



## Drivers of Health Insurance Coverage in Low Income Settlements: A Case of Kibera Informal Settlement, Nairobi County, Kenya

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### Abstract

Insurance is critical for any country's economic growth and development to be sustainable. In rural areas of Kenya, among the illiterate, unemployed, poor, and vulnerable in society, health insurance adoption is extremely low. This paper focuses on determining the drivers for health insurance uptake among low-income populations in Kibera, Nairobi County. Semi structured questionnaires were administered to households located in Kibera informal settlements to collect data. The Yamane (1967) formula was used to select the sample size. Simple random sampling was adopted in selecting 399 respondents. Both descriptive and inferential analysis were conducted. The binary probit regression model was employed. 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 pre-existing illness were used as the independent variables. Findings revealed that only 27.6 percent of the respondents had health insurance coverage. The findings further 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 highlighted

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 to drive insurance uptake. In addition, national and county governments need to develop programmes and policies that could empower households in the informal settlements. Further, it is necessary for the government to subsidise the cost of acquiring public health insurance covers since this would encourage uptake among low-income families. The ministry of health should also work in conjunction with various religious denominations to campaign for uptake of health insurance among the poor.

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**Keywords:** Health insurance, Low-income populations, Kibera, Informal settlements, Kenya

### **Introduction**

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 that they require from hospitals without financial impoverishment or any risk. 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 (Gitau, 2016).

Globally, on average, 150 million people 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). 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. Lack of policy uptake in Africa is due to poor income and domination of non-life insurance products across different firms. In Kenya, health insurance adoption is very low within the rural areas, among the illiterate, individuals in the informal sectors, and 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 have NHIF and other private insurances (KDHS, 2022). According to Jattani and Ochieng (2021), about 20-30% of Kenyans are in a health insurance scheme while the rest of the population rely fully on out-of-pocket payments due to the COVID-19 pandemic. 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 requirements from their employers.

The healthcare services model developed by Andersen aimed at explaining determinants of effective use of health services at a given time or all the time (Andersen, 1968). There are various usages of health services demonstrated by the model such as inpatient care services, outpatient care services, and dental care services, among others. The model explains that most of the time, these healthcare services are determined by several 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 centres. Enabling factors outline the family support that one has 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 utilisation. Even though the need for better health services has left many families poor due to high cost of treatment, it has continued to remain a critical factor in determining health utilisation (Andersen, 1995). Medical accessibility can thus be viewed from the perspective of enabling resources and encouraging people to seek 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 to medical care.

Empirical literature has been conducted globally and several factors have been associated with uptake of health insurance. In Pakistan, Jahangeer and Huq (2015) revealed that households headed by a male, with children and elderly dependants, expressed a tendency to register with health insurance companies. In Cambodia, size of household, level of education, and the number of dependants 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 schemes.

In Gabon, Yaya (2020) revealed that the age of an individual was a vital factor of enrolment in health insurance schemes. In another study in Nepal, Ghimire, Sapkota and Poudyal (2019) revealed that age, family size, and number of dependants in a household significantly affects the family's decision to apply for insurance services. According to Dayour, Adongo and Kimbu (2020), lack of awareness as well as inadequate social infrastructure, poorly established administrative policies, and high cost of insurance serve as deterrents to insurance uptake in Ghana.

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, inadequate 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) asserted 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 of resources have contributed to the low uptake of insurance cover in the country. Masengeli, Mwaura-Tenambergen, Mutai, and Simiyu (2017) in their research study reported that age, gender, and marital status all significantly influence insurance purchase decisions. However, Nyorera and Okibo (2015) reported that 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.

The World Health Organization (2016) reported 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. Furthermore, the available data show 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, overreliance on OOP to finance healthcare 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 the available knowledge by examining determinants of health insurance subscription within low-income populations in Kenya.

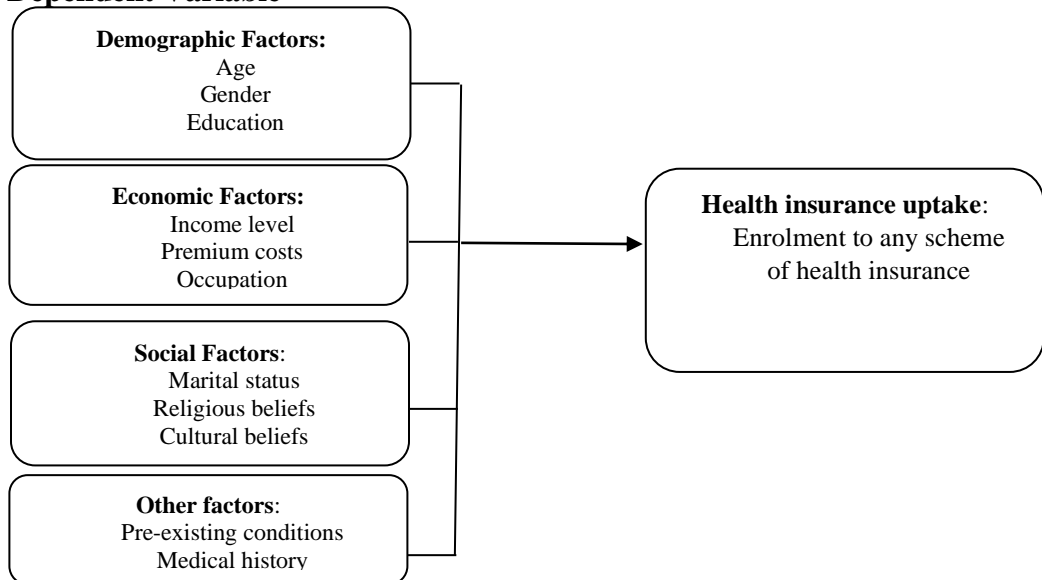
Other scholars have sought after factors determining health insurance uptake in Kenyan households. Maina, Kithuka, and Tororei (2016) focused on maternal insurance uptake and found out that marital status and benefits of the policy influenced insurance uptake while income and household size did not influence uptake of insurance. In addition, Ndungu (2015) examined drivers of national health insurance uptake and revealed that demographic factors, academic position, socio-economic influences, and information accessibility

significantly influenced 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. Furthermore, Mohamed (2019) analysed the uptake of NHIF and found out that financial capability, awareness level, gender, and education level determined the uptake. In addition, 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 the need to expand the available empirical evidence. The purpose of this study therefore is to examine the factors determining health insurance uptake among low-income populations in Kibera, Nairobi County. The conceptual framework (Figure 1) presents the conceptualization of the drivers of health insurance coverage among low-income populations in Kibera informal settlements, Nairobi County.

### Independent Variables

### Dependent Variable



**Figure 1.** Conceptual Framework

## Methods

The study adopted descriptive-exploratory research design. The target population involved the residents/dwellers within Kibera Informal Settlement Scheme in Kibra 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 residents of the study area formed the unit of observation and were the representative of the study scope. This is because the residents dwelling within the informal settlement scheme were considered in the study.

This study adopted a simple random sampling technique since it promotes equal likelihood of representation from the population. The Yamane (1967) formula below was adopted in determining the sample size where;  $n$  = Size of the sample,  $N$  = population and  $e$  = 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 selected.

For data collection, questionnaires were developed per the study's objectives. They were administered with the support of the trained research assistant. The data was collected within a period of one month (January, 2021). The pilot study was conducted to determine the validity and reliability for the study instruments (Shajahan, 2009). It involved 10% ( $n=39$ ) of the sample respondents. These responses were excluded from the final analysis and involved residents of the Mathare informal settlement, which has similar characteristics to the main study area. Validity was ascertained via a non-statistical approach where the tool was presented to the experts in the field of healthcare financing, whereas reliability was tested via test-retest method. It measured the accurateness of the information in the research instrument in measuring its intended purpose.

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

The research used a probit regression model to ascertain the primary drivers of health insurance ownership in Kenya. The dependent variable was

quantified using a binary option to indicate whether the participant had health insurance cover or not.

$$Y = X_i\beta + \varepsilon \dots \dots \dots (3)$$

- Where Y - the dependent variable (health insurance coverage)
- X<sub>i</sub> - explanatory variables
- β - parameters to be estimated
- ε - error term

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

$$UHI = f(DF, EF, SCF, OF) \dots \dots \dots (4)$$

Where UHI = uptake of health insurance; DF= demographic factors (age, household size, marital status, gender, education level); EF= economic factors (employment status, level of income); SF= social-cultural factors (religion, cultural beliefs), and OF = other factors (frequency of accessing healthcare facilities, awareness of insurance information, pre-existing conditions, premium costs). The specified model is as follows.

$$UHI = \beta_0 + \beta_1AG + \beta_2GN + \beta_3MS + \beta_4HS + \beta_5ED + \beta_6ES + \beta_7LI + \beta_8RB + \beta_9CB + \beta_{10}CP + \beta_{11}AW + \beta_{12}FQ + \beta_{13}PEC + \mu \dots \dots \dots (5)$$

Where, UHI<sub>t</sub> is the rate at which the low-income population consumes health insurance.

β<sub>0</sub> represents the model constant; AG represents the age; GN represents the gender; MS represents the marital status; HS represents the household size; ED represents the education level; ES represents the employment status; LI represents the level of income; RB represents the religious beliefs; CB represents the cultural beliefs; CP represents the costs of premiums; AW represents the awareness level/access to insurance information; FQ represents the frequency of accessing healthcare services; PEC represents the Pre-existing conditions; and μ represents the stochastic error term.

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



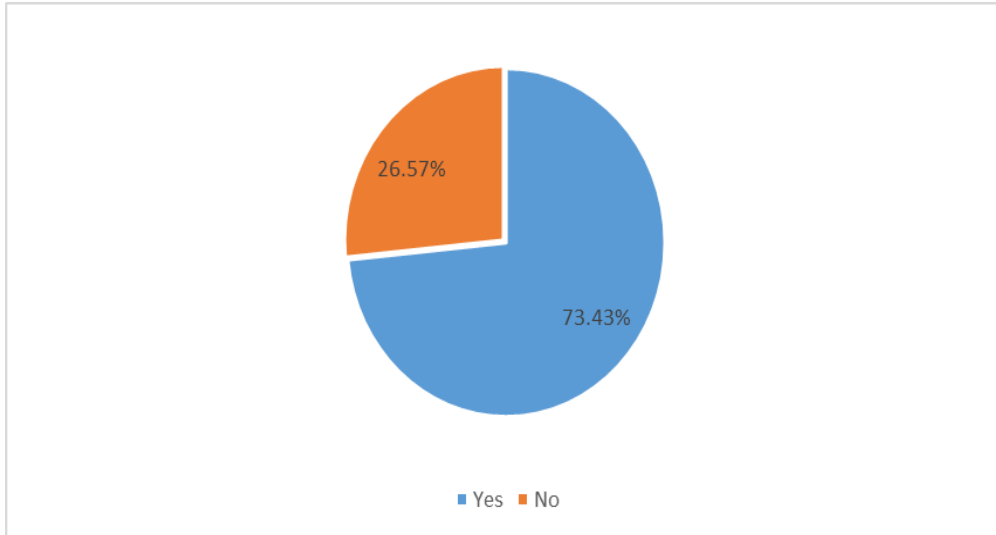
**Table 1.** Measurement of Variables

Variable	Variable Definition	Measurement
<b>Dependent Variable</b>		
Health insurance uptake	Uptake of health insurance	Yes – 1; No – 0
<b>Independent Variables</b>		
<b>Demographic Variables</b>		
Age	Age of the participant at the time of the survey	Years
Gender	Gender of the participant	Male = 0; Female = 1
Marital status	Current marital status of the participant	Single = 0; Married = 1; Widowed = 2; Divorced = 3
Household size	Number of people in a household	Number
Education level	Number of years spent in school	Years
<b>Economic Variables</b>		
Employment status	Employment status at the time of survey	Unemployed = 0; Formal employment = 1; Informal; employment = 2
Level of income	Average monthly income	Number
<b>Social- cultural Variables</b>		
Religion	Participant’s religious affiliation	No religion =0; Catholic =1; Protestant=2; Muslim=3; Others=4
Cultural beliefs	Participants’ beliefs that may hinder insurance uptake	None = 0; Traditional = 1; Modern = 2
<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
Awareness (Access to insurance information)	Whether the participant is aware of health insurance	Yes = 1; No = 0
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
Cost of premium	How much the participant needs to spend on an insurance premium in a month	Value in cash (kshs)

## Results and Discussion

The study explored awareness levels on health insurance by low-income populations in Kibera, Nairobi County. The extent to which health insurance awareness exists in Kibera is depicted in Figure 2. It was discovered that approximately 73% of respondents were aware of a particular type of health insurance, while only 27% were unaware.





**Figure 2.** Health Insurance Awareness Levels

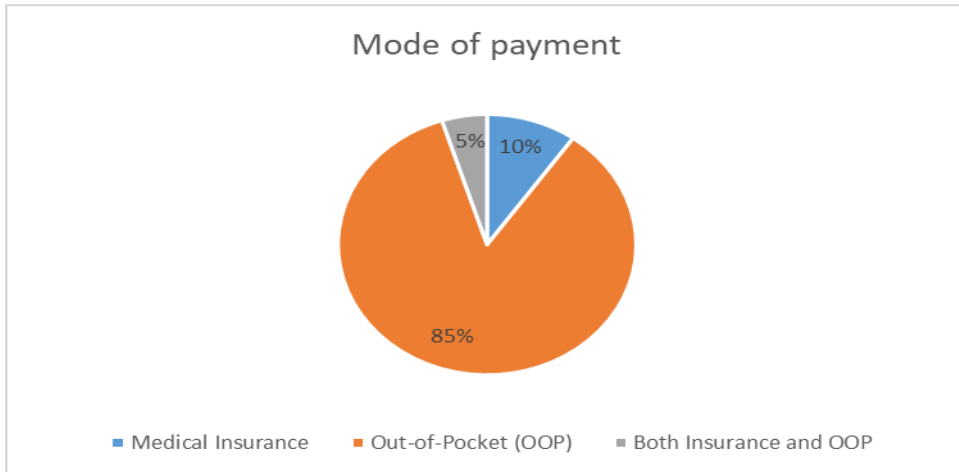
The study sought to profile health insurance schemes in Kibera slums. Table 2 presents the results.

**Table 2.** Health Insurance Uptake among low-income populations in Kibera, Nairobi

Health Insurance Type Owned	Frequency	Percentage
No	289	72.43
Private	1	0.25
Public	100	25.06
Community	2	0.50
Private and Public	7	1.76
Total	399	100.00

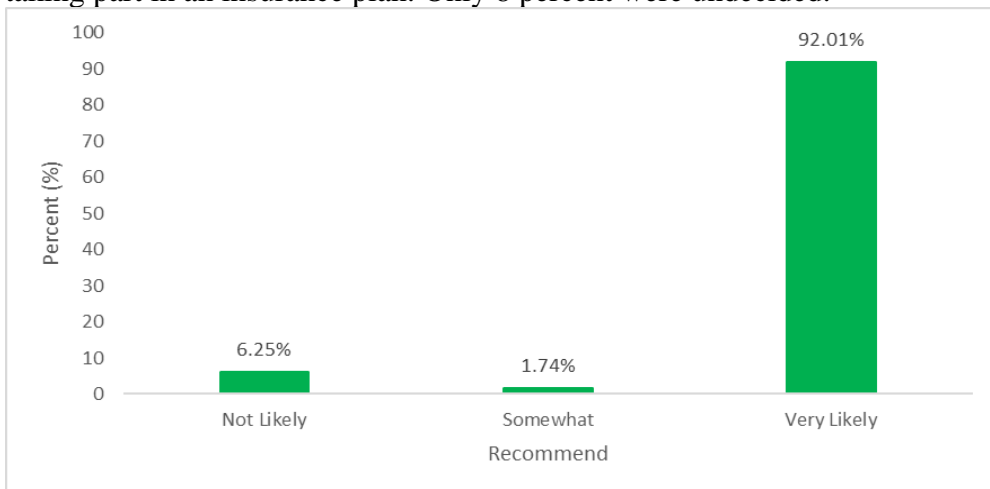
The results showed that only 110 respondents (27.6 percent) subscribed to health insurance, while the majority, 289 (72.4 percent) did not own any form of health insurance. However, 25.1 percent subscribed to the National Hospital Insurance Fund, while 1.75 percent had both private and public health insurance covers. Private and community health insurance plans had the least coverage at 1 percent and 2 percent, respectively. According to KNBS (2013), most households pay for healthcare out of pocket (OOP), and the rest pay through NHIF and private insurers. From the literature, about 20-30% of Kenyans have access to health insurance coverage (Zollmann & Ravishankar, 2016; Jattani & Ochieng, 2021).

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 3 shows that 85 percent of respondents paid for medical services out of their pockets, while those who paid via medical insurance were 9.79 percent.



**Figure 3.** Mode of Payment for Healthcare Services

The respondents were asked if they intended to enrol in any health insurance plans. Figure 4 shows that approximately 92 percent were open to taking part in an insurance plan. Only 8 percent were undecided.



**Figure 4.** Willingness to Enrol in any Health Insurance Scheme

The main goal of the study was to establish the determinants of health insurance coverage 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 3. The study found an overall p-value of 0.0001, which was less than 0.05, with the log likelihood ratio of -83.486084. This implies that the factors considered fitted the model well and thus, variables used in the model were collectively significant in health insurance uptake. 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 visits, cost of premium, and pre-existing illnesses were not elevated drivers of health insurance uptake.

Furthermore, only age, gender, religion, frequency of hospital visit, cost of premium, and pre-existing illnesses were found to negatively impact health insurance uptake within Nairobi’s poor households. The latter however had a non-significant effect on health insurance uptake. Table 3 shows detailed marginal effects of the Probit model of the various factors.

**Table 3.** 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
Health Insurance Uptake	Marginal Effects	Std. Err	t	p>t	95% Conf. Interval	
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

This study presents discussions on two parts: significant factors and non-significant determinants. Apart from the religion variable, two other significant factors (occupation and natural logarithm of income) had a positive effect. The other factors were, however, 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’s 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

have more health needs and thus, treat the health insurance ownership in higher regard. Nonetheless, this coefficient was small. These findings were confirmed by 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 also established that gender of the respondents 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 health insurance compared to their female counterparts. These findings were supported by the results of Saiti, Yitambe and Korir (2020), who investigated health insurance uptake among Kenyan elderly. The study further revealed that gender had an insignificant effect on health insurance demand.

In addition, 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, 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 present 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 a 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 increases, the risk of sickness increases as well. Therefore, the family tends to obtain health coverage to cushion them from high out of pocket expenditures. These findings were supported by the findings of Dror et al. (2016), who investigated uptake factors in community-based health insurance schemes. Their findings showed that household size significantly impact participation in insurance purchasing.

Considering the levels of education, the study revealed a non-significant effect of school attainment on health insurance ownership ( $\beta=0.0166$ ,  $t=1.23$ ,  $p>0.05$ ). The study further showed that health insurance uptake increases insignificantly by 1.66 percent with every educational year attended among low-income populations in Kibera, Nairobi County, holding other factors constant. This implies that clients who are on a higher education level have the ability to comprehend the impact of owning health insurance.

However, the impact in this 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. The results showed that higher education levels translated into increased intention to purchase health insurance.

From the results of the present study, 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 secures 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. These findings are supported by 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 present study revealed a significant effect of income on health insurance ownership ( $\beta=0.2201$ ,  $t=4.36$ ,  $p<0.05$ ). The study showed that the likelihood of health insurance uptake increases significantly by 22.01 percent along with the income level, among low-income populations in Kibera, Nairobi County, holding other factors constant. The extra income earned is used to purchase or access health insurance. These findings corroborate the results obtained by Dror et al. (2016), who reported that income level influenced the uptake levels. Similarly, Kituku and Amata (2016) conducted a study on factors driving uptake of NHIF among informal sector workers in Murang'a. It was revealed that the main determinants of insurance uptake include the level of income.

Religion was also a strong determinant of uptake of health insurance ( $\beta=-0.6548$ ,  $t=-3.08$ ,  $p<0.05$ ) in the present study. 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, 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 present study established that hospital visits had a non-significant effect on health insurance ownership ( $\beta=-0.0062$ ,  $t=-0.33$ ,  $p>0.05$ ). The study showed that as an individual increases their hospital visits, 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.

Furthermore, this 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 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 may discourage potential users since most of the users prioritise basic needs due to their meagre income. Since health insurance alone cannot cater for healthcare services, the amount meant for co-payment may lead to abandonment of the insurance subscription. This finding mirrored the results obtained by Kituku and Amata (2016), who examined factors driving uptake of NHIF in Murang'a's informal sector, which associated inflated cost of insurance with lack of interest in purchasing insurance by the workers.

The present study also found that pre-existing illness or health condition was associated with an insignificant effect on health insurance ownership ( $\beta = 0.1102$ ,  $t = 0.95$ ,  $p > 0.05$ ). 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. However, the effect was not statistically significant. This implies that compared to those who do not have a pre-existing illness, individuals with a pre-existing illness or health condition would tend to cushion themselves from too much expenditures associated with seeking healthcare services by obtaining a 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.

## **Conclusion**

With more than 56% of Kenyans living below the poverty level, the uptake of health insurance has become a luxury to many, and the low uptake of insurance has resulted in limited access to healthcare. Thus, it is important to understand drivers of insurance uptake, especially among low-income populations. Following the findings, this study concludes that 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. Furthermore, it was ascertained that religion and cultural values played a key role in forming subscriber's perception of insurance. Hence, health insurance uptake was significantly determined by these two factors. Occupation and income were also influential factors since the high cost of insurance was a deterrent for low-income citizens.

### **Policy Implications**

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 variable impacting insurance uptake, especially in Kenya where the people in informal settlements live on less than \$1 a day. Financial constraints affect 43% of the world's population, making insurance virtually unaffordable. To counter this, the study suggests the following: first, the ministry of health and other relevant stakeholders need to improve population awareness and understanding of the various health insurance options available and improve flexibility of the products in order to drive insurance uptake, since the findings revealed that the uptake levels were very low among the low-income population. Second, national and county governments need to develop programmes and policies that could empower households in the informal settlements since it was established that occupation had a 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 utilisation compared to the unemployed population. Third, there is a necessity of the government to subsidise 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 increase in health insurance uptake among low-income populations. Lastly, there is the 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 revealed that respondents who were associated with religious inclinations had significantly lower likelihood to purchase insurance products.

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