

**DETERMINANTS OF HEALTH INSURANCE UPTAKE AMONG LOW INCOME  
POPULATIONS IN KIBERA-NAIROBI, KENYA**

**EMMAH WANJIKU NG'ANG'A**


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**DECLARATION**

This research project is original work and has not been submitted to examination in any other University.

Signature .....  ..... Date ... 08/11/2021.....

**EMMAH WANJIKU NG'ANG'A**

**REG NO: X51/76205/2012**

This research project has been accepted for examination with my approval as the assigned university supervisor



Signature ..... Date .....08.11.2021.....

**DR. MARTINE ODHIAMBO OLECHE**

## **DEDICATION**

This project is dedicated to my parents Alice Njeri and Francis Ng'ang'a for their thirst and love for education. I know how much they wanted this for me. To my siblings (Maggy, Essy and Swaleh) - for them to know that there are no limits in life except for those we impose upon ourselves.

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## **LIST OF ABBREVIATIONS**

<b>ANOVA</b>	Analysis of Variance
<b>CHIS</b>	Community-Based Health Insurance Schemes
<b>DW</b>	Durbin Watson
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>LM</b>	Lagrange multiplier
<b>NACOSTI</b>	National Commission for Science Technology and Innovation
<b>NHIF</b>	National Health Insurance Fund
<b>NHIS</b>	National Health Insurance Services
<b>OOP</b>	Out of Pocket
<b>PRISMA</b>	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
<b>SDG</b>	Sustainable Development Goals
<b>SPSS</b>	Statistical Package for Social Sciences
<b>UHC</b>	Universal Health Coverage
<b>USD</b>	United States Dollar

## **ABSTRACT**

Insurance is critical for any country's economic growth and development to be sustainable. Universal Health Coverage (UHC) is a critical pillar of the Sustainable Development Goals (SDGs), and Kenya has identified it as a critical component of ensuring the country's economic sustainability. In rural areas and among the illiterate, unemployed, poor, and the vulnerable in society, health insurance adoption is extremely low in Kenya. The purpose of this study was to determine the factors that influence health insurance uptake among low-income populations in Kibera, Nairobi County. Data was collected through semi structured questionnaires distributed to households located in Kibera. Simple random sampling was adopted in selecting 399 respondents. In estimation, the study employed binary Probit regression model where health insurance ownership was used as the dependent variable while age, gender, marital status, household size, school attainment, occupation, income levels, religion, cultural beliefs, frequency of hospital visits, cost of premiums and also pre-existing illness were used as the independent variables. Results showed that only 27.6 percent of the respondents had health insurance coverage. Following model estimation, the findings revealed that occupation, income levels, and religion significantly influence health insurance ownership among low-income populations in Kibera, Nairobi. Public health insurance cover was the most owned type of health insurance scheme. Recommendations were for the ministry of health and other relevant stakeholders to raise knowledge on the various health insurance options available and improve flexibility of the products in order to drive insurance uptake. In addition, national and county government need to develop programmes and policies that could empower households in the informal settlements. Further, it is necessary for the government to subsidize the cost of acquiring public health insurance covers since this would encourage uptake among low-income families. Lastly, the ministry of health should work in conjunction with various religious denominations to campaign for uptake of health insurance among the poor.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background to the Study

The provision of high-quality healthcare has been declared a global priority. Universal health coverage (UHC) is a critical pillar of the Sustainable Development Goals (SDGs), which aims to promote delivery of quality health services (WHO, 2020). Barasa, Nguhiu, and McIntyre (2018) note that every state's citizen should be in a position where they can access services from hospitals that they require without financial impoverishment or any risk. This can be realised through subsidizing and promoting access to affordable health insurance (Gitau, 2016). Insurance is a risk mitigation mechanism where clients receive protection against losses in exchange for payment of a premium and payment is always due before the contingent claim is serviced by the insurer. Insurance is essential for sustainable economic growth and development in any particular country (Davoud, Mohammad, Ali, Hosein, & Sadeghi, 2013).

According to Dixon et al., (2011) health insurance is the practice of healthy people contributing funds as a group to a pool to cater for hospital expenses in case there is need for treatment in the future. While developed nations have made steps higher in achieving efficient health utilization through availability of various health insurances, the same cannot be said for the developing nations, especially for the poor and the vulnerable groups (persons with disabilities), women and children alike (Kim & Lee, 2016). Globally, on average 150 million people are lack a concrete health plan. In Africa, the effects of catastrophic healthcare expenditure are intense, given the overwhelming bulk of empirical proof pointing to the low penetration of health insurance (Barasa, Mwaura, Rogo, & Andrawes, 2017). Fior Markets (2020) indicated that the globally, coverage for healthcare is set to increase from USD 1465.8 to USD 2021.62 B in the next ten years. This growth is being attributed to government initiatives, efficient processes, increasing medical costs, clear reimbursement policies and

prevalence of lifestyle diseases. However, the growth is more prevalent in the public and private healthcare providers within developed countries.

In Africa, Statista (2019) noted that despite the continent being home to 17% of the global population, only less than 1% of the households have health insurance. In Africa lack of policy uptake is due to poor income and domination of non-life insurance products across different firms. Locally, Ariga, (2018) reported that the National Hospital Insurance Fund (NHIF) provides cover for at least 20% of Kenya's population, with private insurers catering for only 2% of the population. The reports indicated that low-income levels, lack of awareness, education level and occupation level have largely predicted insurance uptake in the country.

In Kenya health insurance adoption is very low within the rural areas and among the illiterate, individuals in the informal sector and more so among the poor and most vulnerable populations (Barasa, Mwaura, Rogo, & Andrawes, 2017). Most of the households pay for healthcare through out of pocket (OOP), and the rest the NHIF and other private insurance (KNBS, 2013). According to Zollmann & Ravishankar (2016), around 20% of Kenyans are in a health insurance scheme while the rest of the population rely fully on out-of-pocket payments. This poses a huge financial burden to the rest of the population, with 43% of the population surviving on little over a dollar per day (World Health Organization, 2016). Maina, Kithuka and Tororei (2016) note that the insured population is mostly insured due to requirement from their employers.

Most governments are concerned with promoting universal health coverage and have made it their priority to attain it. This has been observed through the numerous healthcare reforms in the country including the NHIF reforms of 2015 where Kenya prioritized the attainment of UHC by 2022 via expanding the NHIF reach (President Speech, 2017). Despite the efforts, out-of-pocket (OOP) expenditure is still at a staggering high (26.1%) which is twice the

recommended UHC target of 12-15% (Ministry of Health, 2019). With the Kenyan constitution guaranteeing all Kenyans the right to life and attainable health standards, the achievement of UHC should be given the utmost priority by the government. Various nations consider health insurance to be key to attaining UHC since it would guarantee access to quality medical services at minimal financial strain (Hassan, Mwaura-Tenambergen, & Eunice, 2017). A high rate of out-of-pocket spending results in increased poverty and lack of adequate finances would result in undesirable health outcomes. Saiti, Yitambe and Korir (2020) remarks that quality healthcare should be a guaranteed service that the government offers all its citizens, regardless of their ability to pay for it, in line with the health system objectives of equity, quality and efficiency (WHO, 2014).

### **1.1.1 Determinants of Health Insurance Uptake**

In Pakistan, Jahangee and Huq (2015) revealed that households headed by a male, with children and elderly dependents expressed a tendency to register with health insurance companies. In Cambodia, size of household, level of education and the number of dependents had a positive effect on the health insurance enrolment rate (Ozawa, Grewal, & Bridges, 2016). In their review, Fadlallah, et al. (2018) reported a strong influence of socio-demographic factors on health insurance uptake. Older, married couples were more inclined to make regular insurance payments, while single, younger individuals were less inclined to partake in health insurance.

In Zimbabwe, Mhere (2013) revealed that the age of an individual was a vital factor of enrolment in health insurance scheme. In another study in Nigeria, Oyekale (2012) revealed that age, the family size, and number of dependants in a household significantly impacts the family's decision to apply for insurance services. The researcher explained that older individuals tend to have more responsibilities towards their families, albeit a fixed budget playing a role in limiting expenditure on non-current expenses, hence low insurance uptake. According to Fenny et al., (2016) lack of adequate social infrastructure, poorly established

administrative policies and high cost of insurance serve as deterrents to insurance uptake in Ghana.

Price Waterhouse Coopers (2014) reports indicated that awareness, age, religion, cost and complexity of the products, social class, gender, economic status, and level of education all impact Kenyan's decision to purchase insurance. The low insurance penetration rate in Kenya has been attributed to a number of factors including: restrictive regulatory environment, poor awareness by public members about insurance services and products, lack of supportive insurance culture, lack of disposable income, weak marketing channels, and inefficient claims settling and pricing (Barasa, 2016). Gitau (2016) reported a strong link between culture, religion and insurance attitude. Nguru (2018) and Omollo (2016) assert high insurance uptake among individuals older than 38, while Ndung'u (2015) found gender and marital status to be determinants.

However, fraud cases, lack of accountability and mismanagement have contributed to the low uptake of insurance cover in the country. Masengeli, Mwaura-Tenambergen, Mutai and Simiyu (2017) in a research study reported that age, gender, and marital status all significantly influence insurance purchase decisions. Nyorera and Okibo (2015) reported poor understanding of insurance products, long and cumbersome registration process and traditional sentiments served to deter enrolment into the country's insurance fund (NHIF). The current study reviewed the effect of socio-demographic factors, level of awareness and perception on health insurance uptake.

## **1.2 Statement of the Problem**

Kenya has a variety of public, private, and community-based health insurance programs that cover both inpatient and outpatient care. However, health insurance cover uptake is still low. Health costs are becoming a burden to many of the country's poor and middle class. The World

Health Organization (2016) reports that 43% of Kenyans cannot afford insurance since their daily spend often rarely exceeds one dollar. To date, the current health insurance uptake in the country still lags behind most other developing countries. Moreso, the available data indicates that health insurance uptake has only been limited to the middle-class and upper-class citizens within the country (Maina, Kithuka, & Tororei, 2016).

Niyinyumva (2019) contends that with more than 56% of Kenyans living below the poverty lines the uptake of health insurance has become a luxury to many and the low uptake of insurance has resulted in limited access to healthcare. Gichuru, Muturi and Wawire (2015) pointed out that with less than 12% of low-income households accessing health insurance, overliance on OOP means of financing is becoming unsustainable, and is limiting their ability to access quality healthcare as stipulated in the constitution. From the foregoing, understanding drivers of insurance uptake among low income families is essential since it presents a major health policy challenge. This study seeks to expand available knowledge by examining determinants of health insurance subscription within low-income populations in Kenya.

Other scholars have sought after factors determining health insurance uptake in Kenyan households. Maina, Kithuka and Tororei (2016) focussed on maternal insurance uptake and found out that marital status and benefits of the policy influenced insurance uptake while income and household size did not influence uptake of insurance. Ndungu (2015) examined drivers of national health insurance uptake and revealed that demographic factors, academic position, socio-economic influences and information accessibility significantly influence insurance subscription. In a similar study Namuhisa (2014) concluded that income, level of awareness, benefits and proximity to NHIF offices significantly influenced participation in health insurance. Mohamed (2019) analyzed the uptake of NHIF and found out that financial capability, awareness level, gender and education level determined the uptake. Njogu (2019) examined health insurance uptake in rural households in Nyeri and concluded that marital



status, age, income, education, financial literacy and distribution channels predict insurance uptake.

Despite the myriad of studies focusing on insurance uptake, and the government's efforts to reform the NHIF to cater for both the formal and informal sectors, for both inpatients and outpatients, there are still persistent concerns when it comes to health insurance uptake in low income households. The above studies have not exhaustively solved the problem with insurance uptake in low income households in Kenya hence there is need to expand the available empirical evidence. This gap will be filled by his research since it will examine the determinants of health insurance (private and public) uptake among low-income populations in Kibera, Nairobi County.

### **1.3 Objectives of the Study**

#### **1.3.1 General Objective**

The main aim of this research is to examine the factors determining health insurance uptake among low-income populations in Kibera, Nairobi County.

#### **1.3.2 Specific Objectives**

- i. To examine the factors that determine health insurance uptake among low-income populations in Kibera, Nairobi County.
- ii. To draw key policy recommendations.

### **1.5 Significance of the Study**

This study will be significant to insurance firms, policy makers, scholars, and the insured/uninsured members of the population. By identifying and addressing the factors hinder health insurance uptake, the study is expected to provide a framework that can be adopted by policy makers to promote health insurance uptake. To the insurance companies the results of this study provides vital information on the level of uptake of health insurance within low-income

populations. Further, the findings help in identifying the key predictors to health insurance uptake which can direct managerial decision making within insurance firms in future rollout of insurance products. The study results also expanded the available information on the current uptake and utilization of health insurance which can direct future policy planning within the health sector. Students, institutional researchers and academicians are also expected to be beneficiaries of this study as the results will be documented in academic institutions' and public libraries, thus, can act as a source of knowledge and future reference material.

### **1.6 Scope of the Study**

Contextually, this study concentrated on determinants of health insurance uptake in Kenya. The research focused on demographic factors, socioeconomic factors, level of awareness and perception. Geographically, this study was limited to investigating low-income populations drawn from Kibera constituency in Kenya. Theoretically, the study limited itself to the theory of planned behavior and Andersen Health Care Utilization Model. The methodological scope was limited to a quantitative approach with structured research instrument being adopted in the study.

### **1.7 Definition of Terms**

<b>Awareness</b>	This is the ability to be conscious of a product in a way that brings more understanding/recognition.
<b>Demographic factors</b>	This refers to the persons background information including their age, marital status, gender, and education attainment.
<b>Health insurance</b>	The act of pooling together of financial resources that would cater for unexpected health outcomes or accidents in the future

<b>Health insurance uptake</b>	The voluntary enrolment of individuals into a health insurance scheme
<b>Socioeconomic factors</b>	This refers to the societal and economic factors that describe a population such as their culture, income level, occupation, religion and social norms.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter conducts a systematic review of the pertinent literature in light of the study's objectives. It includes a critical examination of the theoretical and empirical literature. It then presents a visual representation of the interaction between the study variables.

### **2.2 Theoretical Literature**

#### **2.2.1 Andersen Health Care Utilization Model**

This is a healthcare services model which was developed by Andersen in 1968. The model in its origin aimed at explaining determinants of effective use of health services at a given time or all time (Andersen, 1968). There is various usage of health services demonstrated by the model such as inpatient care services, outpatient care services, and dental care service among others. The model explains that the majority of the time, these health care services are determined by a number of critical factors, including predisposing factors, enabling factors, and the need factor (Andersen & Newman, 1973).

Predisposing factors as indicated by Andersen (1968), compose of race, age and health beliefs of the patient or people. By providing an example, people who believe in traditional medicines are unlikely to seek medical attention from urban health centers. Enabling factors look at the family support that one is having when they are ill or sick, access to health insurance among people, and one's community at large (Andersen & Newman, 1973). The theory further explains that family support is critical in explaining health utilization. Even though need for better health services have left many families poor due to high cost of treatment, it has continued to remain a critical factor in determining health utilization (Andersen, 1995).

In relation to the study variables, it may represent both perceived and actual need for health care services among people and an individual. Medical accessibility can be viewed from presence of enabling resources, encouraging people to seek for medication (Andersen & Newman, 1973). This theory gives a variety of reasons that may contribute to the uptake of the health policies that can foster access medical care. As this study focusses on various determinants as the independent variable this theory throws weight to the significance of this variable among the other enabling, predisposing, and need factors that contribute to uptake of health insurance in Kenya.

### **2.2.2 Theory of Planned Behaviour**

Numerous theories and models have been used to explain and predict consumer behaviour (Kempen, Kasambala, & Toerien, 2015; Hansen, Jensen, & Solgaard, 2004). One of the key predictive theories is the TPB as proposed by (Ajzen, 1991). This theory proposes the notion that both the subjective norm and attitudes affect intentions (Kempen, Kasambala, & Toerien, 2015). Subjective norm refers to the expectations arising from individuals within a society that dictate an individual's behaviour (Ajzen, 1991). They influence human behavior in that they make preset assumptions on how individuals are supposed to interact with each other and with their surroundings (Muia, Cheruiyat, & Lagat, 2018).

This behavioural intention of a consumer is a powerful predictor of actual behaviour (To, Liao, & Lin, 2007). According to George (2004), planned behaviour control directly affects the behaviour of purchase. Behavioural intention quantifies the level of commitment to repeat a particular behaviour. According to Ikeda, Martins and Campomar (2017), the perceived behavioural control component refers to how confident and safe consumers feel towards executing a certain act. This theory is a significant aspect of consumer behaviour in general, but also forms part of purchase intentions. The theory was integral to this study as it helps in

examining what leads to insurance uptake among consumers. This theory premised the health insurance uptake among low-income population in Kibera constituency.

## **2.3 Empirical Review**

### **2.3.1 Factors and Uptake of Health Insurance**

Dror et al., (2016) investigated the factors that drive low-income families to be involved in community-based health insurance schemes. The research reviewed 54 studies were included in the research. The meta-analysis indicated that household size, household head and married couples positively influence uptake of health insurance. The findings also showed that cultural beliefs, legal and policy frameworks, income level, benefits package and occupation influenced the uptake levels. The study was however not premised on Kenyan health insurance uptake which may limit the applicability of the study results.

Panda, Chakraborty, Dror and Bedi (2014) investigated the factors contributing to participation of low-income families in health insurance schemes designed for the Indian community. A total of 23,876 households were targeted, with quantitative techniques being employed in the research. The study employed logistic regression analysis. The findings indicated that the age of the respondents, education attainment, gender and the socioeconomic status determined the enrolment to community-based health insurance schemes (CHIS). The research also showed that self-employment has an insignificant effect on participation of health insurance schemes. The study was conducted in India while current research examines health insurance in Kenya.

Van Der Wielen, Falkingham and Channon (2018) conducted a study on drivers of enrolment in Ghana's NHI program. The study applied a comparative examination of two groups between 18-49 years and over 50 years of age. The study applied logistic regression analysis. The study results showed that income level and cultural beliefs influenced enrolment into health insurance. The findings showed a relationship between socioeconomic status and uptake of

NHIS. The study was conducted in Ghana while current survey examines health insurance uptake in Kenya.

Adebayo, Uthman, Wiysonge, Stern and Lamont (2015) investigated factors determining community-based insurance participation within low-income and middle-income economies. The study reviewed journals and applied quantitative and qualitative techniques in the review of the data. The results indicated that lack of disposable income and means of generating extra finances was hindering health insurance enrolment. Penetration was also influenced by education attainment, sex and the size of the household. The study only considered secondary data review while current study collected responses from low-income population in Kenya.

Alesane and Anang (2018) assessed drivers of community health insurance within rural Ghana and the implications on community well-being. The study conducted a quantitative research focusing on 178 respondents drawn from two microfinance groups. The research used logistic regression analysis and the findings indicated that the youth, men, those with high literacy levels and members of small households were more inclined to partake insurance policies. This indicates that socio-demographic factors do influence uptake of insurance products. The study was conducted among poor rural families in Ghana while current study reviews health insurance among low-income population in Kenya.

Apanga and Adam (2015) examined factors determining family planning adoption among communities in Ghana. Adopting a descriptive correlational design and utilizing a systematic random sampling, 280 participants aged between 15-49 years were selected for the study. Both descriptive and inferential analysis methods were applied. The study showed that education level of participants was positively related to usage of family planning services. The study also indicated that marital status and income level determined usage of maternal health insurance

usage within families. The study only considered responses from families accessing family planning services while current examination considered uptake of health insurance in Kenya.

Mukangendo, Nzayirambaho, Hitimana and Yamuragiye (2018) study reviewed the factors limiting insurance uptake among rural families in Nyanza district, Southern Rwanda. The research adopted a cross-sectional survey covering nine health centers with 495 participants being considered in the research. The study adopted logistic regression analysis. The results showed the socioeconomic status of participants, affordability, age, marital status and premium payments contributed to health insurance penetration. Further, long wait times and poor customer service significantly impacted health insurance uptake. The study did not consider how other factors considered in this research.

Ndungu (2015) examined the factors that influence participation of members of the informal sector in insurance initiatives in Murang'a. respondents were selected through systematic sampling. The study relied on quantitative analysis and results indicated that more female respondents had enrolled in NHIF as compared to men. The study also indicated that married couples had a higher enrolment rate. The results showed that an individual's age, gender, marital status, literacy level and family size as well as awareness level significantly influences the uptake of NHIF. The study only considered enrolment to the national insurance while current study reviewed the uptake of all forms of health insurance cover.

Nyaboga (2019) study reviewed the extent to which socio-economic factors determine health insurance penetration among Motorcycle Operators in Machakos County, Kenya. The study adopted a quantitative approach with binary probit regression being employed in the study. The research utilized questionnaires in the data collection process. The results showed that the employment status, tertiary education and motorcycle ownership contributed to enrolment. The study also indicates there was insignificant influence of age, household size and membership



in social welfare on uptake of health insurance. The study only considered a small proportion of participants drawn from Motorcycle Taxi Operators while current study reviewed health insurance uptake in low-income households in Kibera Constituency.

Masengeli et al., (2017) focussed on patients of the Bungoma County Referral hospital in their study on drivers of health insurance uptake. Using a cross sectional descriptive survey, 300 patients were sampled. Data was obtained using questionnaires and key informant interviews which were conducted on 4 selected hospital heads. The results of the analysis showed that household income, age of patient, educational level and awareness of insurance benefits were drivers of health insurance participation. The study also noted that affordability of the cover and covering for essential drugs increased uptake levels. The study considered patients within a health institution while current review focuses on low-income population within Kibera Constituency.

Muketha (2016) sought to determine health insurance penetration determinants in Kenya's informal sector population. A descriptive research design was adopted, with analysis comprising of Probit regression analyses. Factors such as the place of residence, behavioural factors, alternative community insurance schemes, age, household size and wealth index were noted to influence NHIF uptake. Nguru, Kodhiambo and Yitambe (2018) in their study also established that nature of employment, medical history and terms of employment determined the level of health insurance uptake. These studies were not based on residents of the Kibera slums which has totally different population demographics.

A study conducted by Mutinda (2012) on determinants of health Insurance in Kibera slums reported that low uptake of NHIF was largely informed by lack of awareness and finances to get involved in health insurance schemes. Those who had officially subscribed to NHIF services were in formal employment and had their contributions done through checkoff systems

(67.5%) while only 32.5% were making direct payments. Default rates and penalties for those who paid for themselves was a major challenge as most of them are contract employees. Thus, maintaining their membership was a huge challenge due to their irregular income flow. The study was majorly focused on NHIF uptake while the current study focuses on all insurance schemes available for uptake among low-income populations in Kibera. However, the current study focused on all the villages to get a clear representation of the population.

### **2.3.2 Level of Awareness, Perception and Uptake of Health Insurance**

Panda, Chakraborty and Dror (2015) research focused on an examination of the effect of creation of health insurance awareness on insurance uptake among rural populations in India. The study relied on data from a baseline survey among 800 households and applied ordinary least square regression in the analysis. The study noted that the cohort with higher understanding of insurance concepts were covered by insurance policies. Thus, increasing awareness on the available choices and offering tools to improve knowledge on benefits of health insurance improved uptake levels. The study relied on baseline survey data while current research relied on primary research data from low income population in Kenya.

Ghaddar, Byun, and Krishnaswami (2018) investigated the level of awareness of health insurance services among vulnerable members of the Hispanic population in the United States of America. The study conducted in-person interviews across 681 Hispanic participants with logistic regression being applied in the research. The study indicated that most of the participants lacked adequate knowledge on the services offered through health insurance programmes being offered in the United States. The findings showed that little knowledge, confidence level, perception on the benefits and reliability of the health insurance determined uptake levels. The study involved Hispanics in the United States; the current assessed insurance uptake within the Kenyan population.

Ogben (2014) examined the insurance awareness and its impact on health insurance uptake among rural communities in Abuja, Nigeria. A cross-sectional survey design was adopted, with 287 participants being considered in the research. The research utilized questionnaires in the data collection. The findings showed that possessing requisite knowledge about the benefits of insurance played a key role in insurance uptake within the community. The study also indicated that knowledge level and satisfaction level significantly determine participation in community insurance schemes. The study however did not examine how demographic or socioeconomic factors influence health insurance uptake, which this study considered.

Olanrewaju, et al. (2019) investigated drivers of health insurance uptake in the various states in Nigeria. The research utilized questionnaires in the data collection. The results showed that lack of adequate knowledge on benefits on insurance limited its uptake. The research further showed that conducting regular trainings, increasing the level of knowledge and the perceived benefits are expected to improve the health insurance schemes uptake. The study was conducted in Nigeria while current research examines health insurance uptake in Kenya.

Yusuf, et al. (2019) investigated the relationship between health insurance knowledge, attitude and uptake of CHIS in Nigeria. A descriptive research design was adopted and 419 respondents contacted. The study relied on semi-structured questionnaires in the data collection with mixed techniques used in the analysis. The findings showed that 80.2% of the participants had no knowledge about CHIS, while 62% had a positive attitude towards insurance. Insurance services' knowledge, awareness, insured/uninsured attitude are key drivers of health insurance uptake. The current study focused on health insurance uptake among low-income populations.

Kituku and Amata (2016) conducted research on drivers of NHIF uptake in Kenya's informal sector in Murang' a. A descriptive research design was adopted and members of Unaitas Sacco targeted for analysis. Structured questionnaires were utilized to source primary data from

members. Findings showed that the main determinants of insurance uptake include; income, knowledge and awareness, access to insurance facilities and the prices charged for the cover. Further, gender, education, age and marital status were also found to determine insurance uptake. The study was however not conducted within low-income population members in Kibera constituency which is the focus of current study.

Hassan, Mwaura-Tenambergen and Eunice (2017) examined health insurance uptake drivers among Kenyan Muslims. The study relied on descriptive and inferential analysis techniques. The findings showed that there was low insurance uptake among Muslims due to religious beliefs. It was determined that people were not aware of the company Takaful Insurance, and its services. This could be the reason why the firm has low levels of insurance enrolment. The research indicated increasing reliability of services, boosting customer awareness, and creating products that are tailored to meet the specific demands of Muslims in Kenya would have a significant influence on Muslim populations' participation in health insurance. The study only considered Muslim participants in a bid to establish the influence of religion on insurance uptake. However, the current review considered low-income population across Kibera constituency, it did not discern between the respondents' religions.

Nguru, Kodhiambo and Yitambe (2018) investigated drivers of insurance uptake among patients in Embu County, Kenya. A descriptive-cross sectional research design helped in selecting and collecting data from 384 participants. The results showed that 46.1% of the study respondents have enrolled for health insurance with majority being covered through NHIF as a result of their occupation levels. It was determined that education, gender, employment, pre-existing health conditions and awareness level all have a strong influence on insurance subscription. The research advocated for education programs to increase knowledge on various health insurance options available and improve flexibility of the products in order to drive

insurance uptake. The study was conducted among patients while current study examined low income populations.

Saiti, Yitambe and Korir (2020) investigated demand drivers of health insurance penetration Kenya's elderly population. The study used a descriptive cross-sectional design with multi-stage sampling to select participants. Analysis determined that age, religion, gender, marital status and frequency of hospital visits had an insignificant effect on demand for health insurance. Further, affordability, knowledge of health insurance policies and education level were all significant in influencing health insurance penetration. The research focussed on the elderly while the current will assess health insurance among low-income populations.

#### **2.4 Overview of Literature**

The review of the available empirical literature highlighted various gaps that inform the need for the current research. The summary of the identified gaps in literature are presented in Table 2.1.

**Table 2.1: Summary of Research Gaps**

<b>Author</b>	<b>Title</b>	<b>Findings</b>	<b>Research Gap</b>
Alesane and Anang (2018)	Uptake of health insurance by the rural poor in Ghana	The study revealed that insurance uptake increases with level of education but decreases with household size	The study was conducted among poor rural families in Ghana while current study reviews health insurance among low-income population in Kenya.
Hassan, Mwaura-Tenambergen and Eunice (2017)	Uptake of health insurance among Muslims in Nairobi county, Kenya	The findings showed that there was low insurance uptake among Muslims due to religious beliefs	The study only considered Muslim participants while current review will consider low income population across Kibera constituency
Kituku and Amata (2016)	Determinants of the uptake of NHIF medical cover by informal sector workers	The study found out that the gender, education, age and marital status determined insurance uptake	The study was however not conducted within low income population members in Kibera constituency which is the focus of current study
Masengeli, Mwaura-Tenambergen, Mutai and Simiyu (2017)	Determinants of uptake of health insurance cover among adult patients attending Bungoma County Referral Hospital	The results showed that household income, age of patient, educational level and awareness of insurance benefits influenced the uptake	The study considered patients within a health institution while current review focuses on low income population within Kibera Constituency

**Source: Research Data (2020)**

## CHAPTER THREE: RESEARCH METHODOLOGY

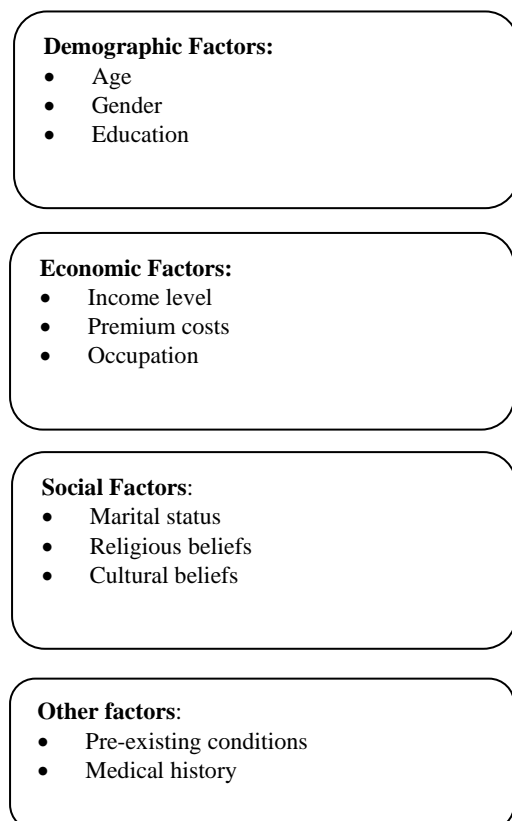
### 3.1 Introduction

The methodologies and techniques employed by the researcher in determining the relationship between the research variables are contained in this chapter. Among other things it details the variable interaction, the design, instruments, model specification and the ethical guidelines.

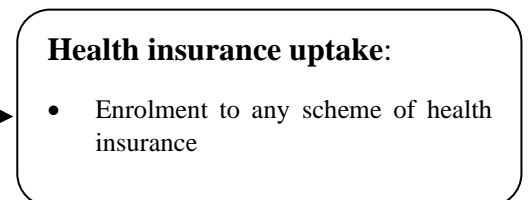
### 3.2 Conceptual Framework

This is a visual representation of the how the study variables or constructs that are used to map and guide the research process interact (Cooper & Schindler, 2014). The conceptual framework presents the conceptualization of the factors determining health insurance uptake among low-income populations in Kibera, Nairobi County.

#### Independent Variables



#### Dependent Variable



**Figure 3.1: Conceptual Framework**

### **3.3 Research Design**

This is the road map chosen on a research journey in search for as much relevance, validity, objectivity, accuracy and feasibility as possible (Cooper & Schindler, 2014). A research design is a procedure of inquiry. A quantitative cross-sectional research design was adopted. As noted by (Creswell, 2014), this type of research enabled the research to examine the research phenomena in its current state as well as established the association between the research variables using quantitative techniques.

### **3.4 Target Population**

According to Coopers and Schindler (2014), a population is defined as the sum of all elements to which researchers can refer. This study involved the residents/dwellers within Kibera Informal Settlement Scheme in Kibera Constituency, Kenya. The Kenya National Bureau of Statistics (2019) identified 149,662 residents within the locale with 77,330 males, 72,324 females and 8 intersex residents. The population of the area formed the current study's unit of observation. This was representative of the study scope as only the residents dwelling within the informal settlement scheme was considered within the study.

### **3.5 Sampling Design and Sample Size**

Sampling is the selection of a representative from the population (Cooper & Schindler, 2008). This study adopted a simple random sampling technique since it promotes equal likelihood of representation from the population. Justification for the use of this technique was in the fact that it is based on the scientific rules of probability; it reduces the probability of respondent bias and also ensures sufficient representation of the members' interest within the target population. Blumberg (2014) defines a sample as a representative of the population. The sample enables a generalization to be made about the population; if and only if the sample accurately represents the larger population. The Yamane (1967) formula below was adopted in selection of the sample size.



n = Size of the sample,

N = population

e = precision level

$$n = \frac{N}{1+N(e)^2} \dots\dots\dots (1)$$

$$\frac{149,662}{1+149,662 (0.05)^2} = 399 \dots\dots\dots (2)$$

Hence 399 respondents from Kibera Informal settlement scheme were the selected.

### **3.6 Data Collection Instruments**

For data collection, questionnaires were used. The questionnaire's content was developed in accordance with the study's objectives.

### **3.7 Data Collection Procedures**

Collection procedures indicate how the pilot study was carried out, the results of the reliability and validity tests from the pilot study, how the research instrument was administered, and the ethical considerations made by the researcher (Shajahan, 2009). The study adopted the drop and pick method where assistants were consulted to distribute the questionnaires to the residents of Kibra settlement scheme. After some time, these questionnaires were collected.

### **3.8 Pilot Testing**

The pilot study involved 10% (n=39) of the sample respondents; these responses were excluded from the final analysis. It involved residents of the Mathare informal settlement. Pilot was used to ascertain the questionnaire's reliability and validity. Reliability and validity tests were carried out to determine the research instrument's consistency and reliability. It measured the accurateness of the information in the research instrument in measuring its intended purpose. The supervisor was contacted for content validity.

### 3.9 Model Specification

Model specification is of importance in research to ensure there is validity of the selected model and ensure that all the study variables are not left out. This section highlights the theoretical and empirical models that guide this research.

#### 3.9.1 Theoretical Model

In their proposition on analysis of the demand for non-durable commodities, Houthakker and Taylor (1970) developed the below demand function which is represented with the following equation;

$$Q_X = b_0 + P_X^{b1} + P_0^{b2} \cdot Y^{b3} \cdot e^{b4} \dots\dots\dots (3)$$

Where;

$Q_x$  = is the demand for product X

$P_x$  = is the prices for product X

$P_0$  = is the prices for closely related products

$Y$  = is the consumer's income

$e^{b4}$  = are the coefficients for preferences and taste of consumers

$b1, b2, \text{ and } b3$  are elasticity coefficients.

Houthakker and Taylor, further argued that the demand for non-durable products such as health insurance can be predicted by previous behaviour or 'habit-forming tendencies.' From this, they developed their demand approach to mirror a habit creation principle that follows a distributed lag model of among other variables income and prices that have an effect on product demand.

$$Q_X = \alpha_0 + \alpha_1 P_t + \alpha_2 \Delta P_t + \alpha_3 Y_t + \alpha_4 \Delta Y_t + \alpha_5 Q_{t-1} \dots\dots\dots (4)$$

Where;

$Q_t$  represents the demand for the product

$\Delta Y_t$  represents the adjustment in aggregate income of the consumers

$\Delta P_t$  represents the adjustment in the aggregate prices of the product between time (t) and (t-1)

### 3.9.2 Empirical Model Specification

The theoretical model conceptualized that demand of non-durable such as health insurance can be determined as a function of various factors. The study empirical modelling assumed that participants within the informal sector are faced by challenges that impact their ability to subscribe to health insurance such as the price of closely related products and the high cost of living. Further in the presence of pre-existing health conditions that require constant care, the individual had the choice between foregoing basic needs and buying insurance.

The research used a Probit regression model to ascertain the primary factors influencing health insurance subscription in Kenya. The research presupposed a linear relationship between the dependent and explanatory variables. The dependent variable was quantified using a binary option indicating whether the participant had health insurance or not.

$$Y = X_i\beta + e \dots \dots \dots (5)$$

Where Y - the dependent variable

$X_i$  - explanatory variables

$\beta$  - parameters to be estimated

e- error term

The measurement equation that follows establishes a link between the latent variable  $Y^\#$  and the observed binary variable Y:

$$Y = \begin{cases} 1 & \text{if } Y^* > K \\ 0 & \text{if } Y^* \leq K \end{cases} \dots\dots\dots (6)$$

Whereby 1 is uptake of health insurance

0 no health insurance uptake

K is the threshold point/cut off, a critical level of index beyond which the individual participated in a health insurance scheme.

The study assumed that health insurance uptake in Kenya is a function of several determinants;

$$UHI = f(DF, EF, SCF, OF) \dots\dots\dots (7)$$

Where UHI = uptake of health insurance

DF= are the demographic factors (age, household size, marital status, gender, education level)

EF= are the economic factors (employment status, level of income)

SF= are the social-cultural factors (religion, cultural beliefs)

OF = other factors (frequency of accessing healthcare facilities, awareness of insurance information, pre-existing conditions, premium costs)

Following Houthakker and Taylor (1970) theoretical model assumptions; the multivariate regression model was;

$$UHI_t = \beta_0 + \beta_1 AG_t + \beta_2 GN_t + \beta_3 MS_t + \beta_4 HS_t + \beta_5 ED_t + \beta_6 ES_t + \beta_7 LI_t + \beta_8 RB_t + \beta_9 CB_t + \beta_{10} CP_t + \beta_{11} AW_t + \beta_{12} FQ_t + \beta_{13} PEC_t + \mu_t \dots\dots (8)$$

Where;

$UHI_t$  is the rate at which the low-income population obtains health insurance

$\beta_0$  represents the model constant

$AG_t$  represents the age

$GN_t$  represents the gender

$MS_t$  represents the marital status

$HS_t$  represents the household size

$ED$  represents the education level

$ES_t$  represents the employment status

$LI_t$  represents the level of income

$RB_t$  represents the religious beliefs

$CB_t$  represents the cultural beliefs

$CP_t$  represents the costs of premiums

$AW_t$  represents the awareness level/access to insurance information

$FQ_t$  represents the frequency of accessing healthcare services

$PECT$  represents the Pre-existing conditions

$\mu_t$  represents the stochastic error term

Both descriptive and inferential statistics were applied. Diagnostic tests also aided in ensuring fit between the constructs of the research by testing of the association between the study variables (Creswell, 2014). The study summarized the responses from the research respondents using frequencies, means, and standard deviations. The research further employed probit regression analysis in determination of how predictor variables impact health insurance uptake in Kenya.

**Table 3.1: Measurement of Variables**

Variable	Variable Definition	Measurement	Expected sign	Supporting Literature
<b>Dependent Variable</b>				
Health insurance uptake	Uptake of health insurance	Binary Yes – 1 No – 0		Nyaboga (2019)
<b>Independent Variables</b>				
<b>Demographic variables</b>				
Age	Age of the participant at the time of the survey	Years	Positive	Panda et.al. (2014); Alesane and Anang (2018)
Gender	Gender of the participant	Male = 0 Female = 1	Positive	Panda et.al. (2014); Alesane and Anang (2018)
Marital status	Current marital status of the participant	Single = 0 Married = 1 Widowed = 2 Divorced = 3	Positive	Dror et.al (2016); Ndungu (2015)
Household size	Number of people in a household	Number	Positive	Muketha (2016); Dror et.al. (2016)
Education level	Number of years spent in school	Years	Positive	Adebayo et.al (2015)
<b>Economic Variables</b>				
Employment status	Employment status at the time of survey	Unemployed = 0 Formal employment = 1 Informal employment = 2	Positive	Panda et.al. (2014)
Level of income	Average monthly income	Number	Positive	Alesane and Anang (2018)
<b>Social- cultural variables</b>				
Religion	Participant's religious affiliation	No religion =0 Catholic =1 Protestant=2 Muslim=3 Others=4	Positive	Hassan, Mwaura-Tenambergen and Eunice (2017)

Cultural beliefs	Participants' beliefs that may hinder insurance uptake	None = 0 Traditional = 1 Modern = 2	Positive	Van Der Wielen, Falkingham and Channon (2018)
<b>Other Variables</b>				
Frequency of accessing healthcare facilities	The number of times the participant or dependant visited a health facility in the last 12 months	Number	Positive	Nguru, Kodhiambo and Yitambe (2018)
Awareness (Access to insurance information)	Whether the participant is aware of health insurance	Yes = 1 No = 0	Positive	Yusuf, et al. (2019)
Presence of pre-existing health conditions	Participant having pre-existing health conditions like chronic illnesses that require constant care or hospitalisation	Yes = 1 No = 0	Positive	Nguru, Kodhiambo and Yitambe (2018)
Cost of premium	How much the participant needs to spend on an insurance premium in a month	Value in kshs	Positive	Mukangendo et.al (2018)

**Source: Researcher (2021)**

### **3.10 Diagnostic Tests**

#### **3.10.1 Multicollinearity Tests**

According to Bryman and Bell (2011), multicollinearity is a result of correlation between variables. It reduces the degree of efficiency of the estimates for the parameters. Multicollinearity at a high-rate results in an induced reduction in the magnitude of the independent variable's effect on the dependent variable. The research conducted correlation matrix and the correlation coefficient of more than 0.7 inferred existence of multicollinearity (Osborne & Waters, 2002).

### **3.10.2 Normality Tests**

Normality tests were carried out in determination of the sample distribution shape (Osborne & Waters, 2002). If the shape is similar to that of a normally distributed population, then the errors are normally distributed (Keith, 2006). The study employed Shapiro Wilk test of the standardized residuals to estimate the normality of the research data. If p value was more than 0.05, then data was pronounced normally distributed.

### **3.10.3 Heteroscedasticity Tests**

Diagnostics tests were carried out to ensure the minimum assumptions are observed. The study employed heteroscedasticity tests to determine whether the random error term resulting from multiple linear regression must have constant variances. A scatter plot test was used where residuals were regressed against residual squared.

### **3.11 Ethical Considerations**

The following ethical issues were addressed: informants were informed that participation was voluntary and their consent was sought prior to the questionnaires being distributed; they were also assured that their responses would be kept confidential and their names would not be recorded. Respondents who did not consent to participate in the research were excluded. The study also ensured that the ethical approval certificate is issued by University of Nairobi before undertaking the research work, while an official permit was sought from NACOSTI before collecting data from the field.



## **CHAPTER FOUR: RESULTS AND DISCUSSION**

### **4.1 Introduction**

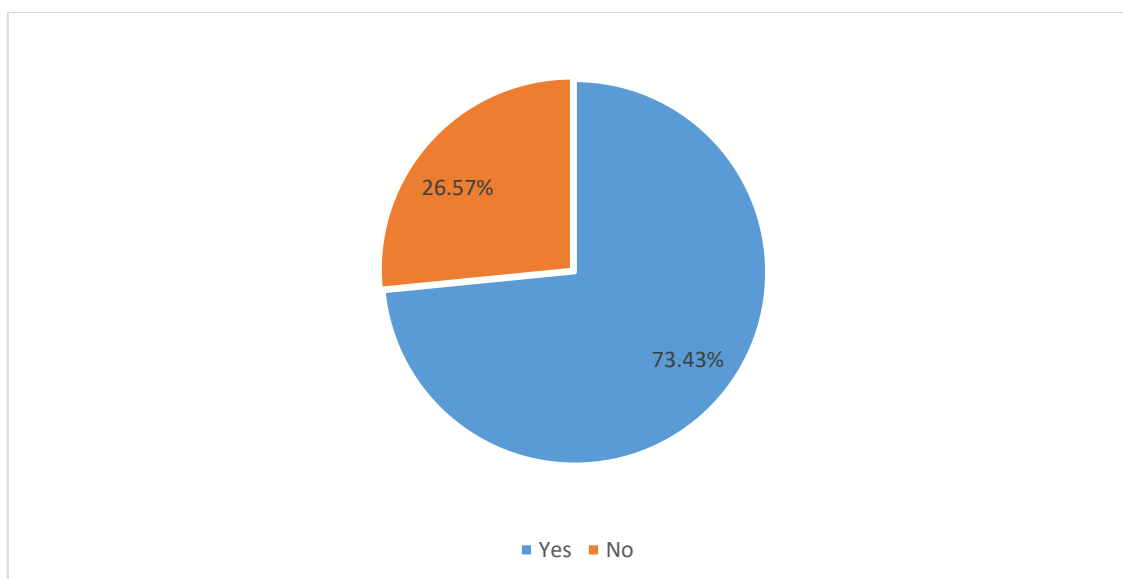
The section presents descriptive statistics and Probit model estimates on the factors that influence low-income populations' adoption of health insurance products in Kibera, Nairobi County, Kenya. The study examined the factors that influence the uptake of health insurance products among low-income populations in Kibera, Nairobi County.

Primary data was collected from the low population across Kibera, Nairobi County. Questionnaires were administered to a total of 399 respondents distributed across the study site. The study conducted the pilot test of 40 respondents from where reliability and validity were determined.

### **4.2 The Awareness and Profile of Health Insurance uptake among low income populations in Kibera**

The study explored awareness levels on health insurance by low-income population in Kibera Nairobi County. The extent to which health insurance awareness exists in Kibera is depicted in Figure 4.1. It was discovered that approximately 73% of respondents were aware of a particular type of health insurance, while only 27% were unaware.

**Figure 4.2: Health Insurance Awareness Levels**



**Source: Researcher (2021)**

The next objective sought after profile of health insurance schemes in Kibera slums.

Following table 4.1 presents the results

**Table 4.2: Health Insurance Uptake among low-income population in Kibera, Nairobi**

<b>Health Insurance Type Owned</b>	<b>Frequency</b>	<b>Percentage</b>
No	289	72.43
Private	1	0.25
Public	100	25.06
Community	2	0.50
Private and Public	7	1.75
Total	399	100.00

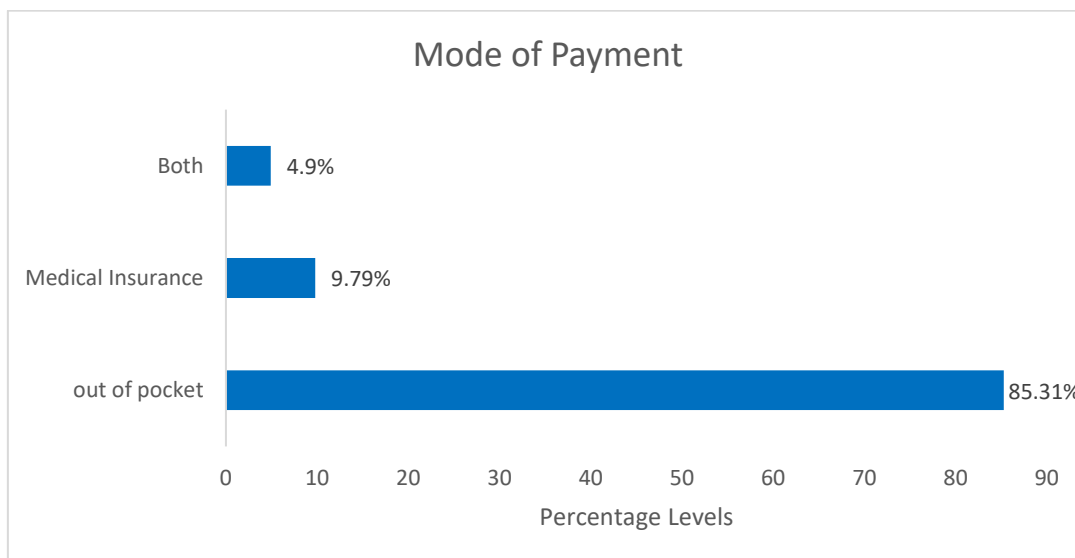
**Source: Computation based on Primary Data**

The results showed that only 110 respondents (27.6 percent) had subscribed to health insurance, with the majority, 289 (72.4 percent) not owning any form of health insurance.

Of these, 25.1 percent subscribed to the National Hospital Insurance Fund, while 1.75 percent had both private and public health insurance covers. The least used was those with private and community health insurance plans at 1 percent and 2 percent respectively. According to KNBS (2014) most of the households pay for healthcare through out of pocket (OOP), and the rest through NHIF and private insurers. From the literature, only around 20% of Kenyans have access to health insurance coverage (Zollmann & Ravishankar, 2016).

On mode of payment, the study evaluated whether the respondents used out of pocket, medical insurance or both out of pocket and medical insurance. Figure 4.2 showed 85 percent of respondents paying for medical services out of their pockets, whereas those who paid via medical insurance were 9.79 percent.

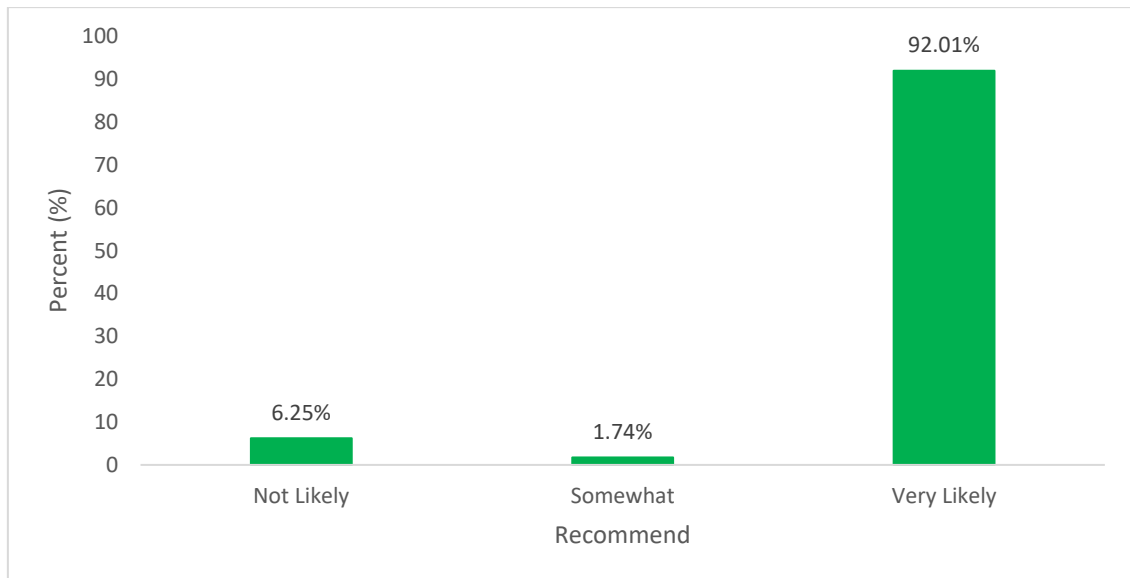
**Figure 4.3: Mode of Payment for Healthcare Services**



**Source: Researcher (2021)**

The respondents were asked if they intended to enrol in any health insurance plans. Figure 4.3 shows that approximately 92 percent open to participating. Only 8 percent were undecided.

**Figure 4.4: Willingness to Enrol in any Health Insurance Scheme**



**Source: Researcher (2021)**

### **4.3 Descriptive Statistics of the variables used in the study**

The study conducted descriptive statistics of all variables relating to the low-income populations in Kibera Nairobi. The factors considered in this study include; respondent's marital status, gender, age, income, level of education, employment, social status, religion, cultural beliefs, and frequency of accessing healthcare facilities (visits), presence of pre-existing conditions as well as cost of premium.

The outcomes are in table 4.2. The study uses means, standard deviation and minimum and maximum values.

**Table 4.3: Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Age (years)	398	33.77638	10.59	18	80
Gender (Male=1)	399	0.4060	0.4917	0	1
Marital status					
Single	399	0.2857	0.4523	0	1
Married	399	0.6341	0.4823	0	1
Divorced	399	0.0501	0.2185	0	1
Widowed	399	0.0301	0.1710	0	1
Household Size	399	3.75	2.09	1	15
School Attainment (years)	399	10.04	3.572	0	18
Occupation (Formal=1)	399	0.2607	0.4395	0	1
Income (Kenya shilling)	307	12285.99	10966.23	200	80000
Religion (yes=1)	397	0.9370	0.2432	0	1
Cultural beliefs (Modern=1)	288	0.9201	0.2715	0	1
Mode of payment (out of pocket=1)	143	0.8531	0.3552	0	1
Frequency of hospital visits	373	1.05	1.92	0	13
Cost of Premium	217	500.5	157.42	100	1700
Pre-existing condition (yes=1)	399	0.1980	0.3990	0	1

**Source: Computation based on Primary Data**

The findings show most of them being 34 years old, with a variation of 11 years. The youngest was 18 years old whereas the oldest was 80 years old. Most of them were females since male respondents were 41 percent implying female were 59 percent. On marital status, the study focused on those who were married compared to others. Married respondents were the majority with about 63 percent implying that majority were not married. For single (29 percent), divorced (5 percent) and widowed (3 percent) formed the rest of the population in Kibera.

The study established that most households had on average four members with the least having one while others had the highest number of about 15 members. Education level was also assessed and it was revealed that most of the respondents had about 10 years on average of schooling. This implies that most had either primary or had incomplete secondary level of education. However, there were those who had about 18 years of schooling whereas others did not even attend. On occupation, the study revealed that respondents who were in formal occupation were only 26 percent whereas the huge proportion that is 74 percent were associated with informal occupation.

The study explored the levels of income for the respondents. It was found that most of the respondents earned on average about Kshs 12,286 with the least earning Kshs 200 while others earned the highest amount of Kshs 80,000. Also, the study assessed whether an individual belonged to any religion or not. It was found that the majority that is over 94 percent had some religion while only 7 percent indicated that they never belonged to any religion. Similarly, it was found that about 92 percent of the respondents in Kibera had modern cultural beliefs with only 8 percent indicating that they held to traditional beliefs.

Further, the study examined modes of payment to receive healthcare services. It was found that over 85 percent of the respondents used out of pocket mode of payment while 15 percent used medical insurance or combined both. On average, respondents visited hospital once with a variation of two visits whereas others who formed the majority (60 percent) never had any hospital visit. Some of them had the highest number of hospital visits that is 13 visits. Premium cost was considered and it was found that most of the respondents on average reported that the premium costed Kshs 500. The minimum and maximum amount was Ksh 100 and Kshs 1700. Lastly, most of the respondents did not

have pre-existing conditions, with only 20 percent reporting to have pre-existing health condition.

### 4.3 Diagnostic Tests

#### 4.3.1 Normality Test

The study conducted a normality check of the distribution of the error term. Table 4.3 indicates the results. In interpreting the outcome of Shapiro Wilk test, the study examined the respective p values. Following the interpretation made by Nyamasi (2015) and Wanyoike (2016) the results show normal distribution of the data to variables such as gender and marital status since their p values were more than 0.05 level of significance. Other variables including the dependent variable were not normally distributed since their respective p values were less than 0.05 level of significance. However, since this study used dynamic cross sectional data sets, these observations are expected. Similar conclusion was also arrived at by Awiti (2013) and Achieng (2014) who utilized similar datasets.

**Table 4.4: Shapiro Wilk test of Normality**

Variable	Obs	W	V	z	Prob>z
Insurance	399	0.99203	2.189	1.864	0.03115
Age	398	0.93112	18.878	6.989	0.00000
Gender	399	0.99828	0.473	-1.783	0.96270
Married	399	0.99847	0.420	-2.062	0.98038
Household size	399	0.95885	11.302	5.770	0.00000
School Attainment	399	0.94492	15.129	6.463	0.00000
Occupation	399	0.99083	2.519	2.198	0.01397
Ln Income	307	0.98150	4.023	3.271	0.00054
Religion	397	0.93260	18.430	6.931	0.00000
Cultural	288	0.93032	14.318	6.235	0.00000
Frequency of hospital visit	373	0.77417	58.403	9.647	0.00000
Ln cost of premium	217	0.84462	24.890	7.426	0.00000
Pre-existing health condition	399	0.98391	4.421	3.536	0.00020

**Source: Own computation based primary data**

### **4.3.2 Multicollinearity test**

The study employed a correlation matrix to ascertain the existence of a relationship between the variable of health insurance uptake and other corresponding variables. High correlation predicts multicollinearity. The findings are as stated in Table 4.4.

In determining presence or absence of multicollinearity, Machio (2008) proposed a threshold of the correlation coefficient of below 0.7 to declare absence of multicollinearity. From the table, correlation coefficients were less than the recommended threshold of 0.7, Multicollinearity is thus deemed absent. Orayo (2014) made a similar conclusion.



**Table 4.5: Correlation Matrix**

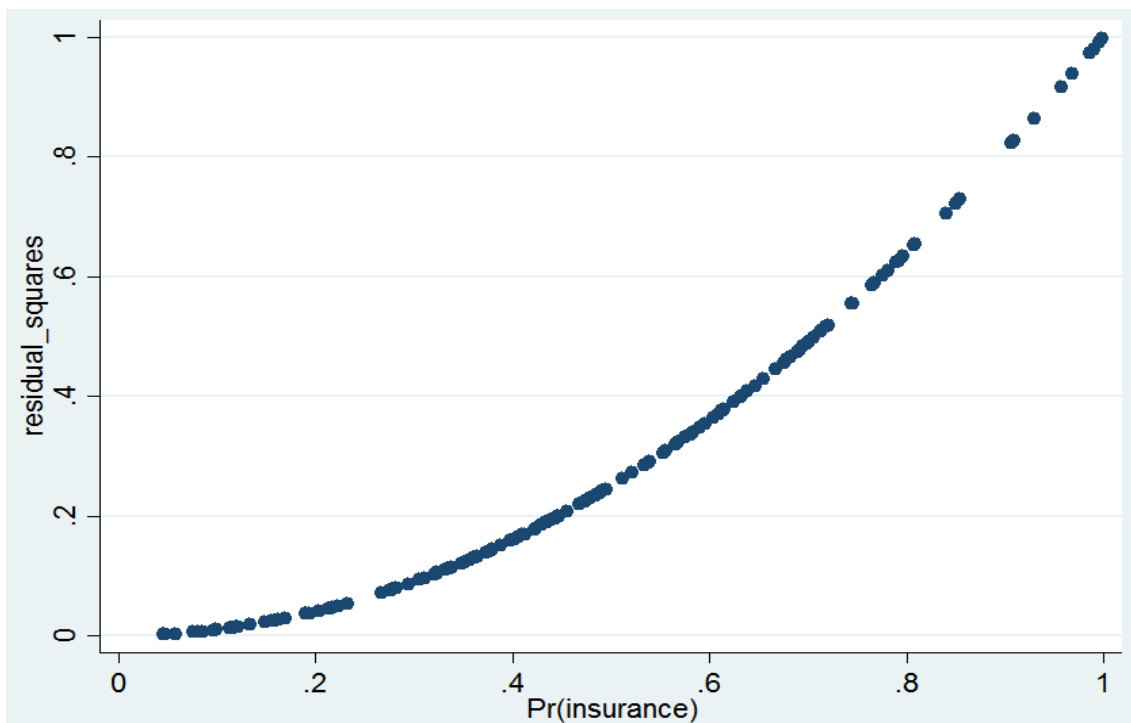
	1	2	3	4	5	6	7	8	9	10	11	12	13
Health Insurance	1.000												
Age	-0.031	1.000											
Gender	-0.043	0.009	1.000										
Married	0.143	0.091	0.059	1.000									
Household size	0.077	0.536	-0.103	0.481	1.000								
School attainment	0.172	-0.375	0.144	0.010	-0.352	1.000							
Occupation	0.200	-0.081	0.043	0.136	-0.069	0.215	1.000						
Lnincome	0.296	-0.203	0.287	0.153	-0.108	0.360	0.203	1.000					
Religion	-0.184	-0.139	0.076	0.125	0.166	-0.028	0.038	-0.080	1.000				
Cultural	0.233	-0.024	-0.132	0.125	0.087	-0.028	0.038	-0.067	0.040	1.000			
Frequency hospital visit	-0.026	0.092	-0.080	0.004	0.287	-0.158	-0.119	-0.161	0.106	0.093	1.000		
Lncostprem	-0.018	-0.026	-0.091	-0.017	0.028	0.090	0.021	0.070	-0.146	-0.022	0.111	1.000	
Pre_condit~n	-0.021	0.318	-0.124	-0.024	0.282	-0.279	-0.128	-0.326	-0.026	-0.026	0.406	-0.042	1.000

**Source: Own computation based on primary data**

### 4.3.3 Heteroscedasticity test

Heteroscedasticity implies variation of the residuals across all the observations under study. The study used scatter plots method of residual-square against the fitted values of the health insurance uptake variable. Figure 4.3 displays the results.

**Figure 4.5 : Residual Square against Predicted Value of Health Insurance Uptake**



**Source: Own computation based on primary data**

As indicated in this figure, a systematic pattern has been exhibited implying that there was constant variance as expected. Following Orayo (2014), it was determined that there was no heteroscedasticity, making the model sufficient for estimation.

### 4.4. Estimation and Discussion of Results

The second objective was meant to establish the determinants of health insurance among low-income populations in Kibera, Nairobi Kenya. Probit model was applied in the study to estimate

the influence of various demographic, socio-cultural and other factors on health insurance uptake. Findings are tabulated in Table 4.5. To summarize the effects of the independent variables on the dependent variable marginal effect was explored. The study found an overall p value of 0.0001 which was less than 0.05 with the log likelihood ratio of -83.486084 implying that the factors considered fitted the model well and thus variables used in the model were collectively significant in health insurance uptake.

The pseudo R as very low (0.1901). This is normal for cross sectional studies. From the LR chi2 (11) results of the model, the variables used in the model significantly explained the dependent variable. The estimated model revealed that occupation, income and religion were significant determinants of health insurance. It was also found that age, gender, household size, education attainment, frequency of hospital visit, cost of premium and pre-existing illness were not elevated drivers of health insurance uptake.

Further, only age, gender, religion, frequency of hospital visit, cost of premium and pre-existing were found to negatively impact health insurance uptake within Nairobi's poor household. The latter however had non-significant effect on health insurance uptake. Table 4.5 shows detailed marginal effects of the Probit model of various factors.

**Table 4.6: Marginal Effects of the Probit Model for Health Insurance**

Probit regression				Number of obs	=	149
				Wald chi2(11)	=	37.44
				Prob > chi2	=	0.0001
Log pseudolikelihood = -83.486084				Pseudo R2	=	0.1904
<b>Health Insurance Uptake</b>	<b>ME</b>	<b>Std. Err</b>	<b>t</b>	<b>p&gt;t</b>	<b>95% Conf. Interval</b>	
Age	-0.0048	0.0047	-1.02	0.307	-0.0140	0.0044
Gender (male=1)	-0.0652	0.0755	-0.86	0.388	-0.2131	0.0827
Marital status (Married=1)	0.0040	0.0973	0.04	0.967	-0.1867	0.1947
Household size	0.0555	0.0289	1.92	0.055	-0.0011	0.1120
School attainment	0.0166	0.0135	1.23	0.219	-0.0099	0.0430
Occupation	0.1500**	0.0731	2.05	0.040	0.0067	0.2933
Ln income	0.2201**	0.0505	4.36	0.000	0.1211	0.3191
Religion	-0.6548**	0.2124	-3.08	0.002	-1.0711	-0.2385
Cultural beliefs	0	(omitted)				
Frequency of hospital visits	-0.0062	0.0189	-0.33	0.745	-0.0433	0.0310
Ln cost of premiums	-0.1708	0.1017	-1.68	0.093	-0.3701	0.0285
Pre-existing illness	0.1102	0.1158	0.95	0.341	-0.1168	0.3372

\*\*Significant at 5%. Ln=Natural logarithm

**Source: Own computation based on primary data**

This study presents discussions on two parts, first; significant factors and second, non-significant determinants. From Table 4.5, the study indicates significant values at recommended (5 percent) levels. Apart from religion variable, other two significant factors (occupation and Ln income) had a positive effect. The other factors were not significant. The discussion is done systematically.

Based on the estimation result, age was not a significant determinant of health insurance uptake ( $\beta=-0.0048$ ,  $t=-1.02$ ,  $p>0.05$ ). An additional year to an individual age led to 0.48 percent insignificant reduction in the probability of partaking health insurance products in Nairobi County, holding other factors constant. This implies that as respondents advance in age, they get to have more needs and thus treating the health insurance ownership as luxury good. This coefficient was however too small. The findings were confirmed by the findings of Saiti, Yitambe and Korir (2020) in their investigation on drivers of health insurance cover among Kenyan elderly. The study revealed that age had an insignificant effect on health insurance demand.

The study established that gender of the respondent was not a significant determinant of health insurance uptake ( $\beta=-0.0652$ ,  $t=-0.388$ ,  $p>0.05$ ). Being male led to 6.52 percent insignificant reduction in the intention to purchase insurance cover, holding other factors constant. This implies that male respondents had lower probability of acquiring the health insurance compared to their female counterparts. The findings were supported with the results of Saiti, Yitambe and Korir (2020) who investigated health insurance uptake among Kenyan elderly. The study revealed that gender had an insignificant effect on health insurance demand.

The study revealed that the respondents' marital status was not a significant determinant of health insurance uptake ( $\beta=0.004$ ,  $t=0.04$ ,  $p>0.05$ ). Being married led to 0.4 percent insignificant increase in health insurance uptake, holding other factors constant. Implying a marginal increase in intention of married couples to acquire health insurance. The findings were confirmed by the results of Saiti, Yitambe and Korir's (2020) study on health insurance uptake among the elderly. The study revealed that marital status had an insignificant effect on demand for health insurance. In addition, Dror, et al (2016), in an assessment of drivers of participation

in community-based health insurance schemes reported an increased association between marriage and insurance cover uptake.

The study indicated that household size was not a significant determinant of health insurance uptake ( $\beta=0.0555$ ,  $t=1.92$ ,  $p>0.05$ ). An additional member to the household led to 5.55 percent insignificant increase in the probability of purchasing health insurance among low-income populations in Kenya, holding other factors constant. This implies that as household size increase, so does the risk of sickness, thus they are forced to have a cover to cushion them from high out of pocket expenditures. The findings were supported by the findings of Dror, et al (2016) who investigated uptake factors in community-based health insurance schemes. The findings indicated that household size, and household significantly impact participation in insurance covers.

Considering the levels of education, the study revealed non-significant effect of school attainment on health insurance ownership ( $\beta=0.0166$ ,  $t=1.23$ ,  $p>0.05$ ). The study showed that; as an individual spends an addition year in school, the likelihood of health insurance uptake increases insignificantly by 1.66 percent among low-income populations in Kibera, Nairobi County holding other factors constant. This implies that clients who are on higher education level have the capacity of comprehending the impact of owning health insurance. However, the impact in our case was not statistically significant. The study findings were contrary to the results obtained by Nguru, Kodhiambo and Yitambe (2018) who investigated drivers of insurance uptake among patients in Embu County, Kenya and showed that higher education levels translate to increased intention to purchase health insurance.

From the results, occupation also significantly impacts uptake of health insurance covers ( $\beta=0.1500$ ,  $t=2.05$ ,  $p<0.05$ ). Being in informal employment led to 15 percent significant increase in the probability of health insurance uptake among low-income populations in Kibera, Nairobi County. This implies that as an individual gets formal employment, they may be forced to own either a private or public health insurance cover which is paid for by the employer compared to those who are not employed. The findings were supported with the findings of Dror, et al (2016) who found that occupation influenced the uptake levels. Nguru, Kodhiambo and Yitambe (2018) reported similar observations in Embu, noting that education, gender, employment and awareness level all have a significant impact on uptake of health insurance.

Considering the income levels, the study revealed a significant effect of income on health insurance ownership ( $\beta=0.2201$ ,  $t=4.36$ ,  $p<0.05$ ). The study showed that; as an individual earns an extra shilling, the likelihood of health insurance uptake increases significantly by 22.01 percent among low-income populations in Kibera, Nairobi County holding other factors constant. The extra income earned is used to purchase or access health insurance. This finding agreed with the results obtained by Dror, et al (2016) who reported that income level influenced the uptake levels. Similarly, Kituku and Amata (2016) who conducted a study on factors driving uptake of NHIF among informal sector workers in Murang' a. Their results indicated that the main determinants of insurance uptake include the level of income.

Religion was also a strong determinant of uptake of health insurance ( $\beta=-0.6548$ ,  $t=-3.08$ ,  $p<0.05$ ). It was found that being in any specific religion reduced the probability of obtaining health insurance significantly by 22.01 percent among low-income populations in Kibera, Nairobi County, implying that religious affiliation is a significant deterrent to uptake of insurance products. The finding was supported by Gitau (2016) who established a strong

association between cultural and religious beliefs and insurance uptake. Hassan, Mwaura-Tenambergen and Eunice (2017) reported religious beliefs as contributors of low insurance uptake among Muslim communities.

On frequency of hospital visits, the study established that hospital visits had non-significant effect on health insurance ownership ( $\beta=-0.0062$ ,  $t=-0.33$ ,  $p>0.05$ ). The study showed that; as an individual increases or visits hospitals several times, the probability of an extra hospital visit led to a reduced likelihood of health insurance uptake insignificantly by 0.62 percent among low-income populations in Kibera, Nairobi County holding other factors constant. More hospital visits drain income used to purchase health insurance which requires consistent servicing. Similarly, Saiti, Yitambe and Korir (2020) reported that the frequency of hospital visits had no influence on people's subscription to insurance services.

Further, the study analysed the effect of the cost of premium on health insurance acquisition and a non-significant effect was established ( $\beta=-0.1708$ ,  $t=-1.68$ ,  $p>0.05$ ). Analysis showed that increasing just one percent of premium insurance costs results in a 17.08 percent reduction in intention to purchase insurance among low-income populations in Kibera, Nairobi County holding other factors constant. Additional cost to the premium of health insurance may discourage potential users since most will prioritize basic needs given their meagre incomes. Since health insurance alone may not cater for healthcare services, the amount meant for co-payment may be more leading to abandonment of the insurance cover. This finding agreed with the results obtained by Kituku and Amata (2016) who examined factors driving uptake of NHIF in Murang'a's informal sector associated high cost of insurance covers with lack of interest in purchasing insurance from the workers.



Lastly, the study found that pre-existing illness or health condition was associated with insignificant effect on health insurance ownership ( $\beta=0.1102$ ,  $t=0.95$ ,  $p>0.05$ ). It was found that having a pre-existing illness led to an increased probability of obtaining health insurance by 11.02 percent among low-income populations in Kibera, Nairobi County holding other factors constant. The effect was however not statistically significant. This implies that compare to those who do not have pre-existing illness, individuals with illness or a health condition would tend to cushion themselves from too much expenditures associated with seeking for healthcare services via obtaining s health insurance plan. The findings were supported by study results obtained by Nguru, Kodhiambo and Yitambe (2018) who investigated drivers of insurance uptake among patients in Embu County. The study indicated a significant association between pre-existing health conditions and awareness level with uptake of health insurance.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS**

### **5.1 Introduction**

This chapter explores the findings from the previous chapter to draw a summary and conclusions. It then details policy implications on the contribution of various determinants of health insurance uptake among low-income populations. It also presents a suggestion for topics that future researchers should explore.

### **5.2 Summary of the study findings**

Insurance is a risk mitigation mechanism where clients receive protection against losses in exchange for payment of a premium and payment is always due before the contingent claim is serviced by the insurer. Insurance is essential for sustainable economic growth and development in any particular country. In Kenya, health insurance adoption is very low within the rural areas, among the illiterate, the informal sector, the poor and vulnerable and marginalized communities. From the literature, several factors have been suggested as key contributors to health insurance uptake. Based on this, the study sought to investigate factors behind uptake of health insurance among the low-income populations in Kibera, Nairobi County.

To achieve the objectives, the study collected primary data via semi structured questionnaires to the households located in Kibera. The study adopted simple random sampling technique with the aid of Yamane (1967) formula in determining the sample population. The sample size was 399. In estimation, the study employed binary Probit regression model where health insurance ownership represented the dependent variable while demographic, socio-cultural and other factors were used as the independent variables. Specifically, the study used Age, Gender,

Married, Household size, School attainment, Occupation, income levels, Religion, Cultural beliefs, Frequency of hospital visits, cost of premiums and also Pre-existing illness were used as the independent variables.

In analysing the awareness and profile of health insurance uptake among low-income populations in Kibera, the study revealed that a small proportion of the respondents making 27.6 percent were covered by health insurance whereas the huge proportion had no any health insurance cover. Following model estimation, the findings revealed that occupation, income levels, and religion were significant determinants of uptake of health insurance. Age, gender, marital status, household size, school attainment, cultural beliefs, frequency of hospital visits, cost of premiums and also pre-existing illness had no significant impact on intention to purchase health insurance among low-income populations in Kenya's low-income populations.

### **5.3 Conclusions**

With more than 56% of Kenyans living below the poverty lines, the uptake of health insurance has become a luxury to many and the low uptake of insurance has resulted in limited access to healthcare. There is thus a need to understand drivers of insurance uptake especially among low-income populations. Following the objectives and findings, the study concludes as follows; first, health insurance uptake among the low-income population in Kibera is approximately 28 percent. Similarly, public health insurance cover is the most owned type of health insurance scheme. Second, it was ascertained that religion and cultural values played a key part in forming subscriber's perception of insurance hence determine health insurance uptake significantly. Occupation and income were also influential factors since high cost of insurance was a deterrent for poorer citizens.

## 5.4 Policy Recommendations

Insurance penetration in Kenya is low despite the introduction of various public, private and community-based health insurance schemes. High cost of insurance covers is the main variables impacting insurance uptake, especially in Kenya where the people in informal settlements live on less than a \$1 a day. Financial constraints affect 43% of the world's population, making insurance virtually unaffordable. To counter this, the study suggests the following;

- i. The ministry of health and the other relevant stakeholders need to raise the knowledge on the various health insurance options available and improve flexibility of the products in order to drive insurance uptake. This is because the findings revealed that the uptake levels were very low among the low-income population.
- ii. In addition, national and county government need to develop programmes and policies that could empower households in the informal settlements since it was established that occupation had significant effect on health insurance uptake level among low-income populations. Literature in health economics also supports this suggestion as employment is associated with higher utilization compared to unemployed population.
- iii. There is a necessity of the government subsidizing the cost of purchasing public health insurance cover to promote uptake of health insurance cover. This suggestion is based on the fact that income levels were significantly associated with increased in health insurance uptake among low-income populations.
- iv. Lastly, there is need for the ministry of health together with county departments of health to work closely with various religious denominations to campaign for uptake of health insurance among low-income populations. This is because the findings that

respondents who were associated with religious inclinations had significantly lower likelihood of purchasing insurance products.

#### **5.4. Areas of Further Study**

This study focused on assessing determinants of uptake of health insurance covers among low-income populations in Kibera, Nairobi County, Kenya. The study mainly relied primarily on cross-sectional data collected from low-income populations in Kibera, Nairobi County, Kenya. Several determinants were actually considered in the study as indicated in the methodology section, however, other factors such as regional variations, and other community factors were not considered. There is need for other studies exploring the same while considering those significant factors. Since the study mainly focused on low-income population from Kibera, Nairobi County, there is a dire need to do similar study to include other informal settlements like Mathare, Huruma, Dandora among others. Further, other national datasets (for example longitudinal data) ought to be considered in future studies.

## REFERENCES

- Abel, A. O. (2018). African Journal of Health Economics, August, 2018, Volume 7 (1): 16-27. *African Journal of Health Economics*, 7(1), 16-27.
- Adebayo, E. F., Uthman, O. A., Wiysonge, C. S., Stern, E. A., & Lamont, K. T. (2015). A systematic review of factors that affect uptake of community-based health insurance in low-income and middle-income countries. . *BMC Health Services Research volume* , 543 (2015) .
- Ajzen, I. (1991). The theory of planned behaviour. . *Organizational Behaviour and Human Decision Processes*, , 50(2): 179-211.
- Alesane, A., & Anang, B. T. (2018). Uptake of health insurance by the rural poor in Ghana: determinants and implications for policy. *The Pan African Medical Journal*, 31.
- Andersen, R. (1968). Healthcare service model: explaining factors determining accessibility to healthcare utilization. *Journal of health social behaviour*, 30 (4).
- Andersen, R. (1995). Revisiting the behavioural model and access to medical care: does it matter? . *Journal of Health Social Behaviour*, 36 (1): 1–10.
- Andersen, R., & Newman, J. F. (1973). Societal and individual determinants of medical care utilization in the United States. . *Milbank Mem Fund Q Health Society*, 51 (1).
- Apanga, P. A., & Adam, M. A. (2015). Factors influencing the uptake of family planning services in the Talensi District, Ghana. . *Pan African Medical Journal*, 20(1).
- Barasa, E., Nguhiu, P., & McIntyre, D. (2018). Measuring Progress towards Sustainable Development Goal 3.8 on Universal Health Coverage in Kenya. . *BMJ Global Health* , 3(3), 1–13.
- Barasa, K. (2016). To identify a framework for adoption by insurance industry for enhancing insurance penetration. . *Strathmore Business School*.
- Blumberg, B. (2014). *Business Research Methods*. Berkshire, UK: Mc Graw Hill.
- Cooper, D. R., & Schindler, P. S. (2014). *Business Research Methods (10th ed.)*. . New York: McGraw-Hill/Irwin.

- Cooper, D., & Schindler, P. (2008). *Business research methods (10th Ed.)*. . New York, NY: McGraw-Hill/Irwin.
- Coopers, D., & Schindler, P. (2014). *Business research methods (12th Ed.)*. . New York, NY: McGraw-Hill/Irwin.
- Creswell, J. (2014). *Research design. International student edition (4th ed.)*. . Los Angeles: SAGE Publication, Inc.
- Davoud, A., Mohammad, P., Ali, T., Hosein, A., & Sadeghi, S. (2013). Determinants of the Choice of Private Hospitals by Patients. . *Journal of Society for Development*, 16(5)1629-1635.
- Dixon, J., Tenkorang, E. Y., & Luginaah, I. (2011). Ghana's National Health Insurance Scheme: helping the poor or leaving them behind?. *Environment and Planning. Government and policy*, 29(6), 1102-1115.
- Dror, D. M., Hossain, S. S., Majumdar, A., Pérez Koehlmoos, T. L., John, D., & Panda, P. K. (2016). What factors affect voluntary uptake of community-based health insurance schemes in low-and middle-income countries? A systematic review and meta-analysis. *PLoS One*, 11(8), e0160479.
- Fadlallah, R., El-Jardali, F., Hemadi, N., Morsi, R., Samra, C. A., & Ahmad, A. (2018). Barriers and facilitators to implementation, uptake and sustainability of community-based health insurance schemes in low-and middle-income countries. *International journal for equity in health*, 17(1), 13.
- Fenny, A. P., Kusi, A., Arhinful, D. K., & Asante, F. A. (2016). Factors contributing to low uptake and renewal of health insurance: a qualitative study in Ghana. . *Global health research and policy*, 1(1), 18.
- Fior Markets. (2020). *Global Health Insurance Market Is Expected to Reach USD 2021.62 billion by 2027*. Retrieved from Fior Markets: [https://www.globenewswire.com/news-release/2020/09/30/2101076/0/en/Global-Health-Insurance-Market-Is-Expected-to-Reach-USD-2021-62-billion-by-2027-Fior-Markets.html#:~:text=30%2C%202020%20\(GLOBE%20NEWSWIRE\),the%20forecast%20period%202020%2D2027](https://www.globenewswire.com/news-release/2020/09/30/2101076/0/en/Global-Health-Insurance-Market-Is-Expected-to-Reach-USD-2021-62-billion-by-2027-Fior-Markets.html#:~:text=30%2C%202020%20(GLOBE%20NEWSWIRE),the%20forecast%20period%202020%2D2027).

- Ghaddar, S., Byun, J., & Krishnaswami, J. (2018). Health insurance literacy and awareness of the Affordable Care Act in a vulnerable Hispanic population. . *Patient Education and Counseling*, 101(12), 2233-2240.
- Gitau, P. (2016). An Assessment of Cultural Factors Affecting Insurance Uptake: A Survey of the Nairobi Central Business Districts. *European Journal of Business and Strategic Management*, Volume 1, Issue 1, Number 1, 70-87.
- Hansen, T., Jensen, J., & Solgaard, H. (2004). Predicting online grocery buying intention: a comparison of the theory of reasoned action and the theory of planned behaviour. . *International Journal of Information Management*, , 24(6): 539-550.
- Hassan, M. A., Mwaura-Tenambergen, W., & Eunice, M. M. (2017). Uptake of health insurance among Muslims in Nairobi county, Kenya. . *Pan African Medical Journal*, 28(1).
- Jahangeer, A., & ul Haq, R. (2015). Willingness to Purchase Health Insurance in Pakistan. *Population & Health Working Paper Series*.
- Keith, T. (2006). *Multiple regression and beyond*. . London: Pearson Alln & Bacon.
- Kempen, E., Kasambala, J., & Toerien, E. (2015). A conceptual framework of e-fashion shopping intent. . *The Retail and Marketing Review*, , 11(1): 23-43.
- Kenya National Bureau Of Statistics. (2013). *Kenya Household Expenditure And Utilization Survey*. Kenya National Bureau Of Statistics.
- Kenya National Bureau of Statistics. (2019). *2019 Kenya Population And Housing Census*. Kenya National Bureau of Statistics.
- Kim, H.-K., & Lee, M. (2016). Factors associated with health services utilization between the years 2010 and 2012 in Korea: using Andersen's Behavioral model. . *Osong Public Health and Research Perspectives*, 7(1), 18–25.
- Kituku, A. M., & Amata, E. (2016). Determinants of the uptake of NHIF medical cover by informal sector workers: a case of UNAITASSACCO members in Murang'a County. . *Journal of Public Policy and Administration*, 1(1), 17-31.



- Maina, J. M., Kithuka, P., & Tororei, S. (2016). Perceptions and uptake of health insurance for maternal care in rural Kenya: a cross sectional study. *Pan African medical journal*, 23(1).
- Masengeli, N. L., Mwaura-Tenambergen, W., Mutai, J., & Simiyu, B. W. (2017). Determinants of uptake of health insurance cover among Adult patients attending Bungoma County Referral Hospital. . *International Journal of Health Economics and Policy*, 2(4), 145-1.
- Mhere, F. (2013). Health Insurance determinants in Zimbabwe: A case of Gweru Urban. *Journal of Applied Business and Economics*, 14(2) 2013.
- Ministry of Health. (2019). *UHC QI Policy Brief*. Retrieved from Ministry of Health: <https://www.health.go.ke/wp-content/uploads/2019/01/UHC-QI-Policy-Brief.pdf>
- Mohamed, A. A. (2019). Determinants of Uptake of National Hospital Insurance Fund by Self-employed Persons in Kenya: Case of Health Projects in Wajir County, Kenya. *Doctoral dissertation, University of Nairobi*.
- Muia, B., Cheruiyat, T., & Lagat, C. (2018). Impact of subjective norm on the purchase intention of counterfeit mobile phones in Kenya. *International Journal of Economics, Commerce and Management*, 6(8): 376-392.
- Mukangendo, M., Nzayirambaho, M., Hitimana, R., & Yamuragiye, A. (2018). Factors contributing to low adherence to community-based health insurance in Rural Nyanza District, Southern Rwanda. *Journal of environmental and public health*, 2018.
- Muketha, D. M. (2016). *Determinants Of The Uptake Of National Health Insurance Among Informal Sector Workers In Kenya* (Doctoral dissertation, University of Nairobi).
- Mutinda, D. (2015). *Factors Influencing The Uptake Of Health Insurance Schemes Among Low Income Earners In Kibera Informal Settlement, Nairobi City County* (Doctoral dissertation).
- Namuhisa, J. A. (2014). Determinants of uptake of National Hospital Insurance Fund scheme by the informal sector in Nairobi county, Kenya. *Unpublished MBA Project, Kenyatta University, Kenya..*

- Ndungu, T. T. (2015). *Factors influencing uptake of national health insurance in the informal sector: a case of ithanga division in murang'a county, Kenya* (Doctoral dissertation, University of Nairobi).
- Nguru, C. N., Kodhiambo, M. O., & Yitambe, A. (2018). Uptake of Health Insurance among Patients Attending Public and Private Hospitals in Embu County, Kenya. *International Journal of Innovative research and Studies*, 8.
- Niyinyumva, B. (2019). *Influence of Culture on Health Insurance Uptake Among Patients at Chogoria Mission Hospital, Tharaka Nithi County* (Doctoral dissertation, Kabarak University).
- Njogu, D. M. (2019). *Factors Influencing Health Insurance Uptake In Nyeri County* (Doctoral dissertation, University of Nairobi).
- Nyaboga, J. M. (2019). *Effects of Socio-economic Factors on the Uptake of Health Insurance by Motorcycle Taxi Operators in Machakos County, Kenya* (Doctoral dissertation, University of Nairobi).
- Ogben, C. (2014). Knowledge and Perception of Rural Communities in Abuja Nigeria on Community Based Health Insurance Scheme. . *South American Journal of Public Health*, 2(4), 534-60.
- Olanrewaju, M. F., Ajileye, D. O., Asekun-Olarinmoye, T. F., Adeoye, A. O., Oyerinde, O. O., Adebola, O., & Filade, B. A. (2019). A Study of Percieved Benefit and Barriers towards the Uptake of State Health Insurance Scheme in Lokoja, Kogi State, Nigeria. *IOSR Journal of Environmental Science, Toxicology and Food Technology*, Volume 13, Issue 10, PP 71-76.
- Omollo, J. (2016). Factors Contributing to Low Insurance Penetration in Kenya. *International Journal of Social Sciences and Entrepreneurship*, Vol.1, Issue 2, 2013, 1(2), 463-469.
- Osborne, J., & Waters, E. (2002). Four assumptions of multiple regression that researchers should always test. . *Practical assessment, research & evaluation*, 8(2).
- Oyekale, A. S. (2012). Factors influencing households' willingness to pay for National Health Insurance scheme (NHIS) in Osun state, Nigeria. . *Studies on Ethno-Medicine*, 6(3), 167-172.

- Ozawa, S., Grewal, S., & Bridges, J. F. (2016). Household size and the decision to purchase health insurance in Cambodia: results of a discrete-choice experiment with scale adjustment. . *Applied health economics and health policy*, 14(2), 195-204.
- Panda, P., Chakraborty, A., & Dror, D. M. (2015). Building awareness to health insurance among the target population of community-based health insurance schemes in rural India. . *Tropical Medicine & International Health*, 20(8), 1093-1107.
- Panda, P., Chakraborty, A., Dror, D. M., & Bedi, A. S. (2014). Enrolment in community-based health insurance schemes in rural Bihar and Uttar Pradesh, India. . *Health Policy and Planning*, 29(8), 960-974.
- Saiti, N., Yitambe, A., & Korir, J. (2020). Demand For Health Insurance Among The Elderly In Nairobi City County, Kenya. *International Journal of Innovative Research and Advanced Studies*, Volume 7 Issue 7, July 2020.
- Sekaran, U., & Bougie, R. (2016). *Research Methods for Business (7th ed)*. . John Wiley & Sons Ltd.
- Shajahan, S. (2009). *Research Methods for Management (3 ed)*. . Ahamedabad: Jaico Publishing House.
- Statista. (2019). *Insurance industry in Africa- Statistics & Facts*. Retrieved from Statista: <https://www.statista.com/topics/4206/insurance-industry-in-africa/>
- To, P., Liao, C., & Lin, T. ( 2007). Shopping motivations on Internet: A study based on utilitarian and hedonic value. . *Technovation*, , 27(12): 774-787.
- Van Der Wielen, N., Falkingham, J., & Channon, A. A. (2018). Determinants of National Health Insurance enrolment in Ghana across the life course: Are the results consistent between surveys?. *International journal for equity in health*, 17(1), 49.
- World Health Organization. (2016). *The World Health Report 2015: Research for Universal Coverage*. Luxembourg: World Health Organization.
- World Health Organization. (2020). *Sustainable Development Goal 3: Health*. . Retrieved from World Health Organization: [//www.who.int/topics/sustainable-development-goals/targets/en/](https://www.who.int/topics/sustainable-development-goals/targets/en/)

Yamane, Taro. (1967). *Elementary Sampling Theory*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

Yusuf, H. O., Kanma-Okafor, O. J., Ladi-Akinyemi, T. W., Eze, U. T., Egwuonwu, C. C., & Osibogun, A. O. (2019). Health insurance knowledge, attitude and the uptake of community-based health insurance scheme among residents of a suburb in Lagos, Nigeria. *West Afr J Med*, 36(2), 103-111.

Zollmann, J., & Ravishankar, N. (2016). Struggling to thrive: How Kenya's low-income families (try to) pay for healthcare. *Nairobi: FSD Kenya*.

## APPENDICES

### Appendix I: Questionnaire

This research sought to: *examine the determinants of health insurance uptake among low-income populations in Kibera, Nairobi County*. Your participation in this study is voluntary.

#### Part A: Background Information

**1. Do you wish to participate in this research study?**

Yes (     )     

No (     )     

#### Part B: Uptake of Health Insurance

**2. Have you enrolled for any health insurance scheme (Private or Public)?**

Yes (     )     

No (     )     

#### Part C: Demographic Information

**3. What is your Age?**

\_\_\_\_\_

**4. What is your Gender?**

Male [    ]     

Female [    ]     

**5. What is your current marital status?**

Single [    ]     

Married [    ]     

Widowed [    ]     

Divorced [    ]     

**6. What is the number of people in your household?**

\_\_\_\_\_

**7. How many years have you been in school?**

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**8. What is your current occupation status?**

Unemployed [ ]

Informal employment [ ]

Formal employment [ ]

Self-employment [ ]

**9. What is your average monthly income?**

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**10. What is your current religious belief?**

No religion [ ]

Catholic [ ]

Protestant [ ]

Muslim [ ]

**Part D: Knowledge and Awareness**

**11. How many times have you or your dependants visited a health facility in the last 12 months?**

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*12.b How did you pay for the services?*

Out of Pocket ( )

Insurance ( )

Free services ( )

Others ( )

**12. Are you aware of any health insurance scheme?**

Yes ( )

No ( )

13.b Which ones?

Private ( )

Public ( )

Community based ( )

None ( )

13.c Which one does your household have?

None ( )

Private ( )

Public ( )

Community based ( )

**13. What is the average cost of insurance premium per month in kshs?**

\_\_\_\_\_

**14. Do you or your dependants have any pre-existing health conditions like chronic illnesses that require constant care or hospitalisation?**

Yes ( )

No ( )

**Additional Questions**

**15a. If you could comfortably afford basic needs and had money left, would you consider enrolling for health insurance?**

Not likely ( )

Somewhat likely ( )

Very likely ( )

**15.b If any of your family members had a pre-existing health condition that require constant care or hospitalization, how likely are you to forego some basic needs to purchase health insurance?**

Not likely ( )

Somewhat likely ( )

High likely ( )

**Thank you for your Time**