

**DETERMINANTS OF HEALTH INSURANCE UPTAKE AMONG THE INFORMALLY  
EMPLOYED IN NAROK COUNTY**

**BY**

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the Degree of Master of Science in Health Economics and Policy of the University of  
Nairobi.**

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## **DECLARATION**

I declare that this is my original work and has not been submitted to any other University or other institution of higher learning for examination or consideration.

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This research report is submitted for examination with my approval as the University appointed supervisor

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## **ABSTRACT**

Affordability and accessibility of healthcare is major issue globally that threatens to impede the realization of Universal Health Coverage (UHC). The challenge is more prominent in low income countries and low medium income countries due to high unemployment rates and poverty levels. Health insurance prevents many individuals and families from catastrophic healthcare cost which can drive families into poverty. Therefore, health insurance is an important means of achieving universal health care.

In Kenya, the people who are formally employed are covered by National Health Insurance Fund (NHIF) because their premiums are paid as statutory deductions. Some employers may also get an extra private health insurance for their workers, thus, the decision is mostly not for the employees to make.

Generally, there is a low insurance uptake among informally employed and unemployed in Kenya. The factors contributing as to whether the members of this group are insured or uninsured are understudied thus there is a huge research gap

This study analyzed the factors that determine health insurance uptake in Narok County, using cross sectional data. The study employed probit model to carry out the estimations where it reveals that wealth quintile/income is a significant determinant of health insurance uptake in the county

This study recommends that the government can consider paying health insurance premiums for the people on the lower wealth quintiles who cannot afford health insurance premiums. The government can also work on improving the household income or wealth index among the informally employed people. This would eliminate or reduce the current gaps that are there due to wealth disparity.

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## CHAPTER ONE

### INTRODUCTION

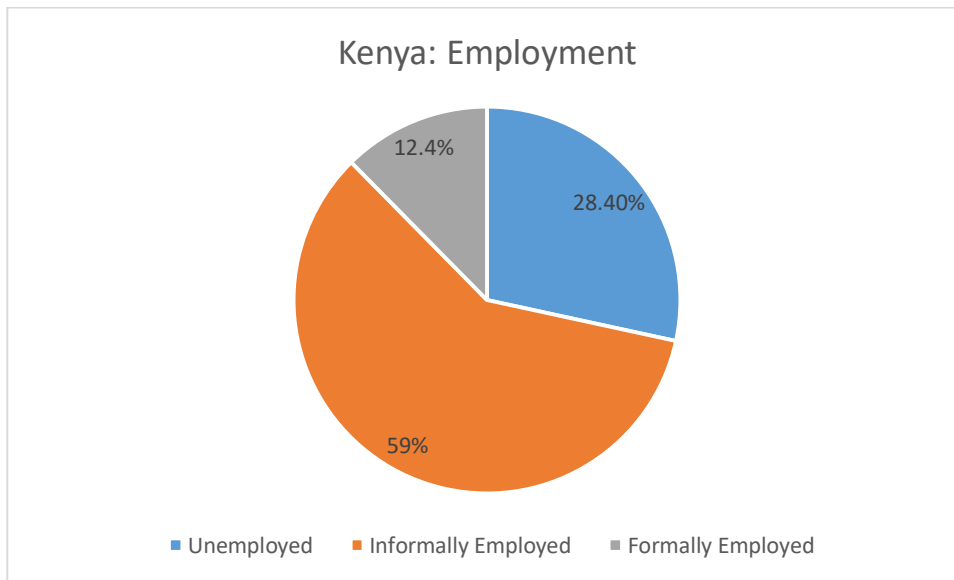
#### 1.1 Background

Healthcare affordability and accessibility is major issue globally that threatens to impede the realization of Universal Healthcare Coverage (UHC) (Okungu *et al*, 2018). The challenge is more prominent in Low and Middle Income Countries (LMIC), which includes Kenya, due to high unemployment rates and poverty levels. A means of achieving health equity is to ensure social inclusion in health insurance and provision of equitable health financing. As a means of providing affordable health services for populations, there have been efforts to promote UHC in recent health policy focus (Abdulraman *et al*, 2018). Health insurance protects many individuals and families from catastrophic healthcare cost which can drive families into poverty. Therefore health insurance is an important means of achieving UHC. However, the major challenge is to ensure that all the members of the population have an adequate health insurance cover.

Social exclusion which arises from lack of formal employment results in entrenchment of exclusion demonstrated by inequality in access to resources, abilities and entitlements ultimately leading to inequities in health. Therefore, health policies for the LMICs should focus on two pertinent issues; a way to deliver an essential combination of quality health services and means of financing and managing the services so as to maintain continuous accessibility, availability and affordability to vulnerable individuals. The health gap between the employed, informally employed, underemployed and the unemployed is due to access to economic and social resources and trust in the institutional systems (Ann *et al*, 2018). To achieve Universal Health Coverage, it's imperative to have a health insurance coverage that can be accessed by all irrespective of their demographic or socioeconomic status (Mathauer *et al*, 2008).

In Kenya, close to 50 per cent of the population are living beneath the national poverty line thus to achieve elevated and equitable levels health insurance coverage is problematic (Kazungu & Barasa, 2017). Over the years, due to government inefficiency and slow growth in economy, labour has been pushed largely into the informal sector and small scale agricultural activity with insecure livelihoods and characterized by little and inconsistent income. According to World Bank review of house hold enterprises in Sub Sahara Africa (Fox & Sohnesen, 2012) informal

sector accounts for about 70 per cent of employment outside of agriculture (Olomi *et al*, 2018). In LMICs, informal firms makes up a majority of all enterprises (World Bank, 2016).



*Figure 1 Kenya employment chart*

According to 2015/16 Kenya Integrated Household Budget Survey (KIHBS) Labour Force Basic Report, Kenyan overall employment to population ratio increased from 69.3 per cent recorded in 2009 Kenya Population and House census (KPHC) to 71.6 per cent in 2016. Of the employed, the informal sector accounts for 82.7 per cent of all employment according to Kenya National Bureau of Statistics (KNBS) 2014. This therefore means that only 12.4 percent of Kenyans are formally employed.

## **1.2 Narok County**

Narok County is geographically located in the southern part of the Rift Valley, Kenya with an area of 17,921 square kilometres. The total population of Narok County as of 2019 was 1,149,379 coming from 241,125 households. It has an employment rate of 52.7%. According to the ministry of health report 2019, Narok County has a health insurance uptake of 9.3%.

## **1.3 National Health Insurance Fund (NHIF)**

NHIF was established in 1966 as a state parastatal and initially covered only salaried formal sector employees. The fund has since undergone a lot of transformation to open it up to the general public and meet the changing healthcare needs. Any Kenyan above 18 years is now

eligible to join NHIF as long as they are able to pay the monthly premiums. NHIF is currently widely available Kenya with 7 million principle contributors as of 2018. NHIF is governed by NHIF Act No 9 of 1998 which has transformed the fund from a department of the Ministry of Health to an independent state corporation for effectiveness and efficiency.

For government to provide universal health coverage, there is need to crucially focus on revitalisation of NHIF as the government strategic purchaser of healthcare. Currently the fund has expanded its benefits to include outpatient coverage, surgical packages and other specialised treatment.

#### **1.4 Statement of the problem**

In Kenya, the people who are formally employed are covered by National Health Insurance Fund (NHIF) through statutory deducted premiums. Some employers may also get an extra private health insurance for their workers, thus, the decision is mostly not for the employees to make. The rest of the Kenyans who are not in formal employment may contribute premiums to either NHIF or private insurers (Kimani *et al*, 2012). The average national health insurance coverage in Kenya was 20 per cent in 2014 (World Bank, 2014). This is very low considering the country aspires to achieve universal healthcare coverage.

Generally, there is a low insurance uptake among informally employed in Kenya (Kimani *et al*, 2012). . It's thus not surprising that only 16% of informally employed people have health insurance (Mukhwana, Ngaira & Mutai, 2015). The factors contributing to whether the members of this group are insured or uninsured are understudied. This has resulted in formulation of inadequate policies to achieve insurance inclusion of this group. The pertinent question therefore is; 'What determines health insurance uptake among the informally employed in Kenya?' The answers to this question would be helpful health decision makers so as to formulate policies that increases uptake among this group. According to Githinji (2017), the various factors can be classified into two major group's i.e. demographic and socioeconomic factors. The demographic factors are place of residence, marital status and age (Mahdavi *et al* 2019). The socioeconomic factors include wealth quintile, employment, household size, education level and access to mass media. This study seeks to explain how these factors influence the uptake of health insurance in Narok County, Kenya.

### **1.5 Objectives of the study**

The general objective is to analyse the health insurance uptake determinants among informally employed in Narok County, Kenya.

The specific study objective is to analyze the influence of demographic and socioeconomic factors on health insurance uptake among informally employed in Narok County, Kenya.

### **1.6 Significance of the study**

Given the percentage of the population under the category of informally employed i.e. 59% and their low uptake of health insurance, it will be impossible to achieve UHC without bringing them on board. As of 2018, Narok County had a health insurance uptake of 9.3% as a percentage of the total population (MOH, 2018). This is very low. This study seeks to find the intricacies that goes into individuals of this category decision on whether to take a health insurance. This study will help the policy makers in determining the incentives that can improve the penetration of health insurance for the informally employed people of the population. It would also help in targeted recruitment of health insurance principles and to formulate health insurance policies that are attractive to this group as a way of social inclusion to achieve health equity.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter will discuss health insurance as a means of achieving universal health coverage (UHC) especially concerning informal sector workers. It will specifically discuss on already available literature about Low and Middle Income Countries (LMICs) and their progress and challenges in the pursuit of the UHC goal. It would discuss why it is important to ensure that the low income earners which are mostly drawn from informal sector workers are supposed to have health insurance. This would include literature from previous research, ministry and agency reports and international organization reports. The review would be in two parts: theoretical literature and the empirical literature.

#### **2.2 Theoretical literature**

##### **2.2.1 The theory of adverse selection**

Adverse selection generally refers to a situation where there is asymmetry of information between the buyer and the seller of a product. In insurance therefore, this asymmetry is exploited by on party who has more material knowledge than the other. Individuals with high pre-existing conditions or high risk individuals would more likely to seek health insurance to avoid paying out of the pocket unlike those low risk individuals or those without pre-existing conditions (Wagstaff, 2010). The insurers would however tend to offer more incentives and prefer individuals with low risk.

##### **2.2.2 The diffusion theory**

This theory explains how individuals process information before they accept and use or adopt it. This theory was explained by Rogers (2003), where he classified the process into five steps; knowledge or information, persuasion, resolution or decision, implementation and approval or confirmation in that timely order. This is how an individual arrives at the decision to take up health insurance or not.

##### **2.2.3 Conventional health insurance theory**

This theory explains that people prefer paying small premiums monthly which is certain as opposed to waiting to pay large amounts when one gets ill which is uncertain. When there is an

increase in healthcare spending through insurance there is loss of welfare in the society thus implies a detrimental moral hazard as was explained by Pauly M (1968). The remedy to this moral hazard is introduction of insurance co-payments, application of deductibles and limitation of benefits such that it transfers some cost to the member seeking unnecessary medical care.

#### **2.2.4 Moral hazard theory**

This theory explains the situation where individuals assume higher risks when they are already insured than when they are not. People with health insurance have higher health seeking behaviour than those without. This therefore increases demand for health services while premiums remain the same. The insurer therefore carries the financial burden. This is the moral hazard on the demand side.

The moral hazard on the supply side is where some providers recommend test and procedures which would otherwise would not have been done if the individuals were not insured

#### **2.2.5 Social exchange theory**

This theory explains uptake of insurance as dependent on the consumer habit, Thibaut and Kelley (1959). The consumer will always consider their actions so as to make decisions that minimize their losses and maximize their rewards.

#### **2.2.6 UHC cube**

The WHO member states in 2005 committed to developing a health system that enable all people to get health services on the basis of their need as opposed to their ability to pay. The 58<sup>th</sup> World Health Assembly (WHA) in 2005 therefore recommended to countries to plan transition to Universal Health Coverage following adoption of its resolution. According to (Bump, 2010), in LMICs the UHC interventions improve access to healthcare and often have positive effect on financial protection and impact on health status. The most important policy focus in UHC should three important elements of coverage; population, cost and service coverage. To understand this concept better its best described using the UHC cube as used in the World Health report 2010.

## Progressive realization: The Three Dimensions (policy choices) of Universal Health Coverage

Towards universal coverage

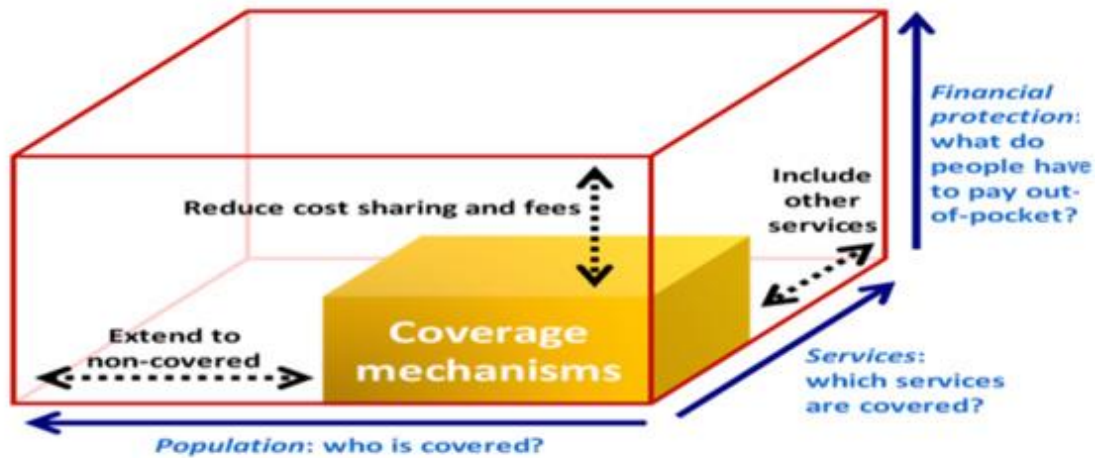


Figure 2 UHC Cube (WHO 2010)

### 2.3 Empirical literature

An important consideration in expanding coverage to the informally employed people is the kind of prepayment system that is desirable to this section of the population and the characteristics that design should motivate prior payment among this group of Kenyans (Okungu *et al*, 2018). Studies have demonstrated that there are determinants that influence health insurance uptake. They can broadly be classified into two categories; demographic and socioeconomic factors.

#### 2.3.1 Demographic factors

In this section we are going to explore the literature on ways in which the demographic factors influence health insurance uptake. According to (Ndung'u, 2015), demographic factors that includes household size, gender, age, number of children and marital status influence uptake of NHIF in Ithanga division, Muranga County.



### **2.3.1.1 Age**

Studies have shown that uptake of health insurance increase with age. It is especially due to the fact health needs increases with age. There is also need for increased financial risk protection as one ages. It's also demonstrable that as one's age increases, they tend to be able to acquire more income. This is also supported by (Githinji, 2017) who asserts that there is a direct correlation between health insurance coverage and age. In a study done on determinants of choice of health insurance in Kenya using multinomial Logit model, (Kiplagat et al, 2013) observed that there is increase in health insurance coverage with increase in age (Duku,2018). This is consistent with studies done on the rural poor in Ghana (Aaro and Benjamin, 2018).

However, there are some studies showing negative relationship between uptake of health insurance and age. According to systemic review of factors determining voluntary uptake of community based health insurance in LMICs of 2016, the presence of the elderly people in the household had negative association with enrolment of health insurance (Dror *et al*, 2016).

### **2.3.1.2 Gender**

Empirical studies over the years have shown that gender influence access to health and health insurance. A report by WHO 2008 explains that gender biases and inequality reflected on the access to health insurance. The disadvantaged position of women in the society has led fewer women being enrolled to health insurance (Sabine, 2012) where by the men as head of households decide on whether to enrol for an insurance policy for health and their utilization. In the study it is shown that low literacy of women impedes their ability to understand the health policies and also lacked important information on it.

In a study carried out in New York to examine how gender affects health access in central Harlem, it was discovered that more women had private and public health insurance than men (Cheryl, 2000). Women are also more likely to renew their insurance covers according to a study done by (Boateng and Awanyur-victor, 2013). It's important to bridge the gender disparities in health access and insurance uptake in order to achieve UHC.

### **2.3.1.3 Marital status**

Marital status plays an important role in access to important resources. People who are married are more likely to enrol for health insurance (Kirigia et al, 2005) (Duku, 2018). It is further

supported by (Savage, 2008) who explained that married people had an increased need for health insurance because of the inherent need to protect their families (Akazili *et al*, 2014).

In a study on health insurance uptake in South Africa, Roger (2012) found that marriage increases chances of ownership of health insurance. That there is a net increase in income for married couples is also demonstrable (Turikoti, 2015). As the number of dependants increase there is an increased need for health insurance. Coverage as a dependant is usually limited to those who are legally recognised as spouses and the children of the principle contributor.

In the informal sector, since income is both relatively low and the spouse is more likely to be unemployed or also informally employed it's economical for one of the couple to take up health insurance to avoid the catastrophic healthcare cost.

#### ***2.3.1.4 Place of residence***

Some studies have shown that rural populations preferred health insurance as compared to their urban counterparts (Yue and Zou, 2014) thus enrolling for community based health insurance.

However, there are studies that are contradicting those findings as Mulenga *et al* (2016) demonstrated that urban population embrace and understand health insurance more than the rural population. This could be due to other contributing factors such as access to information and their level of education. It is also supported by a study done by Kimani *et al* (2014) which found that there is a high likelihood of health insurance uptake among the urban dwellers.

#### **2.3.2 Socioeconomic factors**

Various studies have come up with a number of socioeconomic factors that influence health insurance uptake. The factors are discussed below;

##### ***2.3.2.1 Education level***

The level of education is positively associated with health insurance uptake (Kimani *et al*, 2014).

This observation has been supported by a study done impact of level of education on health insurance uptake, Kiplagat *et al* (2013) found out that as the level of education increases, the more the likelihood of having a private health insurance coverage. These findings are also consistent with what results of studies done by Dickson (2016) and Mulenga *et al* (2016)

### ***2.3.2.2 Wealth quintile/index***

Wealth is closely associated with individual income level which is also associated with health insurance uptake. There is an increase in demand for private health insurance with increase in one's level wealth or income (Makoka et al, 2007 and Kirigia et al, 2007). As one's disposable income increases, there is a tendency to ensure that during difficult times the healthcare expenditure is assured hence health insurance.

Among respondents living in areas with extreme poverty, (Kimani et al, 2012) found out that only 48 percent of those employed were registered with NHIF. The main hindrance to among the poor and low salaried individuals are money related constraints. Kenyans surviving on less than a dollar a day are about 46.6% (World Bank, 2010), and more than half of these population are considered absolutely poor. In South Africa, (Kirigia et al, 2005) deduced that there was an increase in women who had medical insurance with increase in household income.

### ***2.3.2.3 Access to mass media***

Various studies have demonstrated that access to information about the benefits and availability of health insurance impacts on its uptake. Listening to radio, watching television and reading newspapers are useful media in dissemination of insurance information. Mulenga et al (2016) explained that women with more access to mass media daily had increased enrolment for health insurance. The findings are also supported by a study that was done by Kimani et al (2014).

The influence of insurance sensitisation and education on demand for health insurance is generally positive since it addresses literacy gaps and lack of knowledge on health insurance policies. Health insurance education can mainly be obtained through mass media. Educational interventions can thus be used to increase health insurance demands by highlighting the importance of health pooling, insurance, strength of solidarity and benefit packages.

### ***2.3.2.4 Household size and number of children.***

Other than presence of a family member with chronic illness or disability, (Fang et al, 2012) also found out that smaller household size with relatively high income are more likely to take health insurance. But due to policies that exempt pre-existing conditions, households with disabled or chronically ill members are likely to pay more premiums or are exempted. The bigger the household size or the more the number of children, the more the premiums to be paid for health

insurance. This can therefore disadvantage families with larger household sizes with less income (Doyle & Panda, 2011).

#### **2.4 Overview of the literature**

This chapter reviews the global perspective on health insurance and its importance. It specifically reviews the literature with respect to LMICs and the need to upscale its uptake. It covered the literature on the demographic and socioeconomic determinants that have been identified by previous studies. Finally, the identified determinants are put in a conceptual framework so as to help in the development of methodology of analysis.

The previous studies done on this subject had covered the general population while others focus on a particular geographical or administrative area or gender, thus there is a need to do the study on this specific group. This study would bring new perspective and possibly recommendations which would be invaluable to health policy makers

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

The chapter would cover conceptual framework, empirical model, definition and measurement of variables, econometric approach, data sources and sampling methods.

#### 3.2 Conceptual framework

From the literature on health insurance uptake, the representation of the dependent and independent variables can put in the conceptual framework below:

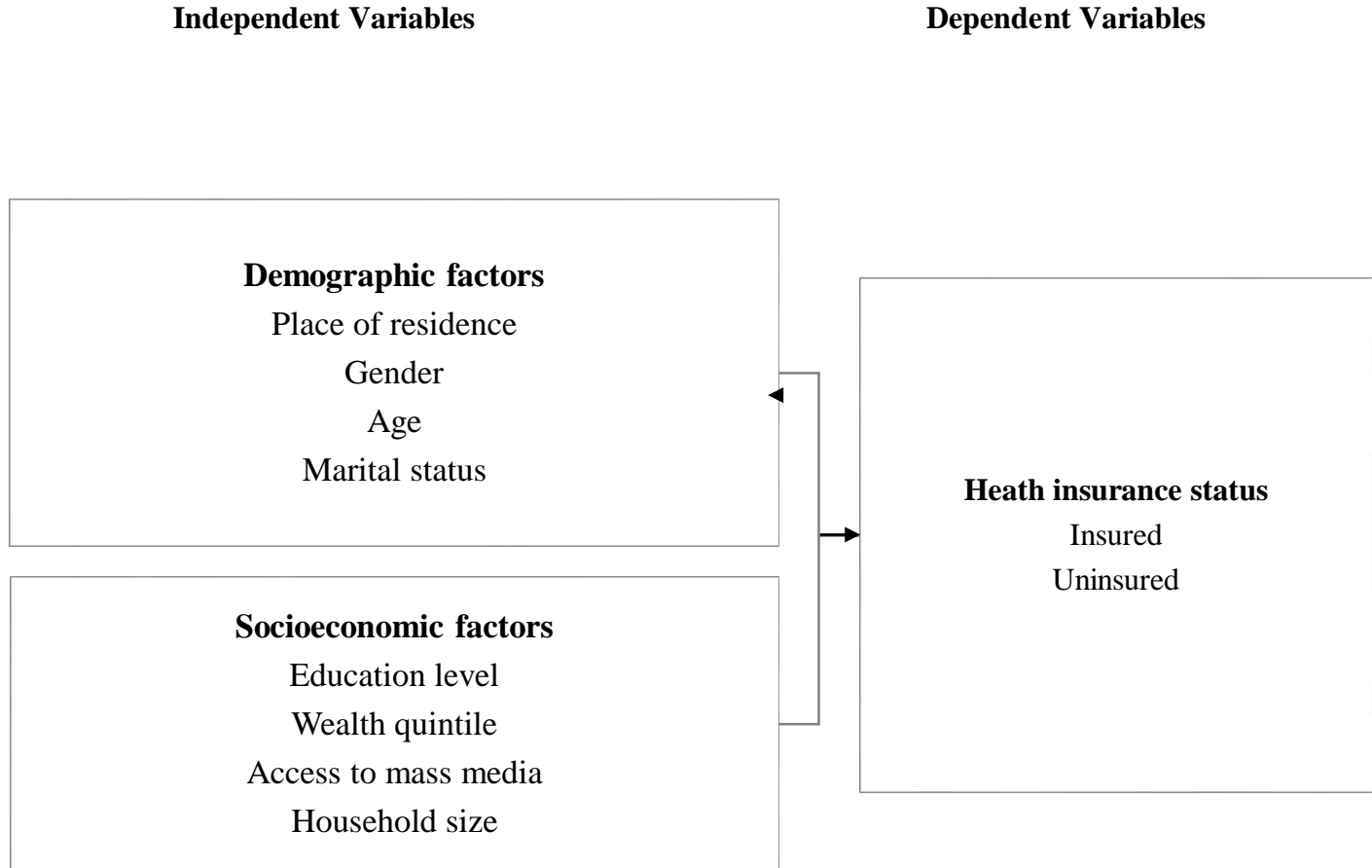


Figure 3 Conceptual framework

### 3.3 Theoretical model

The decision on whether to take up health insurance or not is determined by the extend of perceived deviation between the level of anticipated or expected utility with health insurance and anticipated utility without health insurance. Taking that the expected utility with health insurance is  $EU_1$  and expected utility without health insurance  $EU_2$ , then,  $EU_1 - EU_2$  would be analyzed by the influence of changes in the independent variables in levels of expected utility of the two possibilities. Therefore;  $EU_1 - EU_2$  greater than zero would lead to choice to take up health insurance but  $EU_1 - EU_2$  less than zero would lead to purchase no purchase of health insurance.

Therefore, utility expected by an individual enrolling health insurance ( $EU_{HI}$ ) theoretical model is expressed as follows;

$$EU_{HI} = g(D_{HI}, S_{HI} + \varepsilon)$$

Where  $D_{HI}$  is a function of a vector ( $g$ ) of demographic factors,  $S_{HI}$  is a function of vector ( $g$ ) of the socioeconomic factors and  $\varepsilon$  is for stochastic error term.

### 3.4 Definition and measurement of variables

Variables	Measurement description	Expected sign
<b>Dependent variable</b>		
Health insurance	1 if the individual has health insurance and 0 if they don't.	
<b>Independent variables</b>		
Age	20-30 years = 0 31- 40 years = 1 41- 50 years = 2 Above 50 years = 3	Positive
Gender	1 if male and 0 if female	Negative / Positive
Marital status	Never married /never lived together =0 Married/ living together =1	Positive

	Divorced /separated =2 Widowed =3	
Place of residence	1 if urban and 0 if rural	Positive
Level of education	No education =0 Primary education =1 Secondary education =2 Higher education = 3	Positive
Wealth quintile	Lowest = 1 second lowest =2 middle =3 second highest =4 highest =5	Positive
Household size	1 member = 0 2 members = 1 3 members = 2 4 and above members =3	Positive
Access to mass media	1 if they have Television/ Radio and 0 if they don't	Positive

Since health insurance uptake is a binary variable as from the description above and thus takes values of either 1 or 0.

### 3.5 Empirical Model

The probit model was used since it is assumed that the data follows normal distribution. This assumption is borne of previous studies.

Since the study want to analyze how the demographic and socioeconomic factors (independent variables) influence health insurance uptake/status (dependent variables), we can also assume the relationship is linear, thus;

If independent variables =  $X_{HI}$  and,

Dependent variables =  $Y$  then the structural model would be expressed as;

$$Y^* = X_{HI}\beta + \varepsilon$$

Where  $\beta$  is a vector for parameters to be estimated and  $\varepsilon$  is the error term.

To determine how the independent variables (X) influence an individual uptake of health insurance we take the average characteristics and regress it against the dependent variable (Y).

Since the dependent (latent) variable is either insured (1) or uninsured (0) then the link between the binary variable and latent variable is;

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

Where Y is the probability of having health insurance and K is the threshold/critical point of  $Y^*$  (latent variable) beyond which an individual enrolls for health insurance.

The probit model can thus be;

$$HI = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \varepsilon$$

Where HI- health insurance

$\beta_0$  – coefficient constant

$\beta_1 - \beta_8$  – coefficient to be estimated

$X_1$ - age

$X_2$ - gender

$X_3$ - marital status

$X_4$ - place of residence

$X_5$ - level of education

$X_6$ - household size

$X_7$ - wealth quantile

$X_8$ - access to mass media

$\varepsilon$  – error term.



### **3.6 Data sources**

This study used secondary data collected during the Kenya Household Health Utilization and Expenditure Survey (KHHUES), 2018 by the Kenya National Bureau of Statistics (KNBS).

#### **3.6.1 Study design**

The study used descriptive survey research design since it seeks to explain an already existing relationship of variables under the study.

#### **3.6.2 Population of the study**

The study targeted informally employed people in Narok County. Thus it focused only on adults (above 18 years) who are working in the informal sector within the county. Narok County is geographically located in the southern part of the Rift Valley, Kenya with an area of 17,921 square kilometres. The total population of Narok County as of 2019 was 1,149,379 coming from 241,125 households. It has an employment rate of 52.7%. According to the ministry of health report 2019, Narok County has a health insurance uptake of 9.3%.

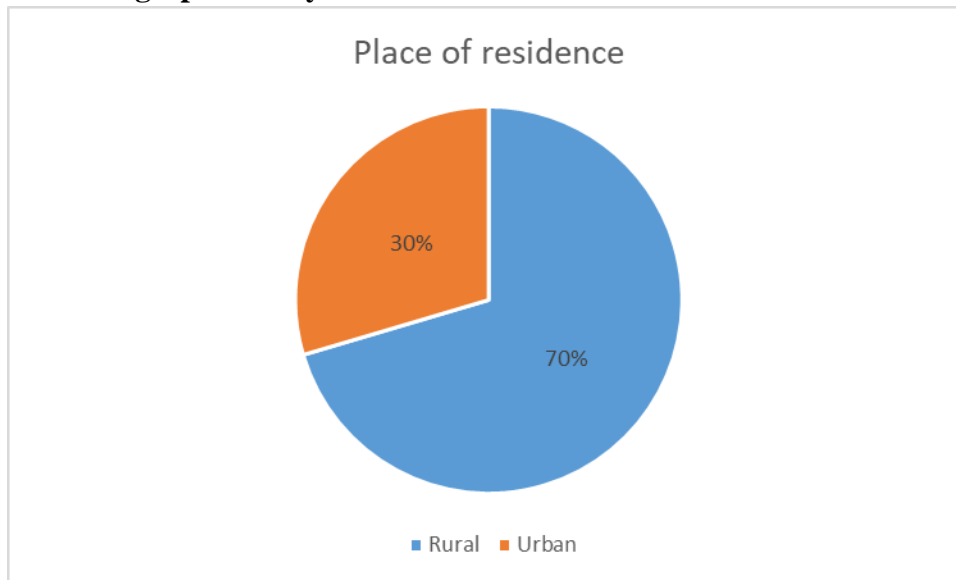
## CHAPTER FOUR

### EMPIRICAL FINDINGS

#### 4.1 Introduction.

This chapter presents the analysis of data, interpretation and discussion of results.

#### 4.2 Demographic analysis



*Figure 4 Place of residence*

Figure four above shows the place of residence of the respondents. 70% of the respondents lived in rural areas while 30% were based in urban areas.

Since there are less urban dwellers than rural dwellers, it is expected that there will be less people with health insurance than those who have it Mulenga et al (2016) as urban population embrace and understand health insurance than the rural folk. Some studies however shows that rural populations prefer health insurance than urban dwellers (Yue and Zou, 2014).

Table 1 Age and Gender of respondents

		Age				Total
		20-30	31-40	41-50	Over 50	
Gender	Male	5.6%	5.6%	2.8%	15.5%	29.6%
	Female	28.2%	19.7%	5.6%	16.9%	70.4%
Total		33.8%	25.4%	8.5%	32.4%	100.0%

Table 1 shows the age and gender of the respondents. 29.6% of the respondents were male and 70.4% were female. The majority of the respondents (33.8%) were between the age of 20 and 30 years. 25.4% were between 31 to 40 years, 8.5% of the respondents were between 41 and 50 years and 32.4% were above 50 years old.

Some studies have shown that age has negative association with health insurance uptake (Dror *et al*, 2016), so it's expected that the elderly population wouldn't embrace health insurance uptake. Since in our sample there is a majority of younger population the uptake should be higher in that group.

This however is not supported by (Githinji, 2017) who concluded that there is a positive correlation between health insurance uptake and age.

Since majority of the respondents were female in gender, the study should demonstrate the gender biases and inequality that is reflected in access to health insurance. In Central Harlem, New York, women are more likely to take up health insurance than men (Cheryl, 2000).

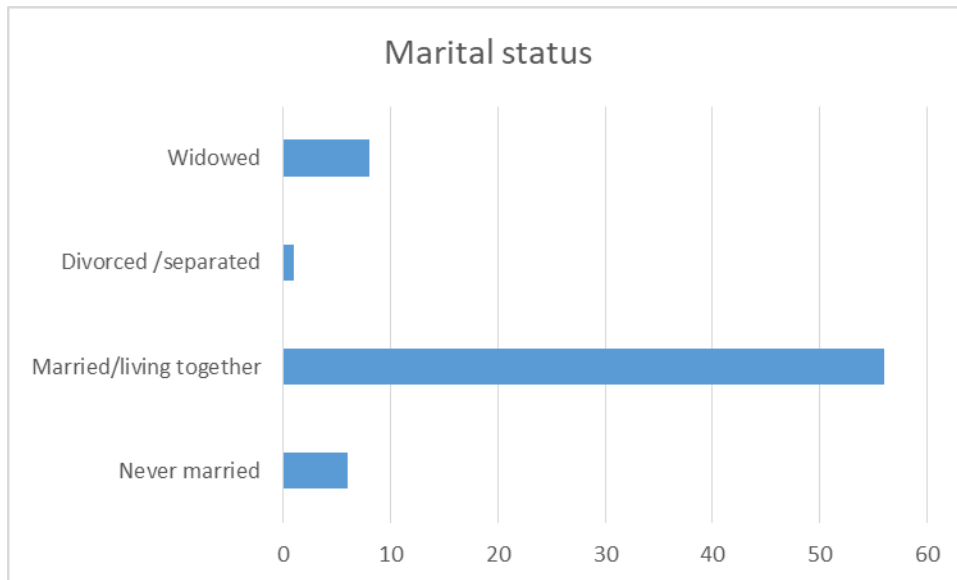


Figure 5 Marital status of respondents

Figure five shows the marital status of the respondents. Majority of the respondents were married/ living together. 1.4% were divorced/ separated, 11.3% of those who responded were widowed and 8.5% were never married.

According to Duku (2018), married people are more likely to get health insurance. This is because of access to more resources as well as increased in risk. In South Africa, Roger (2012) found that marriage increases chances of ownership of health insurance. This is also supported by the pooling of resources by married couples thus availability of more resources to purchase health insurance.

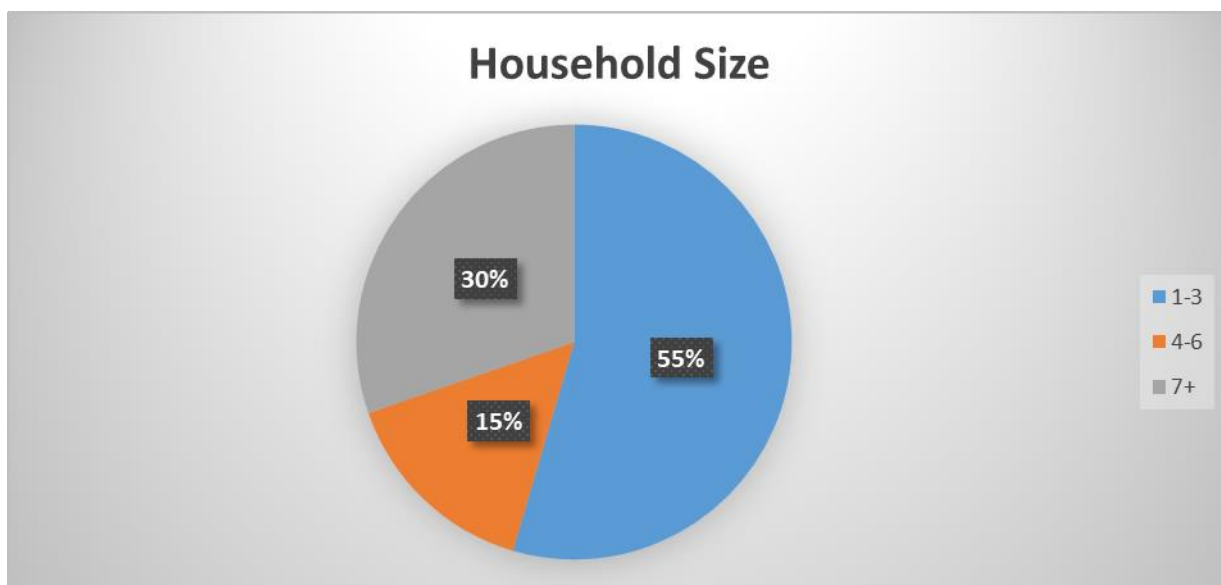
### 4.3 Socio-economic factors

Table 2 Education and wealth quintile of respondents

		Wealth Quintiles					Total
		Lowest	Second	Middle	Fourth	Highest	
Highest level of education reached	Primary	12.7%	5.6%	5.6%	4.2%	7.0%	35.2%
	Secondary	4.2%	4.2%	5.6%	2.8%	9.9%	26.8%
	College (middle level)				2.8%	4.2%	7.0%
	University				1.4%	1.4%	2.8%
	Never went to School	14.1%	7.0%	1.4%	4.2%	1.4%	28.2%
Total		31.0%	16.9%	12.7%	15.5%	23.9%	100.0%

Table 2 shows the education level and wealth quintile of the respondents. Majority of the respondents (35.2%) had primary education as their highest level of education. 28.2% stated that they never went to school. 26.8% had secondary education, 7% went to college and only 2.8% had university education. 31% of the respondents were in the lowest wealth quintile 16.9% were in the second lowest, 12.7% were in the middle wealth quintile, 15.5% were in the fourth and 23.9% were in the highest wealth quintile.

As the level of education increases, the more the likelihood of having a private health insurance coverage increases Kiplagat et al (2013) thus the level of education is positively associated with health insurance uptake (Kimani et al, 2014). These findings are also consistent with the results of studies done by Dickson (2016) and Mulenga et al (2016)



*Figure 6 Household size*

Figure six presents the household size of the respondents. Majority of the respondents 55% were in a household size of 1-3 members, 15% had a household of 4 to 6 members and 30% had a household of 7 and more members.

Smaller household size with relatively high income are more likely to take health insurance (Fang et al, 2012). This however disadvantages families with larger household sizes with less income (Doyle & Panda, 2011).

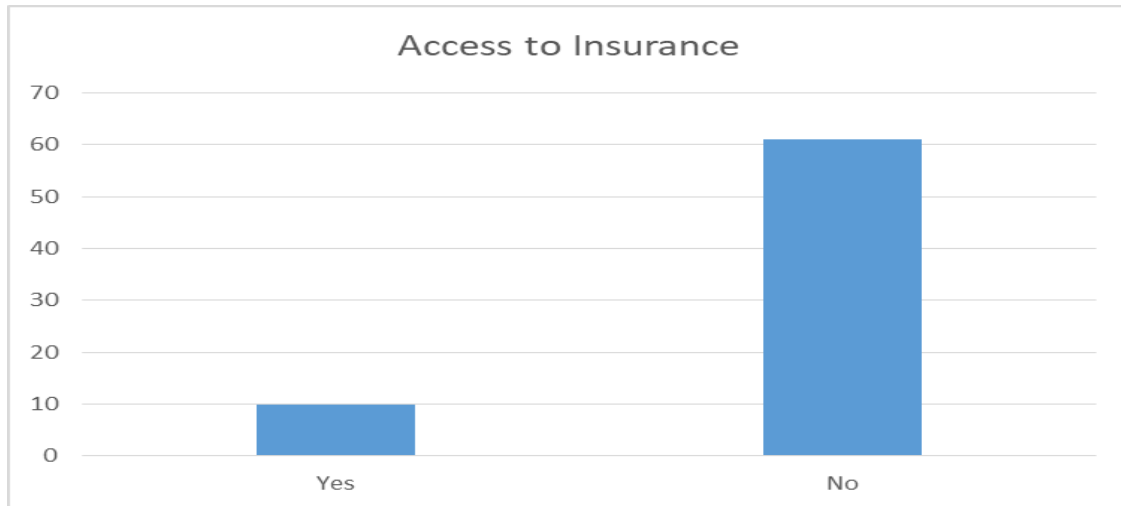


Figure 7 Access to insurance

Figure seven shows that only 14.1% of the respondents had access to medical insurance. 85.9% did not have medical insurance.

#### 4.4 Correlation analysis

Table 3 Correlation analysis

	Insurance	Residence	Gender	Marital Status	Education	Wealth	Age
Insurance	1.0000						
Residence	0.0925	1.0000					
Gender	-0.0037	0.2171	1.0000				
Marital Status	-0.0307	-0.2237	0.2237	1.0000			
Education	0.1331	-0.2588	-0.0019	0.2970	1.0000		
Wealth	0.2447	0.6885	0.2294	-0.2004	-0.2295	1.0000	
Age	0.0666	-0.2785	-0.2893	0.3678	0.2941	-0.2899	1.0000

The table 3 shows the correlation between the dependent variable (insurance) and independent variable. From table 3 above all the independent variables had insignificant correlation with the

dependent variable except for the Wealth quintile. Wealth quintile had a correlation of 0.2447 with access to insurance. Only education and wealth quintile has a correlation that is greater than 0.1. From the results, we can deduce that residence, gender, marital status and age do not have any significant correlation.

These results are not consistent with (Ndung'u, 2015), who concluded that demographic factors such as age, gender, marital status, household size and number of children influence uptake of NHIF in Ithanga division, Muranga County.

#### 4.5 Probit Estimation results

*Table 4 Results of probit regression*

Insurance	Coefficient	Standard error	z	P>(z)	95% confidence interval	
Household size	0.1697681	0.4167747	0.41	0.684	-0.6470952	0.9866314
Residence	0.9863134	0.9704852	1.02	0.309	-0.9158025	2.888429
Gender	-0.3422742	0.8349225	-0.41	0.682	-1.978692	1.294144
Marital status	0.09810866	0.3689027	0.27	0.790	-0.6249274	0.8211446
Education	0.1877164	0.135896	1.39	0.163	-0.0760743	0.4515072
Wealth	0.4253227	0.2540505	1.67	0.094	-0.0726071	0.9232525
Age	-0.24700449	0.2951585	-0.84	0.403	-0.8255049	0.9723195

Table 4 above shows a probit regression with access to insurance as the response variable. The response variable was coded as 0 for no access to insurance and 1 for access to insurance. The regression converged at a log likelihood of -12.554. The model had a chi-square value of 11.45 with a p-value of 0.1203. The p-value associated with the model is greater than 0.05 which is the level of significance. This means that the model with the full set of predictors is not significant. None of the independent coefficients had a p-value less than 0.05 therefore indicating that none of the predictors of access to insurance in the full model were significant. However removing the variables that had large p-values improved the model

The correlation matrix reveals a correlation between wealth quintile and health insurance uptake, and it's further demonstrated in the probit regression that there is a positive the two variables. This therefore infers that the main hindrance to enrolment to insurance among the poor and low income individuals and households are money related constraints.

(Makokha et al, 2007) demonstrated that demand for private health insurance increases with increase in one's level wealth or income. This is consistent with the findings of this study that wealth has a significant association with health insurance uptake since it's also closely associated with income level.



## CHAPTER FIVE

### CONCLUSION

#### **5.1 Introduction**

This section covers the summarized results of the key findings and policy implications.

#### **5.2 Summary of key findings**

In chapter one, I set out to investigate the determinants of health insurance uptake among the informally employed in Narok County. From the literature in the previous chapter I came up with a conceptual framework comprising of both the demographic and socioeconomic factors. The cross sectional data collected during the Kenya Household Health Utilization and Expenditure Survey (KHHUES), 2018 by the Kenya National Bureau of Statistics (KNBS) was used. Based on previous studies the probit model was used since the data was assumed to follow normal distribution.

The probit estimate shows that of the factors under study only wealth quintile has a significant impact on health insurance uptake. The research inferred that income/wealth quintile is the only significant factor that determines health insurance uptake in Narok County. The more the income or the higher the wealth quintile the more likely they are to take up health insurance. This can be attributed to increase in disposable income.

The largest percentage of the respondents (31%) occupied the lowest wealth quintile. This can therefore explain the low uptake of health insurance (14.1%) among the respondents. The limitation comes in from the inability to pay for the insurance. This put the individuals and the households at the risk of experiencing catastrophic healthcare cost when illness or accidents strikes

#### **5.3 Policy implications**

Since there is generally a very low uptake of health insurance in the informal sector, there is need to ensure that all the members of this sector have health coverage. The single most important consideration to determine the coverage is to ensure even the members of the informal sector within the lowest quantile have health insurance. It's important to ensure that the health insurance premiums are further graduated to bring on board all the members of the population irrespective of their income/wealth quintile.

The government can also consider paying health insurance premiums for the people on the lower wealth quintiles who cannot afford health insurance premiums. This would eliminate or reduce the current gaps that are there due to wealth disparity.

The government can also work on improving the household income or wealth index among the informally employed people. This would enable them have enough disposable income to be able to pay for their health insurance. This would be the most plausible way since it's demonstrable that households with higher income or with higher wealth index can be able to maintain better hygiene, eat healthier and live in safer environments which contribute to the general wellbeing and health of individuals and families

#### **5.4 Areas for further research**

This research covered demographic and socioeconomic determinants of health insurance uptake in one county. There is need to extend this to other counties since each county has its unique features, especially there is need to focus more on studies to be done in counties with more rural population.

Future studies should also focus on how to close disparities on access to health insurance and especially between those in the highest wealth quintile and those in lowest wealth quintile. There is need more to find whether tax based health insurance or individual contribution based health insurance is good for low and medium countries like Kenya with huge disparities in wealth.

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