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Health Insurance Coverage and the Preference for Public and Private Healthcare Providers in South Africa: The Case of Outpatient Healthcare Services.

A Master's research report submitted in partial fulfilment of the Degree of Master of Commerce (Economics/Economic Science) in the School of Economic and Business Sciences,
University of the Witwatersrand

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DECLARATION

I hereby declare this as my own work. It is duly submitted in partial fulfilment of my Master's of Commerce degree. I have not copied nor do I present the whole or parts of other's work as my own. Where I have done so, I have indicated it by the use of quotation marks and I have referenced all quotations and other ideas borrowed from others.

Khanani Godi Date: 14 October 2019

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ABSTRACT

The paper sought to test if medical/health insurance coverage influences one's preference or choice between a public and private service provider when seeking healthcare. Using the South African National Health and Nutrition Examination Survey (SANHANES) dataset conducted in 2012, we ran several regressions to test this theory. The methodology employed is based on Grossman's theory of the demand for health. Logit and Probit regression models were used where the preference between a private/public service provider (dependent variable), is regressed against the determinants of demand for healthcare. We find that being insured (having medical aid) influences choice of healthcare facility with the likelihood of choosing private healthcare facilities over public ones. More specifically, the odds ratio of using a public facility decreases by 4.9 times when one is insured. This finding is consistent with that of Ataguba and Goudge (2012) who found that health insurance increases the use of private healthcare services. With the proposed National Health Insurance, it is likely that consumers will flood the private sector for the good quality service they could not afford without insurance. This influx may have an adverse impact on the efficiency and quality service delivery that the private healthcare sector boasts. As such, healthcare reforms such as the NHI should be coupled with quality improvement measures to enhance, monitor and maintain the performance and quality service in healthcare.

1. INTRODUCTION

In its 1948 constitution, the World Health Organisation (WHO) affirmed health as an essential human right (WHO, 2019). The organisation introduced the concept of Universal Health Coverage (UHC) to ensure the prioritisation of health worldwide. UHC is a system that seeks to ensure that all people and communities receive health services they need when ill, and of sufficient quality (WHO, 2019). Moreover, UHC also aims to ensure that the use of health services does not expose the consumer to financial hardship (WHO, 2019).

Achieving universal health coverage (UHC) by 2030 is embedded in the Sustainable Development Goals (SDGs) (Bergen, Ruckert and Labonte, 2019). Hence, the bulk of the developed world boast excellent universal coverage with some developing countries moving towards implementing similar reforms to achieve the SDG target (World Bank, 2015). Subsequently, South Africa seeks to implement a National Health Insurance (NHI) fund as a reform to its healthcare system. Heavy burden of diseases and structural problems in the healthcare sector are the primary reasons why South Africa seeks to introduce a form of UHC (Davies Tax Committee, 2017).

Consequently, the Department of Health (DoH) announced the formulation of a National Health Insurance that would provide universal coverage as a health reform and a response to the socio-economic injustices, imbalances and inequities of the past (DoH, 2012). The DoH further documented the key features of the proposed NHI. The reform communique outlined that the contribution towards the NHI plan will be less than what members currently pay for medical aid schemes in monetary terms (Van Der Berg, Burger, Theron, Venter, Erasmus and Eeden, 2010). In addition, low-income earners and poor citizens will be exempt from directly contributing to the NHI (Bergen *et al.,* 2019).

However, implementation of such a reform requires comprehensive research on the state of healthcare in that particular country prior to inception to ensure that all basis (both supply and demand side) are thoroughly covered. This paper seeks to contribute to the literature on NHI in South Africa by assessing the demand side of health. The South African healthcare system is “two tiered” consisting of the public and private healthcare sector. There are notable discrepancies between these two sectors mainly from a service delivery perspective. These discrepancies may partly be rooted in the funding allocation for both sectors. Funding towards healthcare in South Africa is 3 times higher than the WHO benchmark. In the 2015/16 financial year, South Africa was spending approximately 8.9% on health (Council of Medical Scheme

Committee, 2019). However, the country's healthcare still yields poor outcomes despite the significant spend. Unfortunately, the aforementioned poor conditions are more evident in the public sector. Only 4.3% of the 8.9% was spent on the public sector in 2015/16, which supports approximately 84% of the population (Council of Medical Schemes Committee, 2019). Meanwhile, the balance of the spend portion was spent in the private sector, which supports only 16% of the population (Council of Medical Schemes Committee, 2019).

Even though most primary services in the public sector are free and hospital fees are either low or not applicable for those that cannot afford to pay for healthcare; affordability is not the only determinant for healthcare consumption (ECONEX, 2009). Factors such as quality, efficiency and acceptability influence healthcare utilisation. There are significant variations in the quality of services offered in the public and private healthcare sector. These variations range from staff attitudes, waiting times, hygiene matters, medication shortages, control of infections, safety and security of staff members and patients (Davies Tax Committee, 2017) . Sadly, the public sector is renowned for longer waiting times, bad staff attitudes and medication shortages which is almost all the negative sentiments mentioned above. These variations also affect utilisation rates at public health facilities (the number of times one seeks healthcare when required). The variations also affect the preferred choice of a healthcare service provider because a rational consumer will almost always choose to go to a service provider that will ensure that they maximise their utility.

Meanwhile, the private healthcare sector, mainly affordable to consumers who are insured due to its high cost boasts quality, efficient and "acceptable" service. Insured members pay membership premiums as voluntary pre-payment for various benefit plans from a range of service providers (Council for Medical Schemes, 2012). The ability to access health insurance thus separates health demand by socio-economic status as it limits utilisation through affordability and accessibility.

According to SANHANES (2013) in order to obtain a full understanding of the efficiency, effectiveness and quality of the South African healthcare system, one must thoroughly look at utilisation patterns and perceptions thereof. Perception is a characteristic that influences preference i.e. how one perceives a certain healthcare influences their decision to consume healthcare. As such, access to healthcare services should not only be understood from a utilisation perspective but also from a non-utilisation aspect (SANHANES, 2013). Non-

utilisation of services can assist in revealing existing barriers to access to healthcare and quality of services provided (SANHANES, 2013). Limitations to accessing healthcare services encompass the availability, affordability, as well as the acceptability of healthcare services (McIntyre, Okorafor, Ataguba, Govender, Goudge, Harris, Nxumalo, Moeti, Maja, Palmer, and Mills, 2008). It follows that commendable access to healthcare services is reflected by utilisation rates. Thus, limited utilisation of healthcare services can be linked to poor accessibility and quality service issues amongst other things.

Moreover, the demand for healthcare exceeds the supply in South Africa with a ratio of 0.8 doctors per 1000 persons compared to the World Health Organisation's (WHO) ideal ratio of 1:1000 (ECONEX, 2009). This imbalance is more evident in the public sector where 8 out of 10 patients use public clinics and hospitals meanwhile the bulk of the country's doctors, dentists and specialists work in the private healthcare (DoH, 2019).

The structural healthcare sector issues outlined above along with the heavy burden of disease emphasise the need for South Africa to introduce a conducive health reform such as the NHI. The proposed NHI will not only ensure satisfactory utilisation of health services but also provide financial protection to the insured as well as freedom of choice between healthcare service providers (Ataguba and Goudge, 2012). In short, the NHI aims to provide universal coverage, which is expected to have a positive and direct impact on the accessibility, affordability and preference of healthcare facilities.

The effect of medical insurance on the utilisation of healthcare services is inconclusive and under researched. In a study done by Ataguba and Goudge (2012), the main finding is that insurance coverage results in increased use of private healthcare services with no significant influence on the use of public services in South Africa. This implies that medical insurance coverage allows the consumer to seek out a preferred healthcare service provider more than it does normal utilisation. The main reason for the preference of private over public healthcare services is embedded in the quality of services provided and perceived. Havemann and van der Berg (2002) also found that private healthcare plays an unexpectedly large role in healthcare demand and utilisation for South Africans. Furthermore, Havemann and van der Berg (2002) found that even poor respondents or those that cannot afford private healthcare reveal a clear preference for private services, despite monetary constraints and factors that limit access. Moreover, the prevalence of the demand for private healthcare is likely to increase with rising income, as this decreases the non-affordability factor (Havemann and van der Berg, 2002).

This study seeks to add to the literature on the relationship between medical insurance coverage and utilisation. More specifically, unlike Ataguba and Goudge (2012) this study will put more emphasis on whether having medical insurance (medical aid) coverage influences one's preference of healthcare service providers (choice between public and private service providers). Initial focus on the demand for healthcare in South Africa and an empirical investigation of whether having medical insurance influences choice of healthcare service provider form the basis of the study. Thus, if indeed medical insurance does influence choice of service provider how would utilisation rates change in both the public and private healthcare sector with Universal Coverage such as the NHI? Using medical aid as a proxy for health insurance will give an idea of how healthcare services utilisation and preference between different healthcare service providers will change in the presence of universal coverage or more specifically the proposed NHI.

Historically, health reforms such as universal coverage have resulted in an increase in the demand or frequent utilisation of healthcare facilities. In South Africa, as cited by Ataguba and Goudge (2012) this increase in demand is more evident in the private sector. Similarly, Taiwan and Ghana experienced an influx of healthcare utilisation after implementing their NHIs respectively. Unfortunately, the higher utilisation has adversely affected the quality of service in Taiwan. Hence quality improvement measures should be implemented with NHI inception.

The paper continues as follows: In Section 2, the literature review presents the demand for health, which is the main basis of the study along with the background of South Africa's healthcare system. Section 3 outlines the methodology and approach undertaken to answer the research question and Section 4 lays out the results of the study and a short discussion thereof. Finally, Section 5 bears the concluding remarks as well as the recommendations put forward.

2. LITERATURE REVIEW

2.1. Background

2.1.1. The Concept of Universal Health Coverage

Universal Healthcare Coverage (UHC) is enshrined in the World Health Organisation's constitution of 1948 (WHO, 2019). Health is documented a fundamental human right in the constitution and the UHC was undertaken to address health issues worldwide. UHC is a broad concept that can be implemented in various ways. UHC is defined as "a system that seeks that all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need of sufficient quality to be effective while also ensuring that the use of these services does not expose the user to financial hardship" (WHO, 2019). The definition embodies three objectives namely:

- equity in access to healthcare;
- quality of health services should be good enough to improve the health of consumers
- people should be protected against financial hardship when seeking healthcare

UHC cuts across all the health-related Sustainable Development Goals (SDGs) and brings hope of better health and protection for the world's poorest (WHO, 2019). Bulk of the developed world boasts world-class universal coverage with the best ones found in Scandinavian countries. This paper will focus on the case of Taiwan and Ghana's NHI experiences as both countries have some notable similarities and contrasts to South Africa.

2.1.2. The South African Healthcare system

The South African healthcare system is highly skewed and is widely labelled as "two tiered", (public and private) healthcare sectors. There is an extensive network of public primary healthcare (PHC clinics), community health centres and district hospitals (Davies Tax Committee, 2017). There is also a series of secondary, tertiary, central (academic) and specialised hospitals (Davies Tax Committee, 2017). These public health facilities serve most of the South African population funded by standard tax revenues (Davies Tax Committee, 2017). Moreover, South Africa's income tax system is progressive, and the public health system is redistributive (Davies Tax Committee, 2017). That is, the healthcare system is dependent on the minor percentage of the population that pay taxes.

Most primary healthcare services are free and hospital fees are low or not applicable for those that cannot afford private healthcare. There is substantial variation in the quality of public and private health services. These variations range from staff attitudes, waiting times, hygiene, medication, infection control, safety and security of staff and patients. For instance, occurrences of unsatisfactory staff attitudes have been found to be more prevalent in the public sector which affects service delivery. Nonetheless, staff members in the public sector raise concerns such as capacity constraints as the main sources for poor service delivery (ECONEX, 2009). As such, improving the quality of public healthcare remains a formidable challenge as there are various interlinkages at play (Davies Tax Committee, 2017).

The private healthcare sector on the other hand consists of several corporate hospital groups and network of pharmacies. Along with this, the private healthcare sector consists of "roughly 15000 independent general practitioners, specialists and other professional service providers" (Davies Tax Committee, 2017). Private healthcare is expensive to the majority of the population and mainly affordable to those who are members of medical aid schemes due to its high cost. These members pay membership premiums as voluntary pre-payment for several benefit plans (Council for Medical Schemes, 2012). Benefit plans may vary markedly ranging from the extensiveness of the package, and the amount of coverage to cater for the different incomes and needs of members (Davies Tax Committee, 2017). Further, some medical schemes or plans have an additional out-of-pocket component. This applies when a service is not included in the benefit plan agreed upon or when the medical aid does not cover the full cost of a particular service (Council for Medical Schemes, 2012). In addition, in the event that a member runs out of scheme benefits they are required to close the gap by paying out of pocket.

Given the above, the medical aid scheme system has certain limitations. The main limitation that the National Health Insurance seeks to address is that of co-payments and out-of-pocket payments. This will ensure a system that eliminates affordability and accessibility as a barrier to using a healthcare facility of choice.

2.1.3. Brief Synopsis of National Health Insurance Systems

The National Health Insurance's main objectives include covering every South African, employed or unemployed, earning low or high income as well as ensuring that socio-economic status of members of the public does not influence the type of healthcare received (DoH, 2019).

As such, more countries are rolling out universal health coverage programs designed to improve access to healthcare and reduce the number of people impoverished by paying for the healthcare they need worldwide (World Bank, 2015). Subsequently, the World Bank recently studied 24 developing countries that are rolling out UHC. These include Argentina, Brazil, Chile, China, Columbia, Costa Rica, Ethiopia, Georgia, Ghana, Guatemala, India, Indonesia, Jamaica, Kenya, Kyrgyz Republic, Mexico, Nigeria, Peru, Philippines, South Africa, Thailand, Tunisia, Turkey and Vietnam (World Bank, 2015). There are many other honourable mentions but for the purpose of this study Taiwan and Ghana will be the countries of focus in comparison to South Africa.

2.1.4. The National Health Insurance of Taiwan

It has been over 20 years since Taiwan implemented its National Health Insurance program which has reached approximately 99% of the population to date (Lee, Ang, Chiang and Kaplan, 2018). Taiwan spent over five years working towards implementing its NHI program. The premise for the country's NHI program was to replace the previous system that had ten separate social health insurances (Cheng and Chiang, 1998). Prior to implementing the health reform, the planners and policy makers of the country thoroughly studied health insurance systems abroad to ensure efficiency (Cheng and Chiang, 1998 and Lee *et al*., 2010).

The origin of NHI in Taiwan was also influenced by the urgent need for a better healthcare system especially following the country's economic success (Lee *et al.*, 2010). The NHI is government run and financed through a mixture of premiums and taxes as well as smaller contributions from lottery revenues (Lee *et al.*, 2010). These funding mechanisms compensate the private and public healthcare service systems, granting citizens freedom of choice between public and private healthcare (Lee *et al.*, 2010).

Since inception, Taiwan has faced some challenges with the NHI program where excessive use of healthcare services has been the most prevalent (Wu, Majeed and Kuo, 2010 and Yin, 2013). According to Lee *et al.* (2018) hospital visits have increased from approximately 13 visits per person in 2008 to 15 visits per person in 2011. More specifically, approximately 30 000 individuals insured residents seek hospital inpatient and outpatient services over 100 times a year (Yin, 2013). The influx has adversely affected the quality of healthcare in Taiwan because practitioners struggle to gather adequate information and treat patients extensively and attentively (Lee *et al.*, 2018). Consequently, the freedom of having multiple hospital return

visits, has led to high utilisation of outpatient hospital visits and other health services (Lee *et al.*, 2018).

Along with increased utilisation, the NHI has experienced increasing financial strain since inception (Lee *et al.*, 2018). It has been found that patient premiums are an insufficient funding source to cover the comprehensive health services that NHI provides, especially in the presence of extensive use (Wu *et al.*, 2010). Under these circumstances, the government bears more of the financial burden and has to allocate additional funds to offset the shortfall experienced (Lee *et al.*, 2018). In response to the financing challenge, Lee *et al*. (2018) recommends separating the NHI scheme into different target populations, "strengthening the NHI referral system and regulating the access of overseas citizens to health services while in Taiwan". Although the NHI has been active for over two decades, challenges persist and there is a continuing need to improve Taiwan's NHI.

2.1.5. The National Health Insurance Scheme (NHIS) of Ghana

The NHIS was implemented in 2005 and is funded through a range of independent sources (Van der Wielen, Channon and Falkingham, 2018). These include; "the National Health Insurance Levy; returns on National Health Insurance Fund investments; premium fees and contributions to the Social Security and National Insurance Trust" (Van der Wielen *et al.*, 2018). The NHIS was established to replace the previous "cash and carry system" which made healthcare services inaccessible for citizens that were unable to afford unplanned cash payments when seeking care (Van der Wielen *et al.*, 2018).

Since inception, Ghana has experienced higher utilisation of healthcare among NHIS members. NHIS members were 6% and 9% more likely to use inpatient and outpatient care, respectively, than non-members (Van der Wielen *et al.*, 2018). Although Ghana achieved increased utilisation of healthcare services, it has been found that the increase has been unequal within the population (Van der Wielen *et al.*, 2018). Poorer citizens are found to be still at a great disadvantage in their use of health services overall and benefit less from the NHIS (Van der Wielen *et al.*, 2018). The receipt of healthcare is significantly influenced by a set of secondary barriers to access to healthcare even where insurance should remove the financial burden of unplanned out of pocket payments (Van der Wielen *et al.*, 2018).

South Africa can use the learnings of Taiwan and Ghana to avoid the challenges experienced by the respective countries to ensure a sustainable NHI solution.

2.1.6. The proposed National Health Insurance for South Africa

As part of its 2009 Election Manifesto, the ANC announced the erection of a National Health Insurance that would provide universal coverage as a health reform and a response to the socio-economic injustices, imbalances and inequities of the past. Consequently, the South African Department of Health (DoH) outlined the key features of the proposed NHI in a white paper which aim to offer an affordable wide range of services. However, the NHI service package will not include all medical services but will offer care at all levels, "ranging from primary healthcare, specialised secondary and tertiary care as well as quaternary levels of care" (DoH, 2012). Nonetheless, the package offering will not cover "cosmetic surgery; expensive eye-care devices; medication not listed on the National Essential Drug List as well as diagnostic procedures outside specified guidelines from experts" (DoH, 2012). Thus, the NHI seeks to address health matters that are regarded as important and currently lacking in the healthcare system.

Quality services are regarded as a priority in the planning of the NHI because it is branded as the main disparity between the public and private healthcare sector. To address the issue of quality services, the NHI is committed to uphold high quality service in the private sector and improve it in the public sector. This will be achieved by firstly ensuring radical improvement in the quality of services in public healthcare through major investments (DoH, 2012). These investments will be made towards improving healthcare infrastructure i.e. refurbishment of old buildings and purchasing of new and needed equipment (DoH, 2012). Furthermore, the Department of Health seeks to ensure that every single health facility acquire accreditation to the NHI and adhere to set core standards (DoH, 2012). As such, the National Health Act is being updated to provide for the setting up of the Office of Health Standards Compliance (OHSC) (DoH, 2019). The main objective of this body is to ensure quality care from healthcare providers. An OHSC certificate at healthcare facilities will be public guarantee that standards of hygiene, safety, and respect for patients are adhered to accordingly (DoH, 2019).

There are numerous implications and challenges associated with erecting an initiative such as the NHI and in the South African case; implementation is a major concern (Van der Berg *et al*., 2010). Financing distortions of the NHI initiative serve as one of the implementation

impediments. The DoH envisions that the NHI would be implemented through the creation of a single fund. The fund will be publicly financed and administered to provide a uniform package of personal health services (DoH, 2015). Despite the above, the NHI is expected to have a positive and direct impact on the accessibility, affordability and quality of healthcare.

The NHI is set to address the need to heal divisions of the past and establish a society based on democratic values, social justice and fundamental human rights. This was enshrined in the amended draft Bill that was issued for public comment on 21 June 2018. The Department of Planning, Monitoring and Evaluation posits that the benefits of NHI are multiple and include improved financial risk protection through prepayment funding and reducing out-of-pocket payments (Department of Planning, Monitoring and Evaluation, 2017). Other benefits include:

- reduced inequities and fragmentation in both funding and provision of health services
- improved access to quality healthcare;
- improved efficiency and cost containment through streamlined strategic purchasing;
- improved accountability on the use of public funds
- better health outcomes across all socio-economic groups through improved coverage (Department of Planning, Monitoring and Evaluation, 2017).

Despite all the envisaged benefits listed above, the core objective of the NHI documented in the White Paper is the dire need to eliminate the disparities between access to healthcare services in the public and private sectors. Therefore, all South Africans will benefit from the implementation of NHI more specifically the portion of the population that cannot afford medical insurance to access desired healthcare facilities.

There are several ills that the NHI is expected to heal which form interlinkages. One of the obligations of the NHI fund as stated in the bill is to collate utilisation data and implement information management systems to assist in monitoring quality and standard of healthcare (DoH, 2015). The NHI fund is also required "to perform its functions in the most cost-effective and efficient manner possible in accordance with the values and principles enshrined in section 195 of the Constitution, the provisions of the Public Finance Management Act and in support the Health Minister's objectives to protect, promote, improve and maintain the health of the population" (DoH, 2015).

Implementing the NHI means that the Department of Health must make sure to employ suitable and qualified personnel to ensure that the supply side is well prepared for the expected increase in utilisation. These health policy issues are critical to the successful implementation of the NHI however; they have a huge bearing on the financing mechanism of the fund. With all these, will the NHI fund be able to deliver quality facilities, services and personnel? Furthermore, will the coverage be universal enough to accommodate the expected pent up demand for healthcare that will arise?

The 2018 MTBPS posits that weak economic performance and revenue shortfalls contributed to some slippage in fiscal projections (National Treasury, 2019). As a result, economic growth has remained subdued and the domestic GDP outlook has been revised down. For the year 2019/20, tax revenue is expected to be R15.4bn below the 2018 MTBPS estimate (National Treasury, 2019). Moreover, funding pressures from other financially constrained state-owned companies have increased (National Treasury, 2019). Along with these, other social spending needs have materialised i.e. free higher education. Against this backdrop, the fiscal purse is stretched even more. While implementing the NHI is a policy priority for the Health sector, government notes that quite a few issues need to be addressed prior to implementation such as staff shortages.

Thus, over the MTEF period, "R2.8bn is reprioritised from the NHI indirect grant (personal services component) to the new human resources capacitation grant to help provinces fill critical posts, including intern and community service posts" (National Treasury, 2019). In addition, R1bn is added to the provincial equitable share in 2021/22 to fund the permanent appointment of medical interns (National Treasury, 2019). This is in line with the financing reforms proposed in the White Paper which are to be supported by a complete overhaul of healthcare management including; "measures to improve the quality of public healthcare, revitalisation of health facilities and infrastructure, increased investment in the education and training of health professionals, a review of the medical drugs policy, strengthening research and development and re-engineering PHC, hospital and specialised services" (DoH, 2015).

Given the state of the healthcare system as described above it is evident that there is a need for a health reform. However, the proposed NHI will result in a greater imbalance between the supply and demand for healthcare which will manifest into massive financial constraints. The main reason for this is that the current state of the healthcare system is clouded by many ills

that need to be addressed before such a fund can be set up. An effective and efficient fund will not be functional without addressing all the other underlying issues thus great emphasis need to be placed on the foundations and planning of the NHI. Even so, the feasibility thereof is critical because it will allow the Government to determine whether the NHI is the suitable response to the healthcare system of South Africa. This can be done by studying countries that have adopted universal healthcare and how they built their solutions.

2.1.7. NHI Pilots and Progress

In 2013 pilot districts to lay the foundation for the NHI were established (DoH, 2016). These pilots were situated in all the 9 provinces and 11 Districts. The pilots were designed to test interventions necessary for implementing NHI whilst also strengthening the functioning of the district health system (DoH, 2016). According to the DoH (2016), the pilots would strengthen the performance of the public health system in readiness for the full rollout of NHI. The findings from monitoring the pilots would then inform the way forward and the financing plans for the NHI.

One of the initiatives took the form of designing an “Ideal Clinic” which started in July 2013 as a strategy to systematically improve the deficiencies in public sector PHC facilities and the quality of care provided (DoH, 2016). The National Health Council (NHC) gave a directive on 24 April 2015 for all PHC facilities to have attained the “Ideal” status within three years beginning in the second financial year after inception which would be 2015/16. The “Ideal Clinic” model had 10 components and 32 subcomponents, each sub-component had specific elements that needed to be in place (DoH, 2016). Each element was assigned a weight, method of measurement, performance and level of responsibility. The status of performance was determined by applying the tool of measurement against these elements and the results found are tabulated below.

Table 1: Ideal Clinic Status by District

District	**Number of clinics that conducted status determination**	**Average % scored**	**Total number of clinics with IC status**
OR Tambo	25	66%	2
T Mofutsanyane	13	89%	10
Tshwane	38	85%	32
Amajuba	10	88%	9
uMgungundlovu	18	85%	12
Umzinyathi	18	88%	18
Vhembe	32	67%	11
G Sibande	19	79%	11
Pixley ka Seme	9	80%	1
Dr K Kaunda	10	79%	0
Average / Total	192	79%	106

Source: Department of Health

The Ideal Clinics performed well across indicators such as: administration; integrated clinical service management; medicines, supplies and laboratory services; human resources for health; support services; infrastructure; health information management; communication; district health support system; implementing partners and stakeholders (DoH, 2016). Notable improvement initiatives include improving quality and human resources. Challenges noted in the pilots were mainly around financing and information synchronisation which are some of the most important issues that need to be addressed in order to roll out the NHI efficiently.

2.2. The Demand for Healthcare

The prevalent outcome following the implementation of an NHI is that it results in an increase in the demand for healthcare. This notion is based on results deduced from research conducted in numerous countries that have implemented a form of universal coverage (Van der Berg *et al*., 2010). More specifically, McIntyre *et al*., (2008) found similar results in Ghana and Taiwan. Both countries experienced a drastic increase in the demand for healthcare when certain healthcare services were provided cost free (McIntyre *et al*., 2008). It is therefore evident that lowering or eliminating the cost factor serves as a solution for making healthcare more accessible and affordable for consumers.

The implementation of an efficient health reform has remained elusive in South Africa despite three government-appointed committees working on the matter (Shisana, Rehle, Louw, Zungu-Dirwayi, Dana, and Rispel, 2006). The gradual pace can be associated with the great socio-economic inequalities background of the country. These include issues such as having bulk of the doctors serving in the private sector, the HIV/AIDS epidemic, low literacy levels and skewed demographics (Shisana *et al*., 2006).

2.2.1. The demand for health model

The "demand for health model" by Grossman (1972) established the theoretical basis for a health demand function. The main proposition of the model is that health can be viewed as a durable capital stock that produces an output of healthy time, which can enhance productivity (Grossman, 1972). More specifically, demand for healthcare is regarded a "derived demand" a special kind of the demand concept. Derived demand is the consumption of a good consumed for the goods derived from it rather than the good itself (Grossman, 1999 and Havemann and van der Berg, 2002). That is, healthcare is not consumed as an end itself but consumed because individuals seek to be healthy and want to maximise their utility.

Affordability and accessibility play a huge role in the decision to seek out healthcare when ill or not amongst other things. Moreover, acceptability of service also plays a major role in seeking out healthcare. When a consumer decides to seek out healthcare, they also consider their satisfaction with services provided hence they prefer to go to a service provider that will likely provide quality services. For instance, some respondents from an ECONEX (2009) study mentioned that they would rather not seek out healthcare than be subjected to poor service and

ill-treatment. In South Africa, good quality services in the healthcare sector is mostly associated with the private sector. However, since access to private healthcare facilities is limited due to high costs preference is also limited. That is, even if one prefers the private sector, if they cannot afford to pay for the aforementioned services then they are inclined to go to a public facility.

The Rand Health Insurance Experiment conducted a study to test if free medical care would lead to better health and increased utilisation. It was found that demand and or utilisation of healthcare increases with universal coverage (Aviva, Einav, and Finkelstein, 2013). Further, existing data on the demand for healthcare in South Africa point to the existence of pent-up demand in the presence of free medical care (ECONEX, 2009). This data show that under "a system of universal coverage, a comprehensive benefit package and zero co-payments there will be an order of magnitude increase in the demand for healthcare services" (ECONEX, 2009). Nonetheless, the question of how the utilisation rate is split between the two health sectors cannot be ignored. Sohn and Jung (2016) cite that moral or utilisation hazard arises when universal coverage is introduced but which facilities experience this increased footprint.

2.2.2. Determinants of the Demand for Healthcare

What then determines the demand for healthcare and the type (preference) of healthcare service provider? The decision to seek out healthcare is dependent on whether consumption thereof will result in maximising one's utility or not when ill (Acton, 1975; Akinboade *et al*., 1999, Havemann and van der Berg, 2002 and Van der Berg *et al*., 2010). However, other factors influence the consumption of healthcare. These range from social characteristics and economic stance (Havemann and van der Berg, 2002). The first point (social characteristics) is subject to how one perceives their health based on their social stance and surroundings whilst the economic stance is subject to monetary resources available such as income or money to pay for healthcare services (out fee payment or transport money).

Other factors that influence the consumption of healthcare by Havemann and Van der Berg (2002) include the characteristics of consumers (i.e. their preferences), care received and illness. Thus, the main determinants of the demand for healthcare that also affect utilisation include the following as per (Van der Berg *et al.*, 2010):

- Price; subdivided into official, unofficial, travel cost and lost work;

- Quality;
- Income;
- Social, household and cultural characteristics; and,
- Knowledge of available healthcare as well as general and health education.

The determinants of demand for health are factors that influence the demand for the good "health" and operate at the individual and household level (Ensor and Cooper, 2004). These further determine whether an individual identifies illness and is willing and able to seek out healthcare (Ensor and Cooper, 2004).

An honourable mention of the quality factor is critical as it concerns the consumer's preference. The desired and preferred quality of healthcare is mostly provided by the private sector worldwide (Price, 1988; Akinboade *et al*., 1999; Havemann and van der Berg, 2002 and Shipley, 2010) This is because private healthcare boasts "better resources and services" although it is associated with high costs (Havemann and van der Berg). This gives rise to the assumption that the demand for healthcare is high because people do not only seek healthcare but a high-quality service providing system as well (Price, 1988; Havemann and van der Berg, 2002; and McIntyre *et al.*, 2008).

2.3. Rationale of study

Due to limited data available, most health care demand studies are either inconclusive or not pursued at all. However, the broad predictions of Grossman's theory are generally supported by empirical literature. Table 2 below summarises a sample of notable healthcare demand studies as a conclusion to the literature available on the concept.

Table 2: Sample of healthcare demand studies

Paper	Title	Method	Findings
Ataguba and Goudge (2012)	The Impact of Health Insurance on Healthcare Utilisation and Out-of-Pocket Payments in South Africa.	Propensity score matching.	The paper finds that insurance coverage increases the use of private health services with no significant effect on the use of public services.
Cheng and Chiang (1998)	Disparity of Medical Care Utilisation Among Different Health Insurance Schemes in Taiwan	Logistic and Poisson regression models	Persons with different insurance plans had a similar higher probability of seeing a doctor than the uninsured, with the odds ratios ranging from 1.8 to 2.0. Findings from the study concerning the access and use of physician services in different insurance plans provide some useful information for reforming a healthcare delivery system.
Havemann & Van der Berg (2002)	The demand for health care in South Africa.	Multinomial logistic regression	Private healthcare seems preferred over public healthcare; whereas public healthcare portrays the characteristics of an inferior good; the nature of the illness/injury plays a significant role in determining healthcare demand.
Kabongo and Mbonigaba (2016)	Demand-side determinants of access to healthcare services: Empirical evidence from Africa	ARDL panel model and pooled mean group estimators	Findings from this study imply that policy makers should focus on income to increase access to healthcare while taking cognisance of country-specific conditions in the short run to mitigate varying levels of shocks.
Nyambura (2016)	Determinants of Demand for Healthcare Services in Private Hospitals in Kenya.	Binary Probit Model Regression	The study indicated that individuals with access to health information through mass media had high likelihood of increased demand for private hospital care at 10% level of significance by 2.58% holding other factors constant.

Source: Various authors

Considering the diverse findings in the table above it seems, affordability and accessibility play a huge role in healthcare utilisation and preference. In addition, those with medical aid are likely to use healthcare more often than those without with the likelihood of frequenting private healthcare facilities.

3. METHODOLOGY

The Methodology section outlines the estimation approaches undertaken to answer the research question "does medical insurance influence the preference between a public and private service provider"?

3.1. Theoretical Model and model specification

The "demand for health model" by Grossman (1972) is used as a basis for this study. Grossman regards the demand for healthcare an input variable in the consumer's production function of health. Further, the level of demand for healthcare services is determined by the extent to which individuals will strive to get their preference or desires satisfied however, this is usually limited by access and affordability. Since healthcare is not a direct but a derived good, the main proposition of the model is that health can be regarded as a durable capital stock that produces an output of healthy time and can enhance productivity (Grossman, 1972). Thus, as a consumption good, healthcare enters directly into the consumer's utility function as a variable based on preference amongst other things. The model is based on the following assumptions:

- "Individuals are born with an initial capital stock of health";
- "Capital stock of health depreciates with age";
- "Capital stock of health can be increased by investment in health";
- "Households are subject to a household production function";
- "Households maximise their utility given income and resource constraints";
- "Medical healthcare is one of the inputs into the utility function subject to the same income and resource constraints as any other" (Grossman, 1972)

The premise of the Grossman model is defining the intertemporal utility function of a consumer to be equal to equation (1) below (Grossman, 1972).

$$U = U(\emptyset_0 H_0, \ldots., \emptyset_n H_n; Z_0, \ldots.. Z_n \qquad (1)$$

Where:

- H_0 = the inherited stock of health;
- Hi = the stock of health in the *ith* time period;
- Φi = the service flow per unit stock;
- $Hi = \Phi i\ Hi$ = the total consumption of "health services, and

- Zi = consumption of another commodity (aggregate of all commodities besides health)

Given the equation above it follows that net investment in the stock health enters the model

$$Hi + 1 - Hi = Ii - \delta iHi \qquad (2)$$

Where:

Ii = gross investment in the stock health

δi = rate of depreciation during the *ith* period ($0<\delta i<1$) (exogenous but vary with the age of the individual)

Further, consumers produce gross investment in the health and other commodities in the utility function according to a set of household production functions

$$Ii = ii(Mi, THi; Ei), \qquad (3)$$

$$Zi = Zi(Xi, Ti; Ei) \qquad (4)$$

Where:

Mi = goods purchased in the market that contribute to gross investment in health (Medical care)

Xi = goods input in the production of the commodity Zi,

THi and Ti = time inputs, and

Ei = consumer's stock of knowledge or human capital (exogenous)

The inter-temporal utility function can further be maximised to derive the expected behaviour of a rational consumer (Grossman, 1972 and Grossman, 1999). According to (Havemann and Van Der Berg (2002) "maximisation within a budget constraint leads the individual to equate the marginal return on the asset (health) with its marginal cost". Hence, a consideration of all other factors that enter the demand for health.

The individual derives utility from the consumption of both health goods and non-health goods. Utility can thus be specified as a function of the quantity of healthcare. However, as reviewed in the theoretical literature and emphasised by Grossman (1999) and Mosadeghrad (2014), "socio-demographic variables such as age, race, education, social class and health status as

well as attitudes, and behaviours, actions and cooperation may have an influence on the utilisation of healthcare services". Health as a capital good that depreciates over time at an increasing rate with age (Grossman, 1972 and Grossman, 1999). Thus, in case of illness, an individual must choose between seeking treatment or not, depending on their health and productivity preferences. They also need to consider certain factors before deciding to seek out treatment. For instance, the individual may base their decision on the following; where to go based on their social class; how much time they are willing to wait before being treated; distance to healthcare facility and the anticipated attitudes of the health practitioners who will treat them (Grossman, 1999).

3.2. Empirical Model

The study's objective is to determine if having medical aid influences one's preference between healthcare service providers. That is, does having medical aid offer more freedom of choice when deciding where to go when ill i.e. between a private or public healthcare service provider? This entails specifying equation 4 which is consistent with Grossman's theory of the demand for health (Van der Berg, 2010) to encompass socio-economic demographics, accessibility and affordability which influence the demand and preference of healthcare utilisation that further increase or enhance the capital stock of health.

More specifically, the study will focus on three categories of factors that influence the demand for healthcare namely, socio-economic demographics, accessibility and affordability. These categories represent the independent variables of the study. The choice of variables was influenced by literature and data employed. Based on Van der Berg (2010) the empirical model takes the form:

$$Prefi = \beta 0 + \beta 1SED + \beta 2Ac + \beta A + \varepsilon i \qquad (5)$$

- *Prefi* =The dependent variable preference (public or private service provider)
- SED = Socio-economic Demographics
- Ac = Accessibility
- A = Affordability
- ε_i = Error term

3.3. Model Estimation

The choice of estimation was determined by the nature of the data. The dataset employed is purely survey based with a combination of both quantitative and qualitative data. The variables of the study are as defined in Table 3 (below). The baseline model is a linear probability model. We further employed Logit and Probit methods which are better suited for binary choice dependent variables. The two methods are appropriate whenever the dependent variable is binary and takes values 0 or 1. A logit regression is a nonlinear regression model that forces the output (predicted values) to be either zero or one and estimate the probability of the dependent variable to be 1 thus the probability that some event happens (Gelman and Hill, 2007). Logit and Probit models are basically the same with the difference found in their distribution. Logit has a cumulative standard logistic distribution (F) whereas Probit has a cumulative standard normal distribution (Φ); however, both models provide similar results (Gelman and Hill, 2007). Furthermore, we also employed non-parametric tests such as the Chi-square test of independence to determine whether there is a significant association between the variables preference and medical aid. All estimations were run using STATA.

3.4. Data and variables definition

The data employed for the study is from the SANHANES survey conducted in 2012, which includes a comprehensive module on healthcare utilisation, inclusive of questions on users' perceptions regarding specific aspects of the quality of care as well as a general assessment of the quality of care. Data for this survey were collected in two separate but integrated components. These components included "administering questionnaires to participants such as conducting interviews and performing a clinical examination i.e. medical check-up by a doctor, selected measurements by a nurse/clinic assistant as well as collecting a blood sample for biomarker analysis from each participant" (SANHANES, 2013). The study will focus on outpatient activity, as it is more inclusive of healthcare as a whole as opposed to inpatient utilisation or hospitalisation.

Table 3: Variables Definition

Variables	Definition	Dummy
	Dependent Variables	
	Preference	
Prefer	Preferred service provider i.e. private or public healthcare facility when seeking out healthcare	(Private, Public)
	Independent Variables	
	Accessibility	
Number	Over the past 12 months, how many times in total did you receive healthcare in an outpatient care situation (SANHANES, 2013)	{0, 1, 2, 3, 4, …}
Demandhealth	Do you seek out healthcare when ill?	(Yes, No)
Transportation	What kind of transportation did you use to go to a hospital? Private car, bus, etc.	(Private, Public)
Distance	How far is the healthcare facility of your choice from your house.	{0-10 min, 10-20 min, 20-30min, …}
Geotype	Rural or urban resident	(Urban, Rural)
	Affordability	
Outfee	How much did you pay for your consultation when you sought out healthcare	{R50, R100, R150, R200, …}
Medical	Do you have medical aid or not?	(Yes, No)
	Socio-Economic Demographics	
Race	What race are you?	(White, Black otherwise)
Age	How old were you on your previous birthday	{15, 20, 30, 40, 50, …}
Employed	How would you describe your present employment situation?	(Employed, Unemployed)
Econhub	Do you stay in any of the 3 provinces, KZN, WC or GP?	(Yes, No)

Source: (SANHANES, 2013)

3.5. SANHANNES variables

3.5.1. Preference

We create a binary variable "Preference" by merging responses to the following questions:

- What type of hospital did you go to when seeking healthcare in the past 12 months? Public (1) or Private (0)

The question above gives an indication of the demand/utilisation of healthcare along with the preference of service provider over the past year. That is, the year before the study was carried out. This approach needs to be applied with caution considering that some people tend to categorise illness which may also affect or influence utilisation frequency. For instance, people may categorise illness into minor and major where they would rather selfheal for the illnesses they consider to be minor to only seek out healthcare if they are "seriously" ill. Also, due to a low response rate on the frequency or number of times a person has visited a medical facility we opt for a binary measure of whether a person visited a medical facility in the preceding period the SANHANES study as well as the type of facility. A brief description of the independent variables is given below along with how they feature into the model estimation.

3.5.2. Socio-Economic Demographics

The demographic characteristics that are explored in this study include age, race, locality (captures accessibility, geotype), province (econhub) and employment. Locality and province are critical in exploring if location influences utilisation. For instance, how accessible are healthcare facilities in rural Kwa-Zulu Natal? These variables will assist in determining whether social demographics have an influence on healthcare utilisation.

3.5.3. Accessibility

This variable refers to how accessible healthcare facilities are to consumers. Questions such as how long it took one to get to a hospital captures accessibility. The longer the distance travelled to access a health facility we assume the less accessible. This may perpetually result individuals rationing utilisation especially in the case of "minor illnesses". Further, access to health insurance may increase accessibility to preferred health facilities which may increase the demand for healthcare.

3.5.4. Affordability

The affordability variable encompasses issues around the costs associated with seeking healthcare services. Questions ranging from “how much one pays for consultation or transportation to and from a healthcare facility”, “who pays for consultation”, best probe for healthcare costs.

3.5.5. Quality

Although not explicitly featured in the estimation, quality is implicitly encompassed by the preference variable. Where participants clearly implied that quality plays a huge role in their choice of healthcare consumption. Questions such as the ones listed below were analysed to deduce how preference or quality affects healthcare utilisation as a substantiating factor:

- Overall how satisfied were you with the care you received during your last visit to a healthcare facility?
- How would you rate the amount of time you waited before being attended to outpatient?
- How would you rate the way health care was provided in your area?
- What type of hospital or clinic would you go to? (Private or Public)
- Why would you choose a private hospital/clinic/doctor?
- Do you have health insurance/medical aid?

4. ESTIMATION AND DISCUSSION OF RESULTS

This chapter outlines the results of the estimations as well as the discussion and interpretation thereof. The study used OLS, binary Logit and Probit regression models. Descriptive and regression results are presented in form of tables and figures below

Utilisation patterns and perceptions are instrumental in understanding the effectiveness and quality of the South African healthcare system (SANHANES, 2013). As such, access to healthcare services should not only be understood from a utilisation perspective but also from a non-utilisation one (SANHANES, 2013). Non-utilisation of services can assist in revealing existing barriers to access to healthcare and quality of services provided (SANHANES, 2013). Limitations to accessing healthcare services include the availability of health services, affordability of services as well as the acceptability of services (McIntyre, *et al*., 2008).

It follows that commendable access to healthcare services is reflected by utilisation rates thus limited utilisation of healthcare services can be linked to poor accessibility and quality issues among other things. Knowing utilisation rates or what proportion of the population is utilising both inpatient and outpatient services is, therefore, important in order to understand issues pertaining to healthcare access and perceived quality (SANHANES, 2013). It is therefore imperative to know or understand what influences healthcare utilisation and to what extent it hinders or lessens utilisation.

4.1. Descriptive Statistics

Table 4 presents the descriptive statistics of the variables that are used in the estimation. The sample (N) varies across the variables as respondents did not answer all questions or rather skipped questions that they were not comfortable answering. Nonetheless, high non-response rates are common in these kind of surveys (SANHANES, 2013). The data shows that on average the respondents were of the working class (42 years) with the youngest respondent being 15 and oldest 98. The variation age was 18. The data further shows that 32.9% of the respondents are employed and 35.8% have medical aid. The variation from the mean is not drastic for medical aid and employment status.

Furthermore, respondents reported that on average transport costs to healthcare facilities amount to R33.89 with the minimum being R0 (those within walking distance to a healthcare facility) and the maximum being R4000. As a result, the variation from the mean amounts to

R145.4. Other notable variations from the mean include, outfee payments at R775.8 meanwhile the average amount paid is R134.80. Alarmingly, the minimum amount of outfee payment is 0 (possibly enjoyed by those with medical aid or those that go to a free medical healthcare facility), however, the maximum amount is R17000 which could be an outfee payment required for specialist treatment amongst other things. Distance also yields quite a vast variation from its mean confirming skewness in the data.

Table 4: Summary Statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Geotype	2,905	1.934	1.144	1	4
Prefer	2,905	0.786	0.410	0	1
Medical aid	1,367	0.358	0.480	0	1
Age	2,904	42.95	18.04	15	98
Employed	2,905	0.329	0.470	0	1
Econhub	2,905	0.448	0.497	0	1
Race	2,880	0.0517	0.222	0	1
Outfee	1,124	134.8	775.8	0	17,000
Transport costs	1,061	33.89	145.4	0	4,000
Distance	2,229	21.36	12.22	0	70
Demandhealth	2,866	0.967	0.178	0	1
Number	2,803	1.868	1.238	0	4

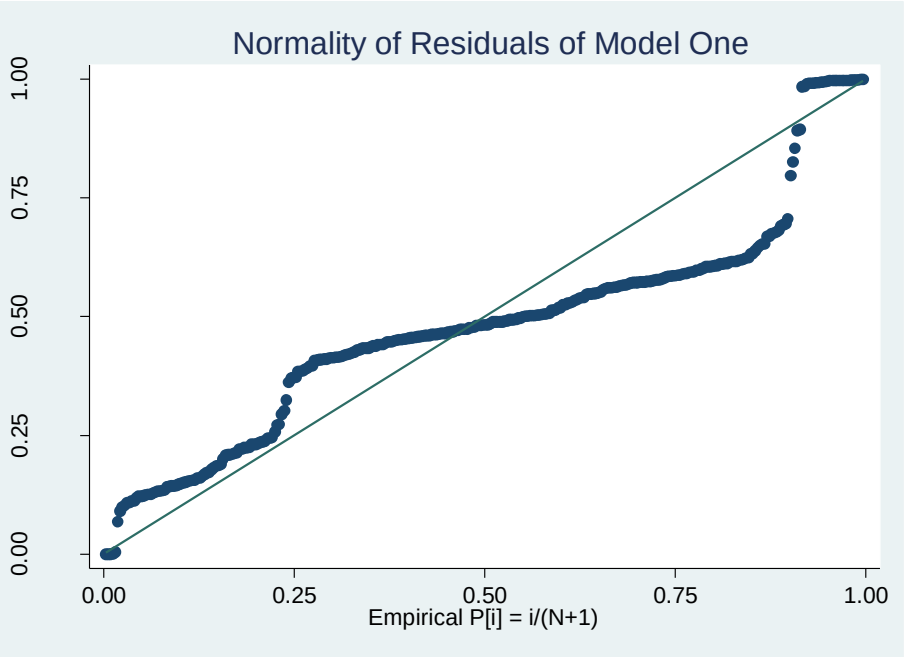
Source: Author's calculations

4.2. Pre-estimation Tests

4.2.1. Normality Test

A normality test to determine whether the residuals/error terms are normally distributed was conducted. This was done to limit erroneous results because when normality assumptions do not hold, it is impossible to draw accurate and reliable conclusions about reality. The results of the test show that the data employed is not normally distributed hence we reject the null hypothesis of normality of the residuals. This is however expected in such dynamic data sets hence the adoption of the Logit and Probit models for the study.

Figure 1: Normality Test



4.2.2. Multicollinearity test

A correlation matrix was run to establish the presence of multicollinearity amongst the regressors. To confirm existence of Multicollinearity, variance of inflation factors were computed. It was found that all Variance Inflation Factors (VIF) are less than 5, thus multicollinearity is not detected. See VIF results on table 5 below.

Table 5: Multicollinearity Test

Variable	**VIF**	**1/VIF**
Outfee	1.49	0.670022
Medical aid	1.47	0.682404
Transport costs	1.35	0.742163
Geotype	1.28	0.781332
Race	1.21	0.823435
Demandhealth	1.19	0.838562
Employed	1.15	0.872252
Number	1.13	0.886937
Distance	1.12	0.892734
Age	1.11	0.897009
Econhub	1.08	0.926035
Mean VIF	1.23	

Source: Author's calculations

4.2.3. Heteroscedasticity Test

Heteroscedasticity implies variation of the residuals across all the observations under study. The results revealed the presence of Heteroscedasticity in the data which was corrected by using robust standard errors estimates to address the issue of Multicollinearity. The unstable variance is also evident in the normality plot in Figure 1 seen above, confirming the heteroscedasticity issue in normal OLS.

Table 6: Heteroscedasticity Test

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
      Ho: Constant variance
      Variables: fitted values of prefer

      chi2(1)      =  117.68
      Prob > chi2 =   0.0000
```

Source: Author's calculations

4.3. Model Estimation Results: OLS, Logit and Probit Regressions

The study estimated the relationship between the dependent variable (prefer) which represents the likelihood that a consumer uses a public facility (1) or private facility (0). That is, y=1 if one uses a public facility when ill and 0 otherwise. The dependent variable prefer is regressed against the explanatory variables (determinants of demand). Findings are as shown in Table 7 below. From the regression results, the pseudo R^2 value was found to be reasonably sufficient at 0.642%.

Column 1 from Table 7 outlines the OLS results. The test confirms that being employed, living in an economic hub, one's race, one's demand for healthcare, and having medical aid are all significant to preference. Meanwhile, Age, outfee payments, transport costs, distance to and from a medical facility, the number of times one goes to a healthcare facility in a year as well as the variable geotype (from an urban or rural area) are found to be insignificant. We further ran a stepwise regression in order to regress the most relevant variables. The regression dropped all the insignificant variables as shown in Table 8 with no significant changes of the betas.

Columns 2 and 3 yield the logit and probit regression results respectively. logit and probit models are quite similar in nature and hence provide similar results although the odd ratios of

the logit regression are almost double that of the probit model in Table 7. The variables employed, econhub, race, transport costs, distance, number, medical aid, yield negative odd ratios on both the logit and probit regressions. This suggests that the likelihood to go to a public health facility decreases when employed or when one has medical aid. More specifically, when employed, one is likely to have medical aid. Furthermore, having medical aid may increase their preference for a private healthcare facility because they can afford it. Also, living in an economic hub i.e. Pretoria one has access to several private hospitals within close proximity thus this convenience it is highly likely that they would use a facility closer than travelling a distance.

Finally, race is significant with high negative odds ratios suggesting that the likelihood for white people to use public facilities is very low. This can be linked to high access to private facilities, disparities in economic status and thus not having affordability as a hindrance to accessing private healthcare facilities.

Table 7: OLS, Logit and Probit Regressions (Preference against determinants of demand

Dependent Variable:	Preference		
	(1)	(2)	(3)
VARIABLES	OLS	LOGIT	PROBIT
Age	0.000	0.007	0.002
	(9.690e-04)	(1.223e-02)	(6.552e-03)
Employed	-0.075**	-1.018**	-0.510**
	(3.673e-02)	(4.646e-01)	(2.496e-01)
Econhub	-0.074**	-1.144**	-0.676***
	(3.255e-02)	(4.684e-01)	(2.589e-01)
Race	-0.234***	-2.767***	-1.520***
	(6.152e-02)	(1.047e+00)	(5.763e-01)
Outfee	0.000	0.002	0.001
	(1.365e-04)	(1.124e-03)	(6.352e-04)
Transport Costs	-0.000	-0.001	-0.000
	(2.988e-04)	(2.941e-03)	(1.628e-03)
Distance	-0.000	-0.012	-0.005
	(1.264e-03)	(1.844e-02)	(1.033e-02)
Demandhealth	0.302**	3.534***	1.836***
	(1.379e-01)	(1.215e+00)	(6.773e-01)
Number	-0.010	-0.198	-0.101
	(1.328e-02)	(2.230e-01)	(1.174e-01)
Geotype	0.018	0.230	0.114
	(1.366e-02)	(2.455e-01)	(1.319e-01)
Medical aid	-0.674***	-4.968***	-2.702***
	(5.481e-02)	(6.192e-01)	(2.908e-01)
Constant	0.716***	1.497	0.885
	(1.463e-01)	(1.414e+00)	(7.973e-01)
Observations	324	324	324
R-squared	0.642		
N	324	324	324
F	84.56		
r2_a	0.629		
ll		-73.38	-73.31
r2_p		0.617	0.617
chi2		236.1	236.2

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations

Table 8: Stepwise to keep important variables at 0.05 significance

VARIABLES	(1) OLS_STEP
Medical aid	-0.669***
	(3.532e-02)
Race	-0.206***
	(6.779e-02)
Econhub	-0.078**
	(3.093e-02)
Demandhealth	0.243**
	(9.780e-02)
Employed	-0.065**
	(3.319e-02)
Constant	0.789***
	(9.841e-02)
Observations	324
R-squared	0.637
F	111.6
r2_a	0.631

Source: Author's calculations

A Chi Squared test of Independence was further employed to determine whether there is a significant association between the variables preference and medical aid. This is imperative because it is the core of the study. A positive correlation would imply that those with medical aid seek out healthcare more frequently.

Table 9: Chi^2 Independence Test

	Medical		
Prefer	0	1	**Total**
0	14	379	393
1	864	110	974
Total	878	489	1,367
Pearson chi^2 (1) = 883.5375 Pr = 0.000			

Source: Author's calculations

The P-value (0.000) was reached and is less than the significance level (0.05), we reject the null hypothesis. This suggests that there is a relationship between medical and number.

4.4. Discussion

The main finding of the study is that being insured (having medical aid) influences preference of healthcare provider implying access to a preferred healthcare facility. More specifically, it was deduced that the likelihood for using a public facility decreases 4.9 times when insured. Firstly, this substantiates that indeed the 16% with medical aid in South Africa almost always prefer private healthcare facilities (Davies Tax Committee, 2017). This finding is also consistent with that of Ataguba and Goudge (2012) that insurance coverage increases the use of private health services with no significant effect on public healthcare utilisation.

Given this result, one can presume that with NHI people will likely flood the private sector for the good quality service they lacked without medical insurance. Subsequently, the private sector should be well positioned to absorb the influx while maintaining quality service and efficiency. Taiwan is currently faced with declining quality service since the inception of its NHI as health practitioners struggle to manage the increasing utilisation of healthcare services. As such, quality improvement and monitoring models should be established to maintain the quality service the private sector boasts with increased utilisation when implementing health reforms such as the NHI. Also, since the NHI seeks to improve the quality of public healthcare facilities then maybe improved utilisation will be evenly spread between both the public and private sector.

Further, being employed and living in an econhub was negatively related to preference suggesting that when one is employed, they have the flexibility of choice and are more likely to choose a private health facility. However, the choice may also be dependent on income brackets amongst other things. This pieces together with the affordability hindrance and the finding by Kabongo and Mbonigaba (2016). Thus, it would be beneficial to also focus on income growth to increase access to healthcare however, the country's specific conditions such as structural unemployment and income inequalities need to be considered to mitigate varying levels of shocks in the short run.

Moreover, South Africa has various socio-economic challenges with structural unemployment on top of the list. As such, income targeting as a short-term solution will not address the access and affordability issue currently at hand however, in the long run this approach will result in an efficient solution. Econhubs are believed to have a variety of healthcare facilities which leave a consumer with more options compared to those who live on the outskirts and rural

areas. As a result, people who live in econhubs are likely to use private healthcare facilities or rather the likelihood of someone using public healthcare decreases when they live in an econhub. The main reason for this may be convenience. It is highly likely that anyone would prefer to use a facility closer than travelling a distance.

Although distance is found to be statistically insignificant, it also has negative odds ratios meaning that the likelihood for a consumer to travel to a public healthcare facility decreases the further the facility. This confirms that distance too does influence preference and utilisation. Geotype on the other hand yields positive odds ratios. The main reason here could be that those who live in rural areas are accustomed to what surrounds them and what is reachable/accessible. It also applies to those who live in urban areas, they might go to a private hospital because it is within close proximity and also maybe because the public facilities close by are more desirable or rather more user friendly than those in rural areas.

Literature affirms that access and affordability are the main constraints to healthcare utilisation however, acceptability and or quality also play a significant role when deciding on a health service provider. According to Havemann and van der Berg (2002) in South Africa, private healthcare seems to be preferred over public healthcare. The main rationale behind this is that public healthcare portrays the characteristics of an inferior good (Havemann and van der Berg, 2002).

Finally, race is found to be statistically significant with highly negative odds ratios suggesting that the likelihood for white people to use public facilities is very low. This can be linked to high access to private facilities, disparities in economic status and thus not having affordability as a hindrance to accessing private healthcare facilities. The variables: age, outfee, demandhealth, and geotype yield positive odd ratios implying that age has no bearing on the type of healthcare service provider choice and outfee payments may influence preference as payment to a private facility might be more costly. The estimation results are consistent with literature that medical aid influences utilisation but more specifically preference. Moreover, other determinants and covariates such as economic stance, socio-economic factors and demographics also have an influence on choice of service providers and in South Africa, the likely choice is towards a private healthcare facility.

5. CONCLUSION AND RECOMMENDATIONS

This section concludes the research study as well as outlining policy recommendations and further areas of study.

The factors that determine the demand for healthcare range from monetary factors, which are mainly dependent on money in one way or another. Therefore, most policy makers almost always favour addressing the cost factor (affordability and accessibility) as an attempt to improve and address the demand and utilisation for healthcare services. The study tested this theory by regressing preference of healthcare facilities between private and public against the determinants of the demand for healthcare mainly to determine if being insured influences utilisation and preference of service provider or not.

The main finding from this study is that medical aid influences preference and that affordability and accessibility factors also have a significant impact on healthcare utilisation. Other important factors range from quality of services which plays a huge role in choice of service provider as well as economic stance, socio-economic factors and demographics. Other honourable mentions are education and awareness which also play a huge role in knowing where to go when ill.

The main recommendation for this study is that implementing NHI is one method in which policy makers can attempt to address the accessibility and affordability limitations to healthcare. However, both the demand and supply side need to be addressed simultaneously for efficiency purposes. That is, the NHI must ensure that quality service is maintained in the private sector and improved in the public sector in order to meet the expected increase in demand. The implementation process for NHI in South Africa has been in progress since 2009. The main reason behind this extended period of execution has to do with the challenges that accompany the policy. Most of these challenges are embedded in the state of the South African healthcare system pre and post 1994 as well as the financing of the NHI policy. Some of the notable recommendation raised by the CMS NHI committee include:

- Strict regulation, to ensure that the existence of other health insurance products in an NHI environment are not destabilising to the future role of medical schemes and the NHI fund, leading to the erosion of the overall financial protection.

- The timing of legislative changes must be carefully considered in order to allow for a seamless transition from a supplementary to complementary benefits cover within the medical schemes' environment.
- The office of Health Standards Compliance (OHSC) needs to ensure that there is compliance with norms and standards for quality, by all healthcare facilities
- A mixed NHI funding method is recommended with a strong emphasis to progressivity on tax funding.
- The funding mechanism adopted should be implemented within the context of efficiency and fiscal consolidation

Further, Quality improvement should form part of the prioritised costs in the implementation process because it appears in different forms. Firstly, quality improvements take the form of infrastructure enhancement. Most public healthcare facilities will need major refurbishments and equipment to ensure that they provide quality service. It also consists as a form of human resource improvements. That is, the measures that need to be taken to up-scale/skill public health practitioners which will come at a high cost. In the 2019 budget the Minister of Finance mentioned that over the MTEF R2.8bn is reprioritised to human resource capacitation to ensure that critical posts are filled. This will close the gap of staff shortages and under skilled managerial personnel as per (Davies Tax Committee, 2017). If the quality improvements in the public sector mimic quality service provision as in the private sector, then utilisation will not be dependent on preference.

The government needs to start creating awareness regarding the NHI and how it is going to operate. This will assist in gathering the appropriate data from beneficiaries of the policy well ahead of time and of course drive frequent utilisations as soon as it kicks in. It is also important to note that in the long run the main fuel of the NHI is a correction of other socio-economic issues such as unemployment. Employment will address the income hindrance and increase access to healthcare. In addition, since the main funding mechanism for NHI is tax, the higher employment rate will translate into a higher taxpayer pool.

Financing the NHI remains a current and future challenge which needs to be tabled cautiously. The current proposal that tax will be the main financier is too simplistic especially given the other pressures on the government purse such as free higher education, struggling SOEs and

government debt repayments. As such, other funding measures need to be considered along with key learnings from similar structured countries that have implemented such health reforms.

Historically, health policies tend to focus mostly on the supply rather than the demand side of healthcare. Data limitations are noted to be one of the main reasons for the lack of focus on the demand side. The added complication of uncertainty, and a lack of data on certain key variables, makes empirical implementation of such models difficult. Thus, studies towards better data collation are imperative. The current issue in the South African case especially in preparation for the implementation of the NHI is constraints experienced in the synchronisation of the financial and programmatic data supporting the planning cycle which would ensure that available data can be used timeously, and financial resources allocated effectively to support realisation of programmatic objectives. Without such information the financial implications of establishing universal care will be massive, the area of study will remain flawed, and proxy based.

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