insurance **Versekering gebruik** 6 = Nothing/ **Niks** -3 = Refused/ **Geweier** Other (Specify)_____	

2.25	What is the line number of the person who experienced the failure of the business/ bankruptcy? **Wat is die lynnommer van die persoon/persone wie die mislukkings of bankrotskap van die besighede ondervind het?**		Name	Line No.
		Person 1		
		Person 2		
		Person 3		

2.26	When did this occur? **Wanneer het dit plaasgevind?**		MM	YY
		Person 1		
		Person 2		
		Person 3		

3. HOUSEHOLD CHARACTERISITICS

3.1	How many **rooms** are in this residence? Include bedrooms, living rooms, kitchens, lounges, dining rooms as well as backyard shacks if they are part of the household. Exclude bathrooms, toilets and passages. **Hoeveel kamers is in die huis. Ingesluit slaapkamers, leefarea, kombuis, sitkamer en eetkamers en ook slaapplek buite die huis indien deel van die huishouding. Die badkamers, toilette en gang is uitgesluit.**	*WRITE IN THE NUMBER:* *SKRYF NOMMER IN* ....Rooms/ Kamers	
3.2	What is the most often used source of drinking water in this residence? **Wat is die beste bron van drinkwater by die huis?** *ONE ANSWER ALLOWED*	1 = Piped – Internal/ **Water in pyp- binne** 2 = Piped – Yard tap/ **Water in pyp- buite** 3 = Water – Carrier/tanker/ **Water – houer of tenk** 4 = Piped – Public Tap/Kiosk (free) **Water in pyp- openbare kraan/kiosk (vrye water)** 5 = Piped – Public Tap/Kiosk (paid for) **Water in pyp- openbare kraan/kiosk (betaal vir dit)** 6 = Borehole/ **Boorhat** 7 = Rainwater tank/ **Reenwater in 'n tenk** 8 = Flowing water/Stream/ **Lopende water/stroom** 9 = Dam/Stagnant water/ **Dam/ stilstaande water** 10 = Well (non-borehole)/ **Put (nie boorgat nie)** 11 = Protected spring/ **Beskermende ontginde water** Other (Specify)_____	
3.3	What kind of toilet does this residence have? **Watter soort toilet het die huis?** *ONE ANSWER ALLOWED*	1 = Flush toilet/ **Spoel toilet** 2 = Improved pit latrine with ventilation (VIP) **Verbeterde putlatrine met ventilasie** 3 = Other pit latrine/ **Ander putlatrine** 4 = Bucket toilet/ **Emmer toilet** 5 = Chemical toilet/ **Chemiese toilet** 6 = None/ **Geen**	
3.4	Is this residence connected to an electricity supply? **Het die huis elektriese tyd voorsiening?**	1 = Yes/ **Ja** 2 = No/ **Nee**	

3.5	Does anyone buy paraffin for lighting, heating or cooking in this residence? **Gebruik enige iemand parafien vir ligte, verhitting of kook in die huis?**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.6	<u>INTERVIEWER:</u> Record main material used for the wall of the residence. *ONLY ONE ANSWER*	1 = Traditional materials (mud, brick, duka) 2 = Temporary shack (plastic, cardboard, plywood) 3 = Permanent shack (corrugated iron, mixed brick) 4 = Permanent brick (brick, block) Other (specify)_____	
3.7	<u>INTERVIEWER:</u> Record main material used for the roof the residence. *ONLY ONE ANSWER*	1 = Traditional materials (thatch) 2 = Temporary shack (plastic, cardboard, plywood) 3 = Permanent without guttering (corrugated iron, tile, asbestos) 4 = Permanent with guttering (corrugated iron, tile, asbestos) Other (specify)_____	
3.8	What is the main language of the residents in this household? **Wat is die hoof taal van die inwoners van hierdie huishouding?** *ONLY ONE ANSWER*	1 = English 2 = Xhosa 3 = Afrikaans Other (Specify)_____	
3.9	What is the main religion of this household? **Wat is die huishouding se mees belangrikste geloof?** *ONLY ONE ANSWER*	1 = Anglican 2 = Baptist 3 = Catholic 4 = Dutch Reformed/Hervomnd/Gereformeend 5 = Full Gospel 6 = Jewish 7 = Methodist (including AME) Presbyterian 8 = Mormiam 9 = Muslim 10 = New Apostolic 11 = Non-Denominational Christian 12 = Old Apostolic 13 = Pentecostal/Charismatic 14 = Pinkster Protestant 15 = 7th Day Adventist 16 = Zionist 17 = None Other (specify)_____	
3.10	Does the family rent or own this residence? **Behoort die grond/eiendom aan die familie of word die grond/eiendom gehuur?**	1 = Own 2 = Rent Other(Specify)_____	

335

We would now like to ask you some questions about the things household members own. We will use this information to compare households in our study. Some of these things may not apply to you, but we need to ask these questions in all the places in which we are working.

Ons wil u graag vragies vra oor goedere wat die huishouding besit. Ons sal hierdie informasie gebruik om te vergelyk met die huishoudings in ons studie. Sekere van hierdie dinge mag dalk nie met u van toepasssing wees nie, maar ons moet hierdie vragies by al die huishoudings waar ons werk, vra.

<u>INTERVIEWER</u>: ASSURE RESPONDENT THAT THE INFORMATION IS CONFIDENTIAL.

3.11	Does anyone in this household own the following items …? **(Ask about each item on the list)** Besit enige iemand in die huishouding die volgende items…? *(Vra oor elke item op die lys)*		
3.11.1	Radio, stereo or cassette recorder **Radio, stereos of kasset opnemers**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.2	Television **Televisie**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.3	Video, VCR **Video, VCR**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.4	Telephone (not cellular) **Telefoon (nie selfoon nie)**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.5	Cellular telephone **Sellulere foon**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.6	Refrigerator/freezer **Yskas / vrieskas**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.7	Gas/electric stove ***Gasstoof/ Elektriese stoof***	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.8	Microwave **Mikrogolfoond**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.9	Washing machine **Wasmasjien**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.10	Bicycle **Fiets**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.11	Motorcycle **Motorfiets**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.12	Car, Bakkie or Combi **Motor, Bakkie of Kombi**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.13	Computer/laptop **Rekenaar/ toeklap rekenaar**	1 = Yes/ **Ja** 2 = No/ **Nee**	
3.11.14	More than 5 books **Meer as 5 boeke**	1 = Yes/ **Ja** 2 = No/ **Nee**	

4. HOUSEHOLD INCOME, EXPENDITURES AND DEBT

	INTERVIEWER READ OUT:		
	I would like to ask you a few questions about how families get and spend money.		
	Ek wil u graag oor die familie se uitgawes en hoe u geld uitgee vra.		
4.1	Does anyone in this household have a bank or a savings account? **Het enige iemand in die huishouding 'n bank rekening of spaarrekening?**	1 = Yes/ **Ja** 2 = No/ **Nee**	
4.2	Does anyone in this household participate in a Stokvel, Goi Goi, mgalelo, community savings scheme or funeral policy? **Het enige iemand in die huishouding al deelgeneem aan Stokvel, Goi Goi, Mgalelo, gemeenskap spaar of begrafnis polis?**	1 = Yes/ **Ja** 2 = No/ **Nee**	
4.3	Does anyone in this household have life insurance? **Het enige iemand in die huishouding lewensversekering?**	1 = Yes/ **Ja** 2 = No/ **Nee**	
4.4	How much money does this household receive in a typical month from everybody (take home pay) including all earnings, pensions, grants and so on? **Hoeveel ontvang die hele huisgesin in 'n tipiese maand almal bymekaar getel (geld wat huistoe gaan) insluitend alle verdienste, pensioene, toelae ens?** *PROBE RESPONDENT FOR BEST GUESS.* *USE LEADING ZEROS.*	Write in Amount in Rands: R _____ **Skryf die Bedrag in Rande neer:** -1 = Don't Know -3 = Refused *IF AMOUNT GIVEN SKIP TO Q4.6*	

4.5	*IF RESPONDENT DOES NOT KNOW OR WILL NOT PROVIDE A SPECIFIC INCOME AMOUNT IN Q4.4, SHOW THEM THE INCOME CARD AND ASK THE FOLLOWING:*		
	Referring to the categories on the card, how much money does this household receive in a typical month (i.e. take home pay) including all earnings, pensions, grants and so on? **Verwys na die kategoriee op die vertoonkaart, hoeveel is die gesamentlike inkomste van die huishouding in 'n tipiese maand?** *ONLY ANSWER IF DON'T KNOW OR REFUSED IN Q4.4.*	0 = No income 1 = R1 - R1 00 2 = R101 - R150 3 = R151 - R200 4 = R201 - R300 5 = R301 - R400 6 = R401 - R500 7 = R501 - R600 8 = R601 - R800 9 = R801 - R1 000 10 = R1 001 - R1 250 11 = R1 251 - R1 500 12 = R1 501 - R1 750 13 = R1 751 - R2 000 14 = R2 001 - R2 500 15 = R2 501 - R3 000 16 = R3 001 - R4 000 17 = R4 001 - R5 000 18 = R5 001 - R6 000 19 = R6 001 - R8 000 20 = R8 001 - R10 000 21 = R10 001 - R12 000 22 = R12 001 – R14 000 23 = R14 001 – R16 000 24 = R16 001 – R18 000 25 = R18 001 – R20 000 26 = R20 001 – R22 500 27 = R22 501 – R25 000 28 = R25 001 – R30 000 29 = R30 000 and over -1 = Don't Know -3 = Refused	

4.6	Does this household mainly pay for food with cash, or buy food on credit or on "the book"? Hoe koop die huishouding hoofsaaklik die kos, met kontant of koop u kos op krediet of op die boek? *IF RESPONDENT SAYS "BOTH", ASK "WHICH IS USED MORE OFTEN, CASH OR CREDIT?"* *ONE ANSWER ALLOWED*	1 = Cash/ **Kontant** 2 = Credit/ **Krediet** 3 = Both, cash more often/ **Albei, meer kontant** 4 = Both, credit more often/ **Albei, meer krediet** 5 = Both, cash and credit equal **Albei, kontant en krediet op gelyke vlak**	
4.7	How would this household classify its financial situation these days? Would you say it is very comfortable, comfortable, just getting by, poor, or very poor? Hoe sal die huishouding die finansiele posisie deesdae klassifiseer? Is dit baie gemaklik, net gemaklik, kan net uitkom, arm, baie arm.	1 = Very comfortable/ **Baie gemaklik** 2 = Comfortable/ **Net gemaklik** 3 = Just getting by/ **Kan net uitkom** 4 = Poor/ **Arm** 5 = Very poor/ **Baie arm**	
4.8	During the last thirty days, for how many days did your household not have enough to eat? Gedurende die laaste dertig dae, vir hoe lank het die huishouding nie genoeg gehad nie?	*Write in Number of Days:* _____ **Days**	

4.9	In an average month, how much does this household spend on the following items? Oor 'n gemiddelde maand, hoeveel spandeer die huishouding op die volgende items?	1 = Accommodation/ housing (including rates, taxes and services such as electricity)/ **Huisvesting (water en ligte, huisbelasting ens ingesluit)**	R
		2 = Education/ **Opvoeding**	R
		3 = Transport/ **Vervoer**	R
		4 = Food and drink (including alcohol and tobacco products)/ **Kos en drinkgoed (alkoholiese drank en tabakprodukte ingesluit)**	R
		5 = Household goods (including cleaning products and appliances)/ **Huishoudelike goedere (skoonmaak produkte en goedere ingesluit)**	R
		6 = Clothing and shoes (including personal care items such as toiletries and hairdressing)/ **Klere en skoene (persoonlike items soos toiletries en haarafsprake ingesluit)**	R
		7 = Health services and medicines (including medical aid subscriptions)/ **Gesondheidsdienste en medisyne (mediese voorskrifte ingesluit)**	R
		8 = Fuel for heating and cooking/ **Brandstof vir verhitting en kook**	R

4.10	How many months could this household live off the savings and investments of all members if there were no other sources of income? Vir hoeveel maande kan hierdie huishouding van die spaargeld en beleggings van al die lede van die huishouding leef indien daar geen ander bron van inkomste is nie?	1 = No savings at all/ **Geen spaargeld** 2 = Less than one month/ **Minder as een maand** Other (Specify)_____ months **Ander (Spesifiseer)** _____ **maande**	

We would like to invite you and your household to take part in a Health Diary survey over the next eight weeks. **All household members over the age of 18 years are encouraged to participate.** If you agree to participate, I will need to ask you a few short questions about your health and your perceptions of health services. After that, all we would need from you is approximately 10 minutes each week to fill out a short diary about your health that week.

Ons wil graag u en u huishouding uitnooi om deel te neem aan die Gesondheidsdagboek opname wat oor 'n tydperk van agt weke sal strek. *Alle lede van die huishouding wat 18 jaar en ouer is kan deelneem.* Indien u instem om deel te neem, sal ek u graag 'n paar kort vragies wil vra oor u gesondheid en begrip van gesondheidsdienste. Na dit, sal ons net 10 minute van elke week van u in beslag neem om die kort dagboek van die week by u in te vul en op te neem.

This is what we mean by a Diary… (*show sample Diary*)… and as you can see, these are simple questions that you can fill out in your own time during the week.

Dit is wat ons bedoel by dagboek …. (wys voorbeeld dagboek). En soos u kan sien, is dit baie maklike vragies wat u moet invul oor die tydperk van 'n week.

5.1	Are you comfortable in reading in any of the following languages? **Kan u hierdie ander tale gemaklik lees?** *READ OUT*	1 = English 2 = Afrikaans 3 = Xhosa 4 = Not comfortable reading in any of these languages.	
5.2	If no: Is there anyone else in the household who is comfortable reading in English/Afrikaans/Xhosa and would be able to assist you? *Indien nee:* **is daar enige iemand anders in die huishouding wat gemaklik is om in Engels/Afrikaans/Xhosa te lees, wat u kan ondersteun?**	1 = Yes/ **Ja** 2 = No/ **Nee**	

Each week I would come to visit you to drop off a new diary and collect the old diary. If at any time you don't want to continue with the Diary you can just tell me when I come to see you and you can stop immediately. When I visit, I will also be able to help you with any difficulties you are having with the diary.

Ek sal u elke week besoek om die voltooide een op te tel en die nuwe een af te gee. Indien u op enige tydstip nie wil aangaan met die Dagboek nie, kan u my net vertel wanneer ek na u toe kom. U kan onmiddellik stop. Wanneer ek u besoek kan ek u ook help indien u enige moeilikheid met die invul van die dagboek ondervind.

5.3	Would you like to participate in the Health Diary survey? **Wil u deelnaam aan die Gesondheidsdagboek opname?** **THIS QUESTION MUST BE ADDRESSED TO ALL HOUSEHOLD MEMEBERS OVER 18 YEARS OF AGE**	1 = Yes/ **Ja** 2 = No/ **Nee**	

If yes:

1. All respondents who agree to participate **must now sign the acceptance letter** (the respondent who answered the introductory survey will already have signed a letter but still needs to agree to do the diary).

2. All respondents who agree to participate must now complete the Introductory Health Survey. You need to ask this survey, <u>it is not a self completion survey</u>.

3. Once the Introductory Health Survey is complete, you will use a Weekly Health Diary to show the respondent how to fill out the Diary.

4. Finally, you will leave a new Health Diary with each person participating and one pencil case per household.

5. You must also schedule a time to collect these Diaries. Leave the reminder slip with the respondent so they know when to expect you back.

> **INTERVIEWER READ OUT:** Thank you very much for your time. All of the information you have given me has been very helpful. As part of our quality control system, a supervisor from Development Research Africa may visit you to check that this interview did take place. They will also ask you a few questions, some will be the same as what I have asked. This is nothing to be worried about. They are simply making sure I have done my job correctly.

Baie dankie vir u tyd. Al die informasie wat u ons gegee het is van groot hulp. As deel van die kwalitieits kontrole sisteem, mag daar 'n toesighouer van Development Research Africa u besoek. Dit is om net te sien of die veldwerker u wel besoek het. U hoef nie bekommerd te wees nie. Ons kyk net of die werk korrek gedoen is.

INTERVIEWER COMPLETE SECTION 6 AND, ONCE THE LETTERS HAVE BEEN SIGNED, ADMINISTER THE INTRODUCTORY HEALTH SURVEY.

6. INTERVIEW EVALUATION – TO BE COMPLETED BY INTERVIEWER ONLY

6.1	Record time at end of interview.	___:___ HH MM 24 HOUR CLOCK	
6.2	Language(s) used during interview? *MULTIMENTIONS POSSIBLE*	1 = English 2 = Xhosa 3 = Afrikaans Other (Specify)_____	
6.3	Were other persons within hearing range at any time during the interview?	1 = No other person within hearing range at any time 2 = 1+ persons within hearing range for part of interview 3 = 1+ persons within hearing range for all of the interview	
6.4 ☞	Did more than one person help to complete this questionnaire?	1 = Yes 2 = No \ *SKIP TO Q6.6*	
6.5	If so, which household members helped to complete the questionnaire?	*FILL IN THE LINE NUMBERS OF THOSE WHO ASSISTED* Line #:_____ Line #:_____ Line #:_____	
6.6	Any additional comments about specific questions or data quality? **(If respondents refused to participate in the health diaries please explain the reasons here)**		
6.7	<u>GENDER OF INTERVIEWER</u>	1 = Male 2 = Female	
>	**INTERVIEWER: PLEASE GO TO COVER SHEET AND COMPLETE NUMBER OF HOUSEHOLD MEMBERS AND NUMBER OF DIARY PARTICIPANTS.**		

2

INTRODUCTORY HEALTH SURVEY

Introduction
INTERVIEWER PLEASE READ OUT:

Dear Sir/Madam,

Thank you for agreeing to participate in the Weekly Health Diary. Before I show you how to use the Diary I need to ask you a few questions about your health and your views of health service providers. Please remember that you may refuse to answer any question and we can stop at any time.

Ukwazisa

Isibuliso Mhlekazi/ Nkosazana
Siyabulela ngenxaso yakho kulencwadi yethu. Phambi kokuba siqale, ndifuna ukukubonisa ukuba isetyenziswa njani. Ndifuna ukukubuza imibuzo embalwa ngempilo neembono zakho ngeenkonzo zempilo. Ukhumbule ukuba awunyanzelekanga ukuphundula imibuzo kwaye singayeka naninina xa ungasafuni kuphendula.

INTERVIEWER: Please take a moment to copy the cover page from the Introductory Household Survey into the blocks below.

Name:		**Line Number:** (From Introductory Household Survey)	
EA Number:		**Household Number:**	
Date:	____/____/____ DD MM YY	**Convenient contact number:**	
Diary Number			

.1.	**INTERVIEWERS VISIT:**									
		VISIT 1		VISIT 2		VISIT 3		VISIT 4		VISIT 5
	Date Time Result	a1 b1 c1		a2 b2 c2		a3 b3 c3		a4 B4 c4		a5 b5 c5

SEE RESULT CODES ON SHEET PROVIDED

2.	**INTERVIEWER NAME :** _____	**CODE:**			

3.   **DATE COMPLETED INTERVIEW:** ☐☐ / ☐☐ / 2 0 0 4
                                      d d   m m   y y y y

4.CHECKED BY SUPERVISOR: NAME: ....

5.   **DATE:** ☐☐ / ☐☐ / 2 0 0 4
                 d d   m m   y y y y

1. PERSONAL HEALTH STATUS:

1.1	In general, how would you rate your health? **Ngokunokwakho ungathi injani impilo yakho?**	1 = Excellent/ **Iphucuke ngokugqibeleleyo** 2 = Very good / **Iphucuke kakhulu** 3 = Good / **Iphucukile** 4 = Fair / **Ingcono** 5 = Poor / **Isenzima** 6 = Very poor / **Isenzima kakhulu**	
1.2 ☞	Do you suffer from any long term or chronic illness? **Unesigulo esinganyangeki?**	1 = Yes / **Ewe** 2 = No / **Hayi** \ *SKIP TO SECTION 2*	
1.3	What is your long term/ chronic illness (or its symptoms)?/ **Sithini isigulo onaso okanye iimpawu zaso?** *DO NOT PROMPT*	1 = Diabetes 2 = High blood pressure 3 = Low blood pressure 4 = Asthma 5 = Epilepsy 6 = Arthritis 7 = TB/Tuberculosis 8 = HIV/AIDS Other (Specify) _____	
1.4 ☞	Are you receiving treatment for your long term/ chronic illness (or its symptoms)? **Lukhona na unyango olufumanayo kwisigulo sakho okanye iimpawu zaso?**	1 = Yes/ **Ewe** 2 = No/ **Hayi** \ *SKIP TO SECTION 2*	
1.5	Where/ from whom do you receive the treatment for your long term/ chronic illness (or its symptoms)? **Uwafumana phi okanye kubani unyango kwisigulo sakho?** *DO NOT PROMPT MULTIPLE MENTION POSSIBLE.*	1 = Public/Government Hospital 2 = Public/ Government Clinic 3 = Other public/ Government sector provider (Specify) 4 = Private hospital 5 = Private clinic 6 = Private doctor/specialist 7 = Traditional healer 8 = Spiritual or alternative healer 9 = Pharmacy/ Chemist 10 = Health facility provided by employer 11 = Other private health service provider (Specify) 12 = None	
1.6	Why do you visit this/these provider(s) for treatment? **Kutheni undwendwela lendawo okanye ezindawo xa ufuna unyango?** *DO NOT PROMPT MULTIPLE MENTION POSSIBLE*	1 = Clean 2 = Good reputation (heard from others) 3 = Personal experience 4 = Has good equipment/ the right equipment 5 = Will give a thorough examination 6 = It is a specialised provider 7 = More chance of seeing a doctor 8 = Staff is friendly 9 = Waiting times are shorter 10 = It is closer to home/ convenient for transport 11 = I trust this service provider 12 = They will receive more attention at this provider 13 = The staff is more knowledgeable/ better trained 14 = They will have more privacy with this provider 15 = This is a safer provider 16 = They will have the necessary drugs available 17 = Affordable Other (Specify) _____	

2. AWARENESS AND PERCEPTIONS OF HEALTH SERVICE PROVIDERS

2.1	Which service providers do you know of or have ever heard of? Zeziphi iinkonzo zempilo ozaziyo okanye oweva ngazo? (Uvumelekile ukukhetha ngaphezulu kwenye impendulo. *DO NOT PROMPT* *MULTIPLE MENTION POSSIBLE*	1 = Public/Government Hospital 2 = Public/ Government Clinic 3 = Other public/ Government sector provider (Specify) 4 = Private hospital 5 = Private clinic 6 = Private doctor/specialist 7 = Traditional healer 8 = Spiritual or alternative healer 9 = Pharmacy/ Chemist 10 = Health facility provided by employer 11 = Other private health service provider (Specify) 12 = None	
2.2	Which of the following service providers have you personally ever used? Zeziphi iinkonzo zempilo ubuzindwendwele ngokwakho kwezi zilandelayo? (Uvumelekile ukukhetha ngaphezulu kwenye impendulo) *READ OUT.* *MULTIPLE MENTION POSSIBLE*	1 = Public/Government Hospital / **Isibhedlele sikarhulumente** 2 = Public/ Government Clinic / **Ikliniki karhulumente** 3 = Other public/ Government sector provider (Specify) **Elinye iziko lezempilo likarhulumente** 4 = Private hospital / **Isibhedlele sabucala** 5 = Private clinic / / **Ikliniki yabucala** 6 = Private doctor/specialist **Ugqirha wabucala okanye okhethekileyo** 7 = Traditional healer / **Isangoma** 8 = Spiritual or alternative healer **Umthandazeli okanye lxhwele** 9 = Pharmacy/ Chemist / **Ikhemesiti** 10 = Health facility provided by employer **Iziko lezempilo emsebenzini wakho** 11 = Other private health service provider (Specify) **Elinye iziko lezempilo labucala** 12 = None / **Ayikho**	
2.3	Which of the following service providers would you never consider using? Leliphi iziko kula alandelayo ongazoze ulisebenzise? (Uvumelekile ukukhetha ngaphezulu kwenye impendulo). *READ OUT.* *MULTIPLE MENTION POSSIBLE*	1 = Public/Government Hospital / **Isibhedlele sikarhulumente** 2 = Public/ Government Clinic / **Ikliniki karhulumente** 3 = Other public/ Government sector provider (Specify) **Elinye iziko lezempilo likarhulumente** 4 = Private hospital / **Isibhedlele sabucalal** 5 = Private clinic / / **Ikliniki yabucala** 6 = Private doctor/specialist **Ugqirha wabucala okanye okhethekileyo** 7 = Traditional healer / **Isangoma** 8 = Spiritual or alternative healer **Umthandazeli okanye lxhwele** 9 = Pharmacy/ Chemist / **Ikhemesiti** 10 = Health facility provided by employer **Iziko lezempilo emsebenzini wakho** 11 = Other private health service provider (Specify) **Elinye iziko lezempilo labucala** 12 = None / **Ayikho**	

FOR ALL SERVICES PROVIDERS MENTION IN Q2.3. PLEASE CIRCLE THE YES COLUMN ON THE PAGE BELOW

2.4. Thinking now about those service providers that you would never consider using. Why would you never consider using these service providers?

Xa ucinga ngoku ngamaziko ezempilo laa uthe uwusoze uwasebenzise. Kungokuba kutheni usithi lawusoze uwasebenzise laamaziko ezempilo?

(Uvumelekile ukukhetha ngaphuzulu kwemphendulo enye)

ASK FOR EACH PROVIDER RESPONDENT MENTIONED IN Q2.3. MULTIPLE MENTION POSSIBLE. CIRCLE APPROPRIATE ANSWER. DO NOT PROMPT

2.4		If service provider mentioned in Q2.3, mark as a YES.		Dirty facilities/	Bad reputation	Have had a bad personal experience with them	Has poor equipment/ no equipment	Don't give a thorough examination	It is not a specialised provider	You will not be able to see doctor	Staff is unfriendly/ rude	Waiting times are too long	It is too far from home/ inconvenient for transport	I do not trust this service provider	You will receive less attention at this provider	The staff is poorly trained/ not knowledgeable	You will not have privacy with this provider	This is a risky provider	They will not have the necessary drugs available	Too expensive	Would never need this provider	Other: (Please specify)	Don't Know
		Yes	No																				
		00		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
2.4.1	Public/ Government Hospital **Isibhedlele sikarhulumente**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.2	Public/ Government Clinic **Ikliniki karhulumente**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.3	Other public/ Government sector provider **Elinye iziko likarhulumente**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.4	Private hospital **isibhedlele sabucala**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.5	Private clinic/ **Ikliniki yabucala**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.6	Private doctor/ specialist **Ugqirha wabucala okanye okhethekileyo**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.7	Traditional healer / **Isangoma**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.8	Spiritual or alternative healer **Umthandazeli okanye Ixhwele**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.9	Pharmacy/ Chemist/ **Ikhemesiti**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.10	Health facility provided by employer **Iziko lezempilo emsebenzini wakho**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1
2.4.11	Other Health Service Provider **Elinye iziko lezempilo labucala**	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	-1

344

2.5	How much would you expect to pay for a visit to each of these service providers for the consultation only (excluding transport costs and drug costs)?/ Yimalini oyijonge ukuba ungayibhatala xa usiya kundwendwela laamaziko ukubona ugqirha okanye umongikazi (ungayifaki imali okhwele ngayo kwakunye neyamachiza) READ OUT		
		Amount Imali	Don't Know Andazi
A	Public/ Government Hospital Isibhedlele sikarhulumente	R	-1
B	Public/ Government Clinic Ikliniki ka rhulumente	R	-1
C	Other public/ Government sector provider Elinye iziko likarhulumente	R	-1
D	Private hospital Isibhedlele sabucala	R	-1
E	Private clinic Ikliniki yabucala	R	-1
F	Private doctor/specialist Ugqirha wabucala okanye okhethekileyo	R	-1
G	Traditional healer Isangoma	R	-1
H	Spiritual or alternative healer Umthandazeli okanye Ixhwele	R	-1
I	Pharmacy/ Chemist Ikhemesiti	R	-1
J	Health facility provided by employer Iziko lezempilo emsebenzini wakho	R	-1
K	Other private health service provider Elinye iziko lempilo labucala	R	-1

2.6	Please rate the following service providers in terms of their overall quality. Please use a scale of 1 to 5, where 1 is very poor and 5 is very good./ Sicela usebenzise isikali ngokukala laamaziko ezempilo angaphantsi ngendlela asebenza ngayo. Isikali ngokwenombolo, umgangatho ongaphantsi kakhulu abe ngunye kuthi ongaphezulu kakhulu abenguntlanu HAND RESPONDENT THE SHOW CARD WITH THE SCALE READ OUT LIST OF SERVICE PROVIDERS						
		Very good	Good	Neither good nor bad	Poor	Very poor	Don't Know / Refused
1	Public/ Government Hospital Isibhedlele sikarhulumente	5	4	3	2	1	-1
2	Public/ Government Clinic Ikliniki karhulumente	5	4	3	2	1	-1
3	Other public/ Government sector provider Elinye iziko lezempilo likarhulumente	5	4	3	2	1	-1
4	Private hospital isibhedlele sabucala	5	4	3	2	1	-1
5	Private clinic Ikliniki yabucala	5	4	3	2	1	-1
6	Private doctor/specialist Ugqirha wabucala okanye okhethekileyo	5	4	3	2	1	-1
7	Traditional healer Isangoma	5	4	3	2	1	-1
8	Spiritual or alternative healer Umthandazeli okanye Ixhwele	5	4	3	2	1	-1
9	Pharmacy/ Chemist Ikhemesiti	5	4	3	2	1	-1
10	Health facility provided by employer Iziko lezempilo emsebenzini wakho	5	4	3	2	1	-1
11	Other private health service provider Elinye iziko lezempilo labucala	5	4	3	2	1	-1

3. HEALTH SERVICE PROVIDER USE

3.1	Which one of the following health service providers would you recommend to someone suffering from flu? Yeyiphi kwezi zilandelayo inkonzo yempilo ongamthumela khona umntu ogula ngumkhuhlane? *READ OUT* *SINGLE MENTION ONLY*	1 = Public/Government Hospital / **Isibhedlele sikarhulumente** 2 = Public/ Government Clinic / **Ikliniki karhulumente** 3 = Other public/ Government sector provider (Specify) **Elinye iziko lezempilo likarhulumente** 4 = Private hospital / **Isibhedlele sabucalal** 5 = Private clinic / / **Ikliniki yabucala** 6 = Private doctor/specialist **Ugqirha wabucala okanye okhethekileyo** 7 = Traditional healer / **Isangoma** 8 = Spiritual or alternative healer / **Umthandazeli okanye Ixhwele** 9 = Pharmacy/ Chemist / **Ikhemesiti** 10 = Health facility provided by employer **Iziko lezempilo emsebenzini wakho** 11 = Other private health service provider (Specify) **Elinye iziko lezempilo labucala** 12 = None / **Ayikho**	
3.2	Why would you recommend this service provider for flu? Kutheni ukhetha eliziko kumntu onomkhuhlani? *DO NOT PROMPT* *MULTIPLE MENTION POSSIBLE*	1 = Clean 2 = Good reputation (heard from others) 3 = Personal experience 4 = Has good equipment/ the right equipment 5 = Will give a thorough examination 6 = It is a specialised provider 7 = More chance of seeing a doctor 8 = Staff is friendly 9 = Waiting times are shorter 10 = It is closer to home/ convenient for transport 11 = I trust this service provider 12 = They will receive more attention at this provider 13 = The staff is more knowledgeable 14 = They will have more privacy with this provider 15 = This is a safer provider 16 = They will have the necessary drugs available 17 = Affordable Other (Specify)	
3.3	Which one of the following health service providers would you recommend to someone suffering from TB or a persistent cough with blood? Khetha libe linye iziko lezempilo ongamthumela khona umntu onesifo sephepha okanye okhohlela ade akhohlele agazi? *READ OUT* *SINGLE MENTION ONLY*	1 = Public/Government Hospital / **Isibhedlele sikarhulumente** 2 = Public/ Government Clinic / **Ikliniki karhulumente** 3 = Other public/ Government sector provider (Specify) **Elinye iziko lezempilo likarhulumente** 4 = Private hospital / **Isibhedlele sabucalal** 5 = Private clinic / / **Ikliniki yabucala** 6 = Private doctor/specialist **Ugqirha wabucala okanye okhethekileyo** 7 = Traditional healer / **Isangoma** 8 = Spiritual or alternative healer / **Umthandazeli okanye Ixhwele** 9 = Pharmacy/ Chemist / **Ikhemesiti** 10 = Health facility provided by employer **Iziko lezempilo emsebenzini wakho** 11 = Other private health service provider (Specify) **Elinye iziko lezempilo labucala** 12 = None / **Ayikho**	
3.4	Why would you recommend this service provider for TB or a persistent cough with blood? Kungokuba kutheni ungakhetha eliziko xa uthumela umntu onesifo sephepha okanye okhohlela kakhulu ekhohlela igazi? *DO NOT PROMPT* *MULTIPLE MENTION POSSIBLE*	1 = Clean 2 = Good reputation (heard from others) 3 = Personal experience 4 = Has good equipment/ the right equipment 5 = Will give a thorough examination 6 = It is a specialised provider 7 = More chance of seeing a doctor 8 = Staff is friendly 9 = Waiting times are shorter 10 = It is closer to home/ convenient for transport 11 = I trust this service provider 12 = They will receive more attention at this provider 13 = The staff is more knowledgeable 14 = They will have more privacy with this provider 15 = This is a safer provider 16 = They will have the necessary drugs available 17 = Affordable Other (Specify)	

3.5	Which one of the following health service providers would you recommend to someone suffering from <u>HIV (or someone who suspects they have HIV)</u>? Leliphi iziko lempilo ongathumela khona umntu <u>ogula yintsholongwane kagawulayo okanye umntu uzicingelayo ukuba unetsholongwane kagawulayo?</u> *READ OUT* *SINGLE MENTION ONLY*	1 = Public/Government Hospital / **Isibhedlele sikarhulumente** 2 = Public/ Government Clinic / **Ikliniki karhulumente** 3 = Other public/ Government sector provider (Specify) **Elinye iziko lezempilo likarhulumente** 4 = Private hospital / **Isibhedlele sabucalal** 5 = Private clinic / / **Ikliniki yabucala** 6 = Private doctor/specialist **Ugqirha wabucala okanye okhethekileyo** 7 = Traditional healer / **Isangoma** 8 = Spiritual or alternative healer / **Umthandazeli okanye Ixhwele** 9 = Pharmacy/ Chemist / **Ikhemesiti** 10 = Health facility provided by employer **Iziko lezempilo emsebenzini wakho** 11 = Other private health service provider (Specify) **Elinye iziko lezempilo labucala** 12 = None / **Ayikho**	
3.6	Why would you recommend this service provider for HIV <u>(or someone who suspects they have HIV)</u>? Kutheni ukhethe eliziko lezempilo nje xa umntu <u>ezisola ngokuba unetsholongwane kagawulayo</u>? *DO NOT PROMPT* *MULTIPLE MENTION POSSIBLE*	1 = Clean 2 = Good reputation *(heard from others)* 3 = Personal experience 4 = Has good equipment/ the right equipment 5 = Will give a thorough examination 6 = It is a specialised provider 7 = More chance of seeing a doctor 8 = Staff is friendly 9 = Waiting times are shorter 10 = It is closer to home/ convenient for transport 11 = I trust this service provider 12 = They will receive more attention at this provider 13 = The staff is more knowledgeable 14 = They will have more privacy with this provider 15 = This is a safer provider 16 = They will have the necessary drugs available 17 = Affordable Other (Specify)_____	
3.7	Which one of the following health service providers would you recommend to someone suffering from <u>an injury such as a stab wound or burn?</u> Leliphi iziko lezempilo ongamthumela khona umntu <u>onenxeba lokuhlanywa okanye lokutsha?</u> *READ OUT* *SINGLE MENTION ONLY*	1 = Public/Government Hospital / **Isibhedlele sikarhulumente** 2 = Public/ Government Clinic / **Ikliniki karhulumente** 3 = Other public/ Government sector provider (Specify) **Elinye iziko lezempilo likarhulumente** 4 = Private hospital / **Isibhedlele sabucalal** 5 = Private clinic / / **Ikliniki yabucala** 6 = Private doctor/specialist **Ugqirha wabucala okanye okhethekileyo** 7 = Traditional healer / **Isangoma** 8 = Spiritual or alternative healer / **Umthandazeli okanye Ixhwele** 9 = Pharmacy/ Chemist / **Ikhemesiti** 10 = Health facility provided by employer **Iziko lezempilo emsebenzini wakho** 11 = Other private health service provider (Specify) **Elinye iziko lezempilo labucala** 12 = None / **Ayikho**	
3.8	Why would you recommend this service provider for <u>an injury such as a stab wound or burn?</u> Kutheni ukhetha eliziko lezempilo xa umntu <u>enenxeba lokuhlanywa</u> okanye lokutsha *DO NOT PROMPT* *MULTIPLE MENTION POSSIBLE*	1 = Clean 2 = Good reputation (heard from others) 3 = Personal experience 4 = Has good equipment/ the right equipment 5 = Will give a thorough examination 6 = It is a specialised provider 7 = More chance of seeing a doctor 8 = Staff is friendly 9 = Waiting times are shorter 10 = It is closer to home/ convenient for transport 11 = I trust this service provider 12 = They will receive more attention at this provider 13 = The staff is more knowledgeable 14 = They will have more privacy with this provider 15 = This is a safer provider 16 = They will have the necessary drugs available 17 = Affordable Other (Specify)_____	

3.9	Which one of the following health service providers would you recommend to someone who wants to have their child immunised? Leliphi iziko lezempilo ongamthumela kulo umntu ofuna ukugonya umntwana? *READ OUT* *SINGLE MENTION ONLY*	1 = Public/Government Hospital / **Isibhedlele sikarhulumente** 2 = Public/ Government Clinic / **Ikliniki karhulumente** 3 = Other public/ Government sector provider (Specify) **Elinye iziko lezempilo likarhulumente** 4 = Private hospital / **Isibhdlele sabucalal** 5 = Private clinic / / **Ikliniki yabucala** 6 = Private doctor/specialist **Ugqirha wabucala okanye okhethekileyo** 7 = Traditional healer / **Isangoma** 8 = Spiritual or alternative healer / **Umthandazeli okanye Ixhwele** 9 = Pharmacy/ Chemist / **Ikhemesiti** 10 = Health facility provided by employer **Iziko lezempilo emsebenzini wakho** 11 = Other private health service provider (Specify) **Elinye iziko lezempilo labucala** 12 = None / **Ayikho**	
3.10	Why would you recommend this service provider for wants to have their child immunised? Kutheni ukhetha eliziko lezempilo xa ufuna ukuthumela umntu oyokugonya umntwana? *DO NOT PROMPT* *MULTIPLE MENTION POSSIBLE*	1 = Clean 2 = Good reputation (heard from others) 3 = Personal experience 4 = Has good equipment/ the right equipment 5 = Will give a thorough examination 6 = It is a specialised provider 7 = More chance of seeing a doctor 8 = Staff is friendly 9 = Waiting times are shorter 10 = It is closer to home/ convenient for transport 11 = I trust this service provider 12 = They will receive more attention at this provider 13 = The staff is more knowledgeable 14 = They will have more privacy with this provider 15 = This is a safer provider 16 = They will have the necessary drugs available 17 = Affordable Other (Specify)_____	

INTERVIEWER READ OUT: Thank you very much for your time. All of the information you have given me has been very helpful. As part of our quality control system, a supervisor from Development Research Africa may visit you or phone you to check that this interview did take place. They will also ask you a few questions, some will be the same as what I have asked. This is nothing to be worried about. They are simply making sure I have done my job correctly.

I am now going to show you how to use the Weekly Health Diary that I will leave with you when I go.

(HAND THE RESPONDENT A DIARY AND SHOW THEM HOW TO FILL IT OUT CORRECTLY)

MBUZI-MIBUZO FUNDELA NGAPHANDLE: Siyabulela ngexesha lakho. Zonke iinkcukakca ondinike zona ziluncedo kakhulu. Ngokomsebenzi wethu umqondisi wenkampani yaseDevelopment Research Africa uzakukundwendwela okanye akuthinte emxebeni ukujonga ukuba lomsebenzi ingaba wenziwe nyani na. Uzakubuza nemibuzo embalwa nje, eminye izakufana nale sendikubuze yona. Asiyonto omawuzikhathaze ngayo bafuna nje ukwazi ukuba umsebenzi ndiwenzile na.

Ndizakukubonisa indlela omawuyisebenzise lencwadi yaleveki yempilo. Ndizakukushiya nentsha ndithathe le indala, masiyenze sobabini. (Nika umphenduli umzekelo wencwadi kwaye umncede ngokuyibhala kakuhle.

DRAID (Office Use)	**3**	*Questionnaire No.* (Office Use)

WEEKLY HEALTH DIARY/ WEEKLIKSE GESONDHEIDS DAGBOEK

Introduction

Dear Sir/Madam,

Thank you for agreeing to participate in the Weekly Health Diary. This diary asks for your views about your health. This information will help you keep track of how you feel and how well you are able to do your usual activities.

Each week you will be given a diary like this one to complete. It shouldn't take you more than 10-15 minutes to fill out your health diary. At the end of the week, your field worker will pay a short visit to collect your old diary and drop off a new one for the next week. Answer every question by selecting the answer as indicated. If you are unsure about how to answer a question, please give the best answer you can. You can also ask your field worker for help when they come to collect the diary.

Before you begin the diary, please check that your details below are right. If anything has changed, please tell your field worker when they come to collect the Diary.

Bekendstelling
Geagte Meneer /Mevrou

Dankie dat u ingestem het on deel te neem aan die Weeklikse Gesondheidsdagboek. Hierdie dagboek vra u opinies oor u gesondheid. Hierdie informasie sal u help om 'n rekord te hou van hoe u voel en hoe goed u die daaglikse aktiwitieite doen.

Elke week sal u so 'n dagboek kry om te voltooi. Dit behoort u nie meer as 10 – 15 minute te neem om die dagstuk in te vul nie. Teen die einde van die week sal die veldwerker u kom besoek om die week se dagboek op te tel en om die nuwe een vir die volgende week te gee. Antwoord asseblief die vrae soos aangetoon. Indien u onseker is hoe om die vraag te beantwoord, gee asseblief die beste antwoord beskikbaar. U kan ook die veldwerker vra om u te help wanneer hy/sy die dagboek kom kollekteer.

Voordat u met die dagstuk begin, kyk net dat u besonderhede korrek is . Indien enige verandering nodig is maak net seker dat die veldwerker dit so verander wanneer hy/sy die dagboek kom kollekteer.

INTERVIEWER: PLEASE TAKE A MOMENT TO COPY DETAILS FROM THE INTRODUCTORY HOUSEHOLD SURVEY INTO THE BLOCKS BELOW

Week Number:		Diary Number:	
Name:		Line Number: From Introductory Household Survey	
EA Number:		Household Number:	
Drop off Date:	___/___/2004 dd mm	Collection Date:	___/___/2004 dd mm
Callback:	1 = Yes 2 = No	Proxy:	1 = Yes 2 = No
Convenient Contact Number:		Telephone	1 = Yes 2 = No

1. INTERVIEWERS VISIT:

	VISIT 1	VISIT 2	VISIT 3	VISIT 4	VISIT 5
Date	a1	a2	a3	a4	a5
Time	b1	b2	b3	b4	b5
Result	c1	c2	c3	c4	c5

SEE RESULT CODES ON SHEET PROVIDED

2. INTERVIEWER NAME : _____   CODE:

3. DATE COMPLETED INTERVIEW: [ ][ ] / [ ][ ] / 2 0 0 4
dd   mm   y y y y

4.CHECKED BY SUPERVISOR: NAME:

5. DATE: [ ][ ] / [ ][ ] / 2 0 0 4
dd   mm   y y y y

1. PERSONAL HEALTH STATUS / PERSOONLIKE GESONDHEIDS TOESTAND

For each of the following questions, write a number into the box next to each question. Only one number per box:

Vir elk van die volgende vrae, skryf asseblief die regte nommer in die blokkie . Net een nommer per blokkie.

1.1	Overall, how would you rate your health during the <u>past week</u>? **Oor die algemeen, hoe sal u, u gesondheid gedurende die <u>afgelope week</u> klassifiseer?**	1 = Excellent/ **Uitstekend** 2 = Very good/ **Baie goed** 3 = Good/ **Goed** 4 = Fair/ **Redelik** 5 = Poor/ **Swak** 6 = Very poor/ **Baie swak**	
1.2	During the <u>past week</u>, how much did physical health problems limit your usual physical activities (such as walking or climbing stairs)? **Gedurende die <u>afgelope week</u>, het enige fisiese gesondheids probleem u gestrem om die normale aktiwiteite te doen (soos loop en trappe klim)?**	1 = Not at all/ **Geensins** 2 = Very little/ **Baie min** 3 = Somewhat/ **Bietjie** 4 = Quite a lot/ **Redelik baie** 5 = Could not do physical activities **Kon geen fisiese aktiwiteit doen nie**	
1.3	During the <u>past week</u>, how much difficulty did you have doing your daily work, both at home and away from home, because of your physical health? **Gedurende die <u>afgelope week</u>, hoe moeilik was dit om die daaglikse take, by die huis en weg van die huis te doen as gevolg van u fisiese toestand?**	1 = None at all/ **Geen** 2 = A little bit/ **Baie min** 3 = Some/ **Bietjie** 4 = Quite a lot/ **Redelik baie** 5 = Could not do daily work **Kon nie daaglikse werk doen nie**	
1.4	How much <u>bodily</u> pain have you had during the <u>past week</u>? **Hoeveel liggaamlike pyn het u die <u>afgelope week</u> ervaar?**	1 = None/ **Geen** 2 = Very mild/ **Baie gemiddeld** 3 = Mild/ **Gemiddeld** 4 = Moderate/ **Taamlik** 5 = Severe/ **Erge pyn** 6 = Very severe/ **Baie erge pyn**	
1.5	During the <u>past week</u>, how much energy did you have? **Hoeveel energie het u die <u>afgelope week</u> gehad?**	1 = Very Much/ **Baie** 2 = Quite a lot/ **Redelik baie** 3 = Some/ **Gedeeltelik** 4 = A little/ **'n Bietjie** 5 = None/ **Geen**	
1.6	During the <u>past week</u>, how much did your physical health or emotional problems limit your usual social activities with family or friends? **Gedurende die <u>afgelope week</u>, hoeveel het u fisiese gesondheids toestand of u emosionele probleme om die normale sosiale aktiwiteite vir die familie en vriende te doen, u die <u>afgelope week</u> gestrem?**	1 = Not at all/ **Geensins** 2 = Very little/ **Bietjie** 3 = Somewhat/ **Baie min** 4 = Quite a lot/ **Redelik baie** 5 = Could not do social activities **Kon geen sosiale aktiwiteite doen nie**	
1.7	During the <u>past week</u>, how much have you been bothered by <u>emotional problems</u> (such as feeling anxious, depressed or irritable)? **Gedurende die <u>afgelope week</u>, hoeveel het u emosionele probleme (soos angstigheid, depressiwiteit of irritasies) u gepla?**	1 = Not at all/ **Geensins** 2 = Slightly/ **"n Bietjie** 3 = Moderately/ **Taamlik** 4 = Quite a lot/ **Redelik baie** 5 = Extremely/ **Uiters baie**	
1.8	During the <u>past week</u>, how much did personal or emotional problems keep you from doing your usual work, school or other daily activities? **Gedurende die <u>afgelope week</u>, hoeveel het persoonlike of emosionele probleme u teruggehou van die normale daaglikse aktiwiteite**	1 = Not at all/ **Geensins** 2 = Very little/ **Baie min** 3 = Somewhat/ **Bietjie** 4 = Quite a lot/ **Baie** 5 = Could not do daily activities **Kon nie daaglikse aktiwiteite doen nie**	
1.9 ☞	Were you sick in the past week? **Was u die afgelope week siek?**	1 = Yes/ **Ja** 2 = No/ **Nee** \ *SKIP TO SECTION 2*	
1.10	<u>If you were sick in the past week</u>, please tell us how you were feeling and what where your symptoms. For example, Louise had a fever and she was coughing. **<u>Indien u siek was die afgelope week</u>, vertel ons van u simptome en hoe u gevoel het. Byvoorbeeld, Louise het koors gehad en sy het gehoes**		

2. HEALTH SEEKING BEHAVIOUR / GESONDHEIDS GEDRAGSPATRONE

2.1 ☞	Did you visit a health service provider in the past week? **Het u 'n gesondsheids diensverskaffer die afgelope week besoek?**	1 = Yes /Ja 2 = No/Nee\ *SKIP TO Q2.3*	

2.2	In the <u>past week</u>, did you visit any of these health service providers or did you ask a friend, family member or neighbour for healthcare advice or treatment? Please tell us which provider you visited first, second, third etc by placing a tick in the appropriate box. If you used a service provider more than once, please list each visit. In die <u>afgelope week,</u> het u enige van die gesondheids diensverskaffers besoek of het u 'n vriend of familielid of bure gevra vir gesondheids advies of behandeling? Vertel ons asseblief watter verskaffer u eerste , tweede, derde ens. besoek het. Plaas die regmerkie teenoor die verlangde blokkie. Indien u die diensverskaffer meer as een keer besoek het, merk asseblief elke besoek.

		A	B	C	D	E	F	G	H	I	J
		Visit 1 / Besoek 1	Visit 2 / Besoek 2	Visit 3 / Besoek 3	Visit 4 / Besoek 4	Visit 5 / Besoek 5	Visit 6 / Beosk 6	Visit 7 / Besoek 7	Visit 8 / Beoek 8	Visit 9 / Besoek 9	Visit 10 / Besoek 10
1	Public/ Government Hospital **Publieke/ Staats Hospitaal**										
2	Public/ Government Clinic **Publieke/ Staats Hospitaal**										
3	Other public/ Government sector provider **Ander publieke/ Staats sektor verskaffers**										
4	Private hospital **Private hospitaal**										
5	Private clinic **Private kliniek**										
6	Private doctor/specialist **Private dokter/spesialiste**										
7	Traditional healer **Tradisionele genesers**										
8	Spiritual or alternative healer **Geestes of alternatiewe genesers**										
9	Pharmacy/ Chemist **Apteek**										
10	Health facility provided by employer **Gesondheids fasiliteit deur werkgewer verskaf**										
11	Other private health service provider **Ander private gesondheids diensverskaffers**										
12	Health treatment / advice from a family member, friend or neighbour **Gesondheids behandeling/advies van 'n vriend of bure**										

NOTE: ONE TICK PER COLUMN / EEN MERK PER KOLOM

| 2.3 ☞ | Did you ask anyone else for advice or treatment
Het u enige eimand anders vir advies of behandeling gevra? | 1 = Yes/ **Ja**
2 = No / **Nee** ⟍ *SKIP TO Q2.5* | |

2.4	Is there anyone else you asked for health advice or treatment in the past week? If so, please list them here and tell us how many times you visited that provider or asked that person for advice: **Is daar enige iemand anders vir wie u vir gesondheidsadvies gevra het? Indien wel, lys hulle hier en lys hoeveel keer u die persoon/ persone van advies gevra het:**		
	Person Visited ***Persoon besoek***	Number of Times Visited ***Hoeveel keer besoek***
A		
B		
C		
D		
E		

| 2.5 ☞ | If you were unwell in the past week but <u>did not seek help from a health service provider,</u> please tell us why?
Indien u siek was die afgelope week en <u>niemand se hulp gevra het nie,</u> vertel ons hoekom nie?.

MUTLIPLE MENTION POSSIBLE
MEERDERHEID OPSIES | 1 = Too expensive/ **Te duur**
2 = Too far/ **Te ver**
3 = Not necessary, self treated with what I had at home
Nie nodig gewees nie, het myself behandel met dit wat ek by die huis gehad het.
4 = No transport/ **Geen vervoer**
5 = No time/ **Geen tyd**
6 = Did not know who to see
Het nie geweet wie om te besoek nie
7 = I was not sick in the past in past week
Ek was nie siek gedurende die afgelope week nie

Other(Specify)_____ | |

3. PAYMENT FOR HEALTH SERVICES / BETAALING VIR GESONDHEIDS DIENSTE

3.1 ☞	Did you visit a health service provider in the past week? Het u 'n gesondsheids diensverskaffer die afgelope week besoek?	1 = Yes / **Ja** 2 = No / **Nee** ⟍ *SKIP TO SECTION 4*	

3.2	If you sought advise or treatment, how much did you have to pay? Please also tell us separately how much your transport cost in total (the journey there and back)? If you had to buy any medicine, please tell us separately how much that cost? If you did not have to pay, please put a zero next to the provider you visited. *Please fill in the amount in Rands next to each provider you saw in the last week.*

Indien u behandeling of advies gekry het, hoeveel het u betaal? Vertel ons ook hoeveel die vervoer gekos het, apart van die behandeling (vervoer is die retoer rit). Indien u nie nodig gehad het om te betaal nie, skryf teenoor die verskaffer wat u die vorige week besoek het.

PLEASE FILL IN THE AMOUNT IN RANDS NEXT TO EACH PROVIDER YOU SAW IN THE LAST WEEK.
VUL ASSEBLIEF DIE BEDRAG IN RANDE IN TEENOOR DIE VERSKAFFER WAT U DIE VORIGE WEEK BESOEK HET

		Amount spent in on the visit **Begrad spandeer met besoek**	Amount spent on transport for the visit **Bedrag spandeer aan vervoer vir die besoek**	Amount spent on Drugs /Medicines **Bedrag op medisyne/gene esmiddels spandeer**
A	Public/Government Hospital **Publieke/Staats Hospitaal**			
B	Public/Government Clinic **Publieke/Staats Kliniek**			
C	Other public/ Government sector provider **Ander publieke/ Staats sektor verskaffers**			
D	Private hospital **Private Hosiptaal**			
E	Private clinic **Private Kliniek**			
F	Private doctor/specialist **Private dokter/ spesialiste**			
G	Traditional healer **Tradisionele geneser**			
H	Spiritual or alternative healer **Geestes of alternatiewe geneser**			
I	Pharmacy/ Chemist **Apteek**			
J	Health facility provided by employer **Gesondheids fasilitiet deur werkgewer verskaf**			
K	Other private health service provider **Ander private gesondheids diensverskaffer**			
L	Health treatment / advise from a family member, friend or neighbour **Gesondheids behandeling/ advies van 'n vriend of bure**			

3.3 ☞	Did you pay for advice or treatment, transport or medicine? **Het u vir advies of behandeling, vervoer of geneesmiddels betaal?**	1 = Yes / Ja 2 = No / **Nee** ⎣ *SKIP TO SECTION 4* *SKIP NA DEEL 4*	
3.4	If you paid for advice or treatment, where did you get the money from to pay for the advice/ treatment? If the money came from more than one place please tick all sources. **Indien u betaal het vir behandeling of advies, waar het u die geld gekry? Indieen u die geld van meer as een plek gekry het, merk net die bron.**	1 = Own salary/ wages / **Eie salaris/loon** 2 = Own savings/ **Eie spaargeld** 3 = Family member living in this household/ **'n Familielid wat in die huis bly** 4 = Family member living outside this household/ **'n Familielid wat weg van die huis af bly** 5 = Friend or neighbour living outside this household/ **vriend of bure wat weg van die huishouding bly** 6 = Money lender/ **Geld voorskieter** 7 = Other source / **Ander bron**	
3.5 ☞	Did you use your own money to pay for advice or treatment, transport and medicine? **Het u u eie geld gebruik om vir die advies of behandeling vervoer of medisyne te betaal?**	1 = Yes / Ja ⎣ *SKIP TO SECTION 4* *SKIP NA DEEL 4* 2 = No / **Nee**	
3.6	If you did not use your own money to pay for advice or treatment , transport and medicine, do you have to pay the money back?/ **Indien u nie u eie geld vir die behandeling, vervoer en medisyne gebruik het nie, moet u die geld terug betaal?**	1 = Yes/ **Ja** 2 = No / **Nee**	

354

4. SATISFACTION WITH HEALTH SERVICES

	4.1 Did you visit a health service provider in the past week? Het u 'n gesondheids diensverskaffer besoek?		4.2 If you saw a health service provider in the past week, how satisfied are you with the service you received? Indien wel, hoe tevrede is u met die dienste wat u ontwang het? ONE ANSWER ALLOWED NET EEN ANTWOORD TOELAATBAAR 1 = Very satisfied/ Baie tevrede 2 = Somewhat satisfied 'n Mate van tevredenheid 3 = Neither Satisfied nor dissatisfied Nie tevrede of ontevrede nie 4 = Somewhat dissatisfied Mate van ontevredenheid 5 = Very dissatisfied / Baie ontevrede WRITE RELEVANT NUMBER IN THE BLOCK BELOW. ONLY ONE NUMBER PER BLOCK SKRYF DIE RELEVANTE NOMMER IN DIE BLOKKIE ONDER NET EEN NOMMER PER BLOKKIE	4.3 If you saw a health service provider in the past week, how long did you have to wait before you were seen? Indien u 'n gesondheids diensverskaffer besoek het, hoe lank moes u wag om hom/ haar te sien? IF YOU DID NOT WAIT, MARK TIME AS "00" AS U NIE GEWAG HET NIE, MERK TYD AS "00"		4.4 If you saw a health service provider in the past week, what problems, if any, did you experience? Indien u die gesondheids diensverskaffer besoek het, watter probleme, indien enige, het u ondervind tydens die week se besoeke aan die gesondheids diensverskaffer? MORE THAN ONE ANSWER ALLOWED PER BLOCK. Write the relevant number(s) in the box below MEER AS EEN ANTWOORD PER BLOK. Skryf die regte nommers in die blok hier onder 1 = Facilities not clean / Fasiliteit was nie skoon 2 = Long waiting time / lang wagperiode 3 = Opening times not convenient / Besoekure nie gerieflik 4 = Too expensive/ te duur 5 = Drugs that were needed were not available geneesmiddels wat nodig was nie beskikbaar nie 6 = Staff were rude or uncaring or turned the patient away/ personeel ongeskik of nie belangestel in pasiente nie 7 = Incorrect diagnosis / verkeerde diagnose 8 = None/ Geen Other (Specify) Ander(Spesifiseer) RECORD ALL MENTION SKRYF ALLES NEER
	YES JA	NO NEE		Hours Ure	Minutes Minute	
A	Public/Government Hospital Publieke/Staats Hospitaal	1	2				
B	Public/Government Clinic Publieke/ Staats Kliniek	1	2				
C	Other public/ Government sector provider Ander publieke/ Staats sektor verskaffers	1	2				
D	Private hospital Private Hosiptaal	1	2				
E	Private clinic Private Kliniek	1	2				
F	Private doctor/specialist/ Private dokter/ spesialiste	1	2				

355

		4.1 Did you visit a health service provider in the past week? Het u 'n gesondheids diensverskaffer besoek?		4.2 If you saw a health service provider in the past week, how satisfied are you with the service you received? Indien wel, hoe tevrede is u met die dienste wat u ontvang het? ONE ANSWER ALLOWED NET EEN ANTWOORD TOELAATBAAR PLEASE CIRCLE NEXT TO EACH SERVICE PROVIDER OMKRING ASSEBLIEF DIE VOLGENDE DIENSTE 1 = Very satisfied/ Baie tevrede 2 = Somewhat satisfied 'n Mate van tevredenheid 3 = Neither Satisfied nor dissatisfied Nie tevrede of ontevrede nie 4 = Somewhat dissatisfied Mate van ontevredenheid 5 = Very dissatisfied / Baie ontevrede WRITE RELEVANT NUMBER IN THE BLOCK BELOW. ONLY ONE NUMBER PER BLOCK SKRYF DIE RELEVANTE NOMMER IN DIE BLOKKIE ONDER NET EEN NOMMER PER BLOKKIE	4.3 If you saw a health service provider in the past week, how long did you have to wait before you were seen? Indien u 'n gesondheids diensverskaffer besoek het, hoe lank moes u wag om hom/ haar te sien? IF YOU DID NOT WAIT, MARK TIME AS "00" AS U NIE GEWAG HET NIE, MERK TYD AS "00"		4.4 If you saw a health service provider in the past week, what problems, if any, did you experience? Indien u die gesondheids diensverskaffer besoek het, watter probleme, indien enige, het u ondervind tydens die week se besoeke aan die gesondheids diensverskaffer? MORE THAN ONE ANSWER ALLOWED PER BLOCK. Write the relevant number(s) in the box below MEER AS EEN ANTWOORD PER BLOK. Skryf die regte nommers in die blok hier onder 1 = Facilities not clean / Fasiliteit was nie skoon 2 = Long waiting time / lang wagperiode 3 = Opening times not convenient / Besoekure nie gerieflik 4 = Too expensive/ te duur 5 = Drugs that were needed were not available geneesmiddel wat nodig was nie beskikbaar nie 6 = Staff were rude or uncaring or turned the patient away/ personeel ongeskik of nie belangstel in pasiente nie 7 = Incorrect diagnosis / verkeerde diagnose 8 = None/ Geen Other (Specify) Ander (Spesifiseer) RECORD ALL MENTION REKORD BOGENOEMDE
		YES JA	NO NEE		Hours Ure	Minutes Minute	
G	Traditional healer / Tradisionele geneser	1	2				
H	Spiritual or alternative healer Geestes of alternatiewe geneser	1	2				
I	Pharmacy/ Chemist / Apteek	1	2				
J	Health facility provided by employer /Gesondheids fasilitiet deur werkgewer verskaf	1	2				
K	Other private health service provider Ander private gesondheids diensverskaffer	1	2				
L	Health treatment / advise from a friend or neighbour (from a different household) / Gesondheids behandeling/ advies van 'n vriend of bure (van 'n ander huishouding)	1	2				

IF NO TO ALL, SKIP TO SECTION 5
INDIEN NEE VIR AL BOGENOEMDE SKIP NA SEKSIE 5

356

5.INCOME AND HOUSEHOLD EVENTS / INKOMSTE EN HUISEHOUDELIKE SKOKKE

5.1	Please tell us how much money you received in total after tax (i.e. take home pay) from each of the following sources this week. **Vertel ons asseblief hoeveel geld u in totaal gekry het (Voor belasting) vir elkeen van die volgende bronne hierdie week.**		
A	Work or trading (including your salary) **Werk/handel (salaris ingesluit)**	R	
B	Pension (including pensions from the government or from your employer) **Pensioen (pensioen van die staat of werkgewer ingesluit)**	R	
C	Unemployment benefits **Werkloosheids versekerings voordele**	R	
D	Disability grant **Ongeskikheids toelae**	R	
E	Child welfare grant **Kinderwelsyn toelae**	R	
F	Money you got from savings **Geld verkry vanuit spaargeld**	R	
G	Other sources (please write here where/who this money came from): **Ander bronne (skryf asseblief van waar of van wie die geld verkry is)** Source 1/ **Bron 1:** _____	R	
G1	Was it a gift, loan, remittances? **Was dit 'n geskenk, lening of toelaag?**	1 = Gift/ **Geskenk** 2 = Loan/ **Lening** 3 = Remittances/ **Toelaag** Other(Specify) **Ander (Spesifiseer)**_____	
G2	Does this person/ persons live in this household? **Bly hierdie persoon/ persone in die huishouding?**	1 = Yes/ **Ja** 2 = No/ **Nee**	
G3	Other sources (please write here where/who this money came from): **Ander bronne (skryf asseblief van waar of van wie die geld verkry is)** Source 2/ **Bron 2:** _____	R	
G4	Was it a gift, loan, remittances? **Was dit 'n geskenk, lening of toelaag?**	1 = Gift/ **Geskenk** 2 = Loan/ **Lening** 3 = Remittances/ **Toelaag** Other(Specify) **Ander (Spesifiseer)**_____	
G5	Does this person/ persons live in this household? **Bly hierdie persoon/ persone in die huishouding?**	1 = Yes/ **Ja** 2 = No/ **Nee**	
G6	Other sources (please write here where/who this money came from): **Ander bronne (skryf asseblief van waar of van wie die geld verkry is)** Source 3/ **Bron 3:** _____	R	
G7	Was it a gift, loan, remittances? **Was dit 'n geskenk, lening of toelaag?**	1 = Gift/ **Geskenk** 2 = Loan/ **Lening** 3 = Remittances/ **Toelaag** Other(Specify) **Ander (Spesifiseer)**_____	
G8	Does this person/ persons live in this household? **Bly hierdie persoon/ persone in die huishouding?**	1 = Yes/ **Ja** 2 = No/ **Nee**	

357

5.2	How much money, if any, did you save this week? **Hoeveel geld, indien enige, het u hierdie week gespaar?**	Write in rands **Skryf in rande** R...............	
5.3	How much money, if any, did you spend on medical aid or medical insurance this week? **Indien enige, hoeveel geld het u deur die mediese fonds of mediese versekering vir hierdie week spandeer?**	Write in rands **Skryf in rande** R...............	
5.4 ☞	Was there anything you needed this week that you could not afford **Was daar enige iets, die week, wat jy nodig gehad het en nie kon bekostig/koop het nie?**	1 = Yes / **Ja** 2 = No/ **Nee** \ *SKIP TO Q5.6*	
5.5	If Yes, Please explain what it was that you could not afford? **Indien ja, verduidelik asseblief wat u nie kon gekostig het nie.**		
	Write in Response: **Skryf die antwoord neer:**		
5.6	Has anything happened to this household in the last week that we should know about? For example, has anyone lost a job, experienced a theft, had an accident, received a new grant or anything else? **Het enige iets met die huishouding gedurende die afgelope week gebeur vanwaar ons moet kennis neem? Byvoorbeeld, het enige iemand 'n werk verloor, diefstal gehad, 'n ongeluk gehad, ander inkomste of toelae ontvang, of enige iets anders?**	1 = Yes / **Ja** 2 = No / **Nee**	
5.7	If Yes, Please explain what this household experienced the last week? **Indien Ja, verduidelik asseblief wat die huishouding die afgelope week ervaar het?**		
	Write in Response: **Skryf die antwoord neer:**		

That is it for this week!   Thank you very much for your time.

All of the information you have given us is very helpful. Your field worker will contact you to arrange a time to collect this Diary and to give you a new Diary for next week. As part of our quality control system, a supervisor from Deveopment Research Africa may visit you to check that the fieldworker visited you. This is nothing to be worried about. We are simply making sure that they have done their job correctly.

Dit is al vir die week! Baie dankie vir u tyd.

Al die informasie wat u ons gegee het is van groot hulp. U vedwerker sal u kontak om 'n tyd te reel vir die afhaal van hierdie dagboek en om u 'n nuwe dagboek vir die volgende week te gee. As deel van die kwalitietskontrole sisteem, mag daar 'n toesighouer van Development Research Africa u besoek. Dit is net om te sien of die veldwerker u wel besoek het. U hoef nie bekommerd te wees nie. Ons kyk net of die werk korrek gedoen is.

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Department of Public Health & Policy
Health Policy Unit
Head: Dr Ruari Brugha

Information Sheet and Consent Letter for Diary Respondents

Dear Respondent,

You are invited to take part in a Health Diary Survey over the next eight weeks. Before deciding whether or not to attend, please listen to the following information about the project. If anything is unclear, or if you would like more information, please don't hesitate to ask. Your participation in this study is entirely voluntary and you may withdraw at any time.

This study is being conducted by researchers from the University of London, the University of Cape Town, the University of the Witwatersrand and the University of Oklahoma.

If you take part in this study, you will be asked to keep a diary every week for the next 8 weeks. In the diary you will need to tell us if you felt sick during the week and whether you looked for treatment or health advice. Filling out your diary should not take more than 20 minutes a week. At the end of each week, someone will come to collect your old diary and give you a new one.

All information that you share will be kept strictly confidential. Other members of your household will not know what you put in your diary unless you choose to show them. You and your household will not be identified in any report or publication. Your privacy will be carefully protected.

You may stop at any time if you do not want to continue. You also have the right to skip any particular question or questions if you do not wish to answer them. You have the right to ask questions at any point before the interview, during the interview, or after the interview is completed.

The results of this study will help to inform government planning in the Western Cape and in the rest of South Africa. The results will also help international institutions, such as the World Health Organisation, to understand how health service use differs around the world and how this affects the health of different populations. You will receive a small token of our appreciation for your time.

We will leave a copy of this information sheet with you. Should you require any additional information, please contact: *Enver Ravat, Development Research Africa, 021- 6864436, 073 125 1703.*

By signing below, you signify that you agree to participate in the study, and that your participation is entirely voluntary.

_____   _____
SIGNATURE   DATE

359

Health Diary Survey 2004
Fieldworker Visiting Slip

DRA

DEVELOPMENT RESEARCH **AFRICA**
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1st Floor Riverside Centre
Corner Belmont & Main Road
Rondebosch, 7700

**Project manager – Enver Ravat
021-686 4436**

Dear Sir/Madam,

A survey of health service use is being conducted by Development Research Africa.

Your household has been randomly selected from this area to be included in this study. Unfortunately you were not available to be interviewed when I came. I will be coming back on _____(day) at _____(time) to conduct the interview.

The questions are not at all difficult to answer and your responses will be confidential. We would be pleased if you would make yourself available as it is an important study and your responses are important to us.

Should the time indicated not be convenient for you, and you want to schedule an appointment, please contact me. My name is _____ and my number is _____.

INTERVIEWER CHECKLIST

BEFORE YOU GO TO A RESPONDENT'S HOME PLEASE GO THROUGH THIS CHECKLIST:

Do you have the following with you?

	Item	Check the appropriate box:	
1	One Introductory Household Survey (No 1) for each household?	yes	no
2	Enough Introductory Health Surveys (No 2) for all the adults in the household (take extra just in case)?	yes	no
4	Enough Weekly Health Diaries (No 3) for all the adults in the household (take extra just in case)?	yes	no
5	Have you filled the week number on the front of all the Weekly Health Diaries (No 3)?	yes	no
6	Enough Information and Consent Letters for all the adults in the household (take extra just in case), and one to leave behind in each household?	yes	no
7.	A list of contact numbers to leave behind in each household?		
8.	One pencil case with 4 pencils and an eraser for each household?		
9	Your laminated sheet of code lists?	yes	no

BEFORE YOU LEAVE THE RESPONDENTS' HOME PLEASE GO THROUGH THIS CHECKLIST:

Have you remembered to do the following?

	Task	Check the appropriate box:	
1	Have all the letters been signed and returned to you?	yes	no
2	Have you used a sample Weekly Health Diary to show all participating respondents how to fill out the Diary?	yes	no
4	Have you left a new Weekly Health Diary with all participating respondents?	yes	no
5	Have you scheduled a time to collect the Weekly Health Diary?	yes	no
6	Have you left the reminder slip with the respondent so they know when to expect you back?	yes	no
7.	Have you left the information sheets for each respondent?		
8	Have you left enough pens or pencils for all participating respondents?	yes	no

APPENDIX 3:
MAPPING RECORD

MAPPING RECORD

1.0	Interviewer names								
1.1	EA Number								
1.2	Area name								
1.3	Date [dd/mm/yy]	DD:		MM:			YY:		

List the number and description of the landmarks found in the EA on the table below. Using the last digit of the EA number, find that number along the top row of the table. Follow that number down to the last line where a landmark is listed. The number that you come to is the number of the landmark that is the starting point.

Landmarks numbered starting in the bottom left corner and going clockwise on the map		Last digit of EA number									
		1	2	3	4	5	6	7	8	9	0
Land mark #	Land mark description										
1		1	1	1	1	1	1	1	1	1	1
2		2	1	2	1	2	1	2	1	2	1
3		3	1	2	3	1	2	3	1	2	3
4		4	1	2	3	4	1	2	3	4	1
5		5	1	2	3	4	5	1	2	3	4
6		6	1	2	3	4	5	6	1	2	3
7		7	1	2	3	4	5	6	7	1	2
8		8	1	2	3	4	5	6	7	8	1
9		9	1	2	3	4	5	6	7	8	9
10		10	1	2	3	4	5	6	7	8	9

1.4	Land mark number selected		1.5	Land mark description	

1.6	Type of settlement	1= Urban formal 2= Urban informal	

1.7	Changes to EA	Does the EA look significantly different from the 2001 photograph/map? Note any major changes here.	
1.8	Dwelling units	Have any new parts of the EA become settled since 2001? Estimate the number of additional dwelling units in these newly-settled areas.	

Office use only: Calculation of interval size or nth

		2001 census estimate	2004 adjustment
1.9	Number of dwelling units		
1.10	Sampling interval (= question 1.9/12)		

363