

**DETERMINANTS OF OWNERSHIP OF HEALTH INSURANCE AMONG
EMPLOYEES WORKING IN THE INFORMAL AND FORMAL SECTORS IN KENYA
CASE STUDY RIFT VALLEY PROVINCES**

A research project submitted to University of Nairobi Institute of Tropical & Infectious Diseases (UNITID) In partial fulfillment of the requirements for the award of Master of Science in Medical Statistics (MSc. Medstat)

DECLARATION

I declare that this research proposal is my original work and has not been submitted by any other party for the award of Degree in any other university.

Name: ELVIS KIRUI SIGN..... DATE.....

Registration:W62/60084/2012

SUPERVISOR

This research proposal has been submitted with my approval as the university supervisor.

ANN WANG'OMBE. Signed..... Date.....

Senior lecture University of Nairobi

School of Mathematics

DEDICATION

This research projects lovingly dedicated to my parents, brothers and sisters who have been my constant source of inspiration.

ACKNOWLEDGEMENT

I wish to acknowledge my Almighty God for his shielding during the whole period of study. My research supervisor for her assistance while I was working on this research, my unquantifiable gratitude to my parents and for being free handed to provide financial, mentorship, moral and spiritual support. Their sacrifice and devotion towards paying my fees cannot be reimbursed by anyone except God.

I also acknowledge all my family members and relatives for their different kind of support they offer me to make sure I complete my course successfully.

ABSTRACT

The research study sought to establish the determinants of ownership of health insurance among people working in the informal and formal sectors in Kenya. It was guided by such specific objectives as; to determine the factors that influence employees to own or reject an insurance; to evaluate socio-economic factors influencing choice of health insurance by employees in Kenya; to determine the role of information on the choice factors of health insurance and finally to determine how location factor influences the choice of health insurance in Kenya. The study focus on the variables that would determine the ownership of health insurance by employees in the formal and the informal sectors. It will also outline some of the theories that have been laid down with regard to the health insurance policies formulation and implementation. Findings revealed significant relationship between the sector of employment and gender of the respondents $\chi^2 (1) = 11.348, p < 0.05$, religion ($\chi^2 (3) = 3.854, p > 0.05$), education status ($\chi^2 (1) = 125.498, p < 0.05$), marital status ($\chi^2 (3) = 30.222, p < 0.05$) and health status ($\chi^2 (4) = 13.975, p < 0.05$). It was also established that there was no significant relationship between the sector one was employed in and the status of insurance coverage for such an individual at $\chi^2 (1) = 2.818, p > 0.05$ with the odds of one being employed in the formal sector and having an insurance cover to that of one having a cover but working in the informal sector was not significant (OR= 2.641 (0.813 – 8.577), $p = 0.106$). Health insurance uptake considering the sector of the economy in this region is largely dependent, and significantly so, on highest level of education and total annual expenditure in that there is likely to be an increase in health insurance uptake among households headed by males who have attained higher levels of education and also have higher disposable income. Policy makers to come up with measures that cap unfavorable rates especially in the informal sector of the economy that has derailed up take of health insurance due to stringent rules and policies in the industry that scare away potential customers from this sector.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLE	viii
LIST OF FIGURE	ix
ACRONYMS.....	x
DEFINITION OF KEY TERMS	xi

CHAPTER ONE

1.0 INTRODUCTION	1
1.1 Background.....	1
1.2 Statement of the Problem.....	2
1.3 Purpose of the Study	3
1.3.1 General objectives.....	3
1.3.2 Specific Objectives	3
1.4 Research Questions.....	3
1.5 Significance of the Study	4

CHAPTER TWO

2.0 LITERATURE REVIEW.	5
2.1 Introduction.....	5
2.2 Theoretical Review	5
2.2.1 The theory of demand for health insurance	5
2.2.2 Nyman’s theory of health insurance	7
2.3 Empirical Review	9
2.4 Conceptual Frameworks	12
2.5 Summary of variables.	14

2.6 Research gap	16
------------------------	----

CHAPTER THREE

3.1 Research Methodology	18
3.2 Introduction.....	18
3.3 Research Design.	18
3.4 Structured of data.....	18
3.6 Population of Study	23
3.7 Sample Population	23
3.8Data Collection	24

CHAPTER FOUR

4.1.0Introduction.....	25
4.2.1 Socio economic profile and insurance choice of the household heads.....	25
4.2.2 Employment Status of the household heads	29
4.2.3 Health Status of the household members.....	30
4.2.4 Health Insurance Coverage.....	31

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS.....	37
5.2.0 Summary.....	37
5.2.1 Socio economic profile Households and household heads.....	37
5.2.2 Employment Status of the household heads	38
5.2.3 Health Status of the household members.....	38
5.2.4 Health Insurance Coverage.....	38
5.3.0 Conclusion	39
5.4.0 Recommendations.....	40
REFERENCES	41

LIST OF TABLE

Table 4.0 Socio economic determinants and insurance type for the households	28
Table 4.1 Distribution of household heads by Employment Activity	29
Table 4.2 Distribution by health status of the household heads	30
Table 4.3 Chronic illness conditions among household Heads	30
Table 4.4 Insurance type and household coverage	31
Table 4.5 Custodian of the cover (who pays for the cover).....	32
Table 4.6 Socio economic characteristics and Employment Sector	34
Table 4.7 Socio economic determinants of insurance coverage.....	35
Table 4.8 Socio economic determinants of insurance coverage by the employment sector.....	36

LIST OF FIGURE

Figure 4.1 Distributions of Household Heads by Gender.....	26
Figure 4.2 Distributions of Households by Religion	26
Figure 4.3 Distribution of households by Highest Level of education of the household head.....	27
Figure 4.4 Distribution of household heads by marital status	28
Figure 4.5 Health Insurance Coverage Statuses	31

ACRONYMS

HMO-	Health management organization
HSF-	Health system financing
KES-	Kenya shillings
NHIF-	National hospital insurance fund
SPSS-	Statistical package for social sciences
WHO-	World health organization

DEFINITION OF KEY TERMS

Health insurance - a type of insurance that pays for medical and surgical expenses that are incurred by an insured patient

Public health - The science and art of promoting health, preventing disease and prolonging life through the organized effects of society

Theory - A set of interrelated propositions or arguments that help to clarify complicated problems or help to understand complex reality more easily.

Formal sector - an employment sector encompassing all jobs with normal hours and regular wages and also recognized as income sources where taxes must be paid.

Informal sector- an employment sector with all jobs not recognized as normal income sources and on which taxes are not paid.

CHAPTER ONE

1.0 INTRODUCTION

This chapter introduces the background of the study, problem statement that the research proposes, the objectives that the research sought to find solutions to, the questions that the research sought to answer, the scope of the research, assumptions, study limitations and the study significance.

1.1 Background

Health insurance registers all eligible members from both the formal and informal sector. For those in the formal sector, it is compulsory to be a member. For those in the informal sector and retirees, membership is open and voluntary. To register with insurance as a member, one has to fill in the Members Form. To register as an employer or organized group, fill in the Employers Form. Upon admission to a hospital facility, health insurance member is accorded services and the hospital makes a claim to the Fund for reimbursement

An in-patient cover for the contributor, declared spouse and children provides comprehensive medical cover in majority of over 400 accredited Government facilities, Mission health providers and some private health providers across the country. It also provides in-patient services in private and high cost hospitals on a co-payment basis, comprehensive maternity and CS (Caesarian) package in government hospitals, majority of mission and some private hospitals , Dialysis at Kenyatta National Hospital & Moi Teaching & Referral Hospital at a rebate, Family planning – Vasectomy and Tubal Ligation.

Most of this coverage's does not exclude any disease .The Fund strives to accredit as many hospitals as possible so as to ensure all members access benefits whenever they are across the country. Most of these insurers have an objective accreditation criteria and guidelines that aim to encourage hospitals towards quality improvement. Accredited organizations are those recognized by the Fund and allowed to offer services to insurance company members and claim reimbursements thereof.

Accreditation of a health provider takes into account the services, personnel, infrastructure and equipment's among other issues that the institutions have. The level of rebate therefore corresponds to the grade after scoring the various aspects.

The Fund, further contracts the health facilities to ensure they provide services comprehensively. This means that members walk in and walk out of the facilities fully treated at the cost of respective health insurer without making additional payments.

1.2 Statement of the Problem

Health insurance is an institutional and financial mechanism which is seen as one option of obtaining additional resources for the financing of health care without deterring the poor and the vulnerable group from seeking care when they need it. It has the potential of generating substantial funds for equitable health care. Government's funds so saved could then be diverted to the development and expansion of primary health care services and other infrastructure. It is a way of improving quality and access to health care as well as managing resources more efficiently.

Health insurance helps households and private individuals to set aside financial resources to meet costs of medical care in event of illness. It is based on the principle of pooling funds and entrusting management of such funds to a third party (government, employer or insurance company or a provider) that pays for healthcare costs of members who contribute to the pool. Lack of health insurance promotes deferment in seeking care, non-compliance of the treatment regime and results in an overall poor health outcome.

Tropical diseases, especially malaria and tuberculosis have long been a public problem in Kenya. However, beyond grappling with a persistent high burden of infectious disease, including malaria, HIV/AIDS, and tuberculosis, Kenya faces an emerging chronic diseases problem characterized by increasing rates of cardiovascular disease, cancers, and diabetes. These diseases are mostly expensive to treat hence it would be better if one has a coverage to boost the payment.

In Kenya, only about 10% of the population has some form of health insurance (KNBS, 2010; Republic of Kenya, 2009; Kinuthia, 2002). Coverage has remained the same since 2003.

This implies that a huge segment of Kenyans are still not covered hence the burden of paying bills lies with themselves or through fund raising. In addition, most of the insurance firms are located in urban areas where a substantial number of populations can afford as compared to rural areas. With the current debate on the introduction of National Social Health insurance, there is need to examine the factors which affect individual's decisions of enrolling in health insurance scheme. According to the United Nations, addressing the disparities in access to care among the poor and marginalized groups is critical in accelerating the achievement of the Millennium Development Goals (MDGs).

Existing evidence shows that efforts to implement social health insurance programs by many African countries, including Kenya are hampered by lack of sustainable health financing mechanisms

1.3 Purpose of the Study

1.3.1 General objectives

To find out the determinant factors of ownership of health insurance among people working in the informal and formal sectors in Kenya

1.3.2 Specific Objectives

- a) To determine the socio-economic factors influencing choice of health insurance in Kenya.
- b) To establish how employment sector of the economy influences the choice of health insurance in Kenya.
- c) Make policy recommendations

1.4 Research Questions

- a) How does the demography of a population influence the choice of health insurance an employee takes?
- b) How does the employment sector of the economy influence the choice of health insurance?

c) What are the employer and employee obligations under the state's healthcare mandate?

1.5 Significance of the Study

The insurance institutions

This will enable the institution to come up with the insurance rates that are affordable to the public at the same time offering quality service to its customers.

The researcher

The researcher will benefit because after successful completion of this study they will have satisfied the condition of the ministry of education and University of Nairobi Institute of Tropical & Infectious Diseases (UNITID) and as such, will be awarded with a Master of Science in Medical Statistics (MSc. Medstat) and shall have acquired knowledge in conducting research in future.

The insurance policy makers

The results obtained from the study will enable insurance policy makers to come up with measures that cap unfavorable rates. They will also obtain a basis source of information where they could consult for reference to formulate their policies.

1.6 Scope of the Study

This study was carried out based on the results of the 2013 Household Health Expenditure and Utilization Survey (HHEUS) carried out throughout the country, the study was focused on the factors that drive people to accept a respective health insurance and those that push them to reject them. Also those factors that determine the reason of variation in the types of insurance they choose to own.

CHAPTER TWO

2.0 LITERATURE REVIEW.

2.1 Introduction.

This chapter focuses on the view of literature related to this research. This is done with a view of collecting views, perspective and opinions on the related field of study. The views depend on theoretical literature that is books, research papers and information from the internet. It also includes critical review, summary and conceptual framework.

2.2 Theoretical Review

Hypotheses for each part of the study are formed based on theoretical considerations and experiences from previous studies.

2.2.1 The theory of demand for health insurance

This is based on expected utility theory of the standard economic theory of behavior under uncertainty is well known; risk averse individuals will pay to avoid severe financial consequences of the "unfortunate" state of the world. In some markets, that willingness to pay to avoid risk leads to the existence of contingent contracts, or insurance markets. In the health insurance context, the "unfortunate" state of the world can be described as the event of illness or fear of illness serious enough to require an individual or family to pay the full cost of necessary and efficacious medical care solely out of current income or wealth. Risk averse individuals facing actuarially fair prices will fully insure, but with unavoidable consequences in the real world, individuals prefer incomplete insurance.

The optimal degree of coverage in the face of loading costs is increasing in the degree of risk aversion. One's degree or intensity of risk aversion to not having health insurance can be reasonably posited to depend upon wealth, because the potential financial loss from catastrophic illness is increasing in wealth, although after a very high threshold level of wealth is reached, risk aversion may decline again; education, because more educated people know the consequences of not having insurance, they know the likelihood of appropriate health care being

efficacious, and they also may have more confidence that they can obtain efficacious care within any insurance and delivery system; income, because financial protection -- both of wealth and of current income or consumption streams -- is a normal good; family status, since parents and married partners may be more likely to seek coverage for family members whom they care about and/or for whom they feel responsible; other access to insurance, since the value placed on any particular insurance option may be different if one is married to a worker whose employer offers coverage, or if some family member(s) are eligible for public insurance; health status of everyone in the family; perceived risk to health status, increasing in age and other sometimes observable clinical factors which we summarize with $_$, so that $RISK = RISK(\text{age}, _)$; gender since men and women have different health use profiles; and then, contingent on a health shock that requires an intervention, one's aversion to the risk of illness also depends upon expected expenditures and the variance of possible expenditures. These expenditure functions depend upon the quantity and quality of medical care that may be necessary (and efficacious) as well as the expected price of each unit of that medical care PC.

Note, when it comes to risk aversion and demand for health insurance, the expected value of necessary medical care is not more important than the variance of that potential demand or need for medical care, i.e., the upper bound of potentially required medical care affects demand. In other words, the first two moments of the health services utilization and expenditure distribution matter, a priori, to insurance demand. We find it useful to think about an individual's demand for health insurance having two classes of arguments: those that reflect influences on the subjective value of insurance coverage per se, and those that determine the net price to the consumer. From the above, one may summarize the value of a particular package of health benefits.

Let the price of health insurance (to the individual) be P^* . Health insurance demand for a particular package of benefits is then: $= 0$ if $V(B_i) < P^*$ $H_i > 0$ if $V(B_i) \geq P^*$. Thus we have the truism, people was uninsured if the value to them of the insurance benefit package they can buy is less than the price they have to pay. We also note the obvious that those which value health insurance the most are likely to buy the most of it, conditional on a given price. This concept of $V(B)$ is similar to Pauly and Herring's notion of reservation price for health insurance (Pauly and Herring, 2002, forthcoming), and $V(B) - P^*$ is similar to consumer surplus.

An interesting feature of health insurance markets is that some of those with the highest $V(B)$ are also those most likely to make choices -- such as seeking jobs from employers that offer health insurance -- that lead them to find the lowest prices of health insurance (P^*). Thus purchasers of insurance are likely to obtain substantial consumer surplus. Other people with high demand -- say those who expect to be very sick -- are unable to work. They often either qualify for public programs or end up facing very high prices in the private non-group insurance market, and sometimes can find no one willing to sell insurance to them at any actuarially fair price. Therefore, it is difficult to sustain the interpretation that observed prices paid in health insurance markets reflect equilibrium marginal subjective values of having health insurance. {my argument is that Pollitz K, R Sorian, and K Thomas, "How Accessible is Individual Health Insurance for Consumers in Less-Than-Perfect Health?" Reports to the Henry J. Kaiser Family Foundation, June 2001. buyers have CS, so nobody's marginal utility is revealed in these markets

The arguments in our expressions of health insurance demand are useful for general expressions of demand, but we also need to make clear that some eligible people do not enroll in insurance even though the monetary cost is zero. This would not seem possible from our characterization of health insurance demand. The important point is that P^* in our framework represents more than just monetary cost. P^* includes time cost and any disutility from an enrollment process that is perceived as burdensome or embarrassing (e.g. some say a kind of stigma is associated with Medicaid since it was for so long associated with people on cash assistance). We explain more in section 4 what is known about the ways P^* exceeds zero for various public insurance programs with zero nominal fees.

2.2.2 Nyman's theory of health insurance

It begins with the observation that health care spending is encouraged by health insurance. Is this problematic? Nyman wrote that conventional health insurance theory provided a ready evaluation of this increased spending: It represents a welfare loss [*] and should be reduced. Conventional insurance theory also provided the policy solution: Impose coinsurance payments and deductibles to increase the price of medical care to insured consumers and reduce these inefficient expenditures. In the 1970s many insurers adopted copayments to reduce health care spending.

In the 1980s and 1990s economists also promoted utilization review and capitated payments to providers as further ways to reduce moral hazard. The managed health care system we have now is largely a product of this theory.

Renewed calls for increased cost sharing (more “skin in the game”) reflect the belief that insurance promotes wasteful health spending. However, it has been recognized for almost thirty years that the conventional insurance theory that supports this belief and has motivated insurance design for decades does not apply to all types of health care. Nyman quotes Mark Pauly as having pointed out that it was only intended to apply to “routine physician’s visits, prescriptions, dental care, and the like” and that “the relevant theory, empirical evidence and policy analysis for moral hazard in the case of serious illness has not been developed.”

Then Nyman developed it. In his Health Affairs article he sidesteps the math (for that, see his book) and illustrates the crucial element of his theory with an example. Consider Elizabeth, who has just been diagnosed with breast cancer. Without insurance, she would purchase only the \$20,000 mastectomy required to rid her body of the cancer. If she had purchased an insurance policy for \$4,000 that paid off with a \$40,000 cashier’s check upon diagnosis of breast cancer, she might purchase the \$20,000 mastectomy and also a \$20,000 breast reconstruction procedure. For economists, this behavior implies that the additional \$40,000 in income from the insurance pool had increased her willingness to pay for the breast reconstruction so much that it is now greater than the \$20,000 market price, causing her to purchase the second procedure. This moral hazard is efficient because she could have spent the additional \$40,000 on anything she chose but opted to purchase the breast reconstruction. The purchase of this additional procedure represents a moral-hazard welfare gain to the extent that with the additional \$40,000 in income, she would have now been willing to pay more than the \$20,000 that it cost to produce the procedure. However, because health insurance policies do not pay off with lump-sum payments, but rather pay directly for health care, the interpretation of the additional care used due to insurance is ambiguous.

How much additional spending due to insurance is a welfare gain? In his book, Nyman calculates that the majority of it is, perhaps as much as 70%. A number of policy implications follow that differ from those implied by an assumption that all moral hazard is a welfare loss. Nyman lists them as: Cost sharing is often not appropriate, particularly for cost-effective, life-saving or

health-preserving interventions; subsidizing insurance premiums to encourage coverage is beneficial, and high health care prices are harmful because they discourage use of care.

It is not incorrect to say that insurance promotes additional health spending. It does. If you believe Nyman's theory, it is incorrect to say that all that additional spending is wasteful, a welfare loss. A little is. Most is not. More skin in the game is not more efficient even if it saves money. Some things are worth the price.* "Welfare loss" here is used in the neoclassical economic sense: that the amount individuals are willing to pay out of pocket is below the marginal cost of health services rendered. Individuals only demand such services because their actual out of pocket liability is reduced below marginal cost due to insurance.

2.3 Empirical Review

Analytically, factors that facilitate the extension and scaling-up of health insurance can be divided into supply-side and demand-side factors. Whether a household demands and is willing to buy insurance depends on the perceived difference between the level of expected utility with insurance and expected utility without insurance (cf. Kirigia et al., 2005). The perceived difference and expected utility are determined by various factors, which can be grouped into the following categories:- personal/household characteristics; Health care market characteristics; community characteristics; Insurance scheme design features and availability of risk management alternatives.

These are specified further in Table 1. Socio-demographic characteristics and risk aversion are not assessed in this study as the chosen methodology does not allow for further insights into these. However, the studies available on Africa suggest that households are in general risk averse with regard to health care (Arhin-Tenkorang, 2001). Based on a review of literature, Consideration of the Kenyan context and discussions with resource persons, the Following key issues relating to demand are considered to be particularly relevant for the Kenyan context.

Knowledge of full health care costs

The value attached to and demand for health insurance is influenced by knowledge of the full costs of health care and experience or knowledge of how and when health care costs become 'catastrophic'.

In other words, health insurance would have diminishing marginal utility for someone who underestimates the high costs of inpatient care and also the likelihood of high-risk events by comparison with someone who is fully aware of the high cost of inpatient care and whose demand would therefore be higher (Cutler/Zeckhauser 2000 in Osei-Akoto, 2003).

Availability of quality health care

Even if the potential benefit of health insurance is seen, there is no utility in insurance if informal sector workers have no geographical access to health facilities that are accredited by health insurance. Similarly, the non-availability of quality health care services (including lack of drugs and other quality deficits) negatively affects demand for health insurance (cf. Carrin, 2003). Thus if informal sector workers perceive quality of health care as a problem, health insurance membership will be less attractive to them.

Absence of alternative risk management institutions

The availability and effectiveness of protection through alternative risk management institutions that cater for meeting people's health care needs and costs would decrease demand for health insurance. Informal institutions such as group saving mechanisms usually constitute ex-post-risk management strategies that help to prevent or reduce catastrophic health expenditure. Yet as Waelkens et al. (2005) point out, there are various constraints (institutional, social and financial) that limit their effectiveness, more so in a changing world in which the traditional mechanisms are less adept. Waivers and exemptions equally serve to provide financial protection. However, they have not been particularly effective in Kenya (Bitran and Giedion, 2003) and there are no clear waiver policy and criteria so far. Given the access barriers to health services faced by a large part of the population it is questionable to what extent the existing risk management institutions provide sufficient support and financial protection. According to Ahuja and Jutting (2003), community-based health insurance is more aligned to people's needs than state or private insurance mechanisms.

Spirit of solidarity

In Kenya there is a strong spirit of “harambee”, a Swahili word meaning ‘let’s pull together’. This refers to people sharing and supporting each other within their community (Adili, 2003). Like group saving and other solidarity group activities, it is based on voluntary reciprocity. Hence, our hypothesis is that the spirit of solidarity in Kenya is in principle conducive to the logic of a social health insurance.

Understanding and acceptance of the insurance rationale

The literature on community insurance refers to people’s limited understanding and acceptance of the insurance rationale. Low-income households may therefore initially be reluctant to join insurance schemes because they do not readily like the idea of ‘paying’ for services they might not use (Brown and Churchill, 2000). Platteau (1997) argues that people join such micro-insurance arrangements based on the principle of ‘balanced reciprocity’. This means that members expect a roughly equal return from their contribution or payment, rather than being guided by a ‘true logic of mutual insurance’ with winners and losers through income redistribution between ‘lucky’ and ‘unlucky’ individuals (ibid). On the other hand, according to Jutting (2001), if solidarity is strong, people may be less concerned whether the benefits of their contributions accrue to themselves or to other community members.

Credibility of and trust in fund management

Lack of credibility and trust in fund managers may negatively affect demand for health insurance (cf. Weismann and Jutting, 2001; Schneider, 2004). In Kenya, where corruption in public services and parastatals has been a huge problem, they have been often faced with negative attitudes. Hence the NHIF, a parastatal, might equally suffer from these perceptions, thus decreasing demand for NHIF membership.

Customer-oriented insurance scheme design features

Insurance scheme design features, particularly the benefit package, payment modes and the enrolment basis (as an individual or family), influence people’s expected utility of health insurance (Carrin, 2003; Schneider, 2004).

For the Kenyan case, our hypothesis is that for many informal sector workers the relatively high amount of Up-front payment and (previously) inflexible collection schedules constitute barriers to joining the NHIF.

Ability to pay

Finally, demand for health insurance is also determined by the ability to pay membership contributions. Lack of money is indeed a major reason why many do not join (cf. Preker et al., 2002; Ju'tting, 2004 for Senegal). As expenditure studies show, higher-income quintiles are more likely to be covered by an insurance (Carrin et al., 2005), which is also the case for Kenya (Xu et al., 2006).

In Kenya, the non-poor spend 2.6% of non food expenditure on health insurance schemes, while this figure is only 0.7% for the poor (CBS, 2000). However, studies of community-based health insurance schemes in East Africa also reveal that the majority of members fall below the poverty line (Waelkens et al., 2005). Hence in Kenya, even though about 30% of the population is extremely poor, it is argued that the 'better-off' segments in the informal sector are able to make contributions (cf. MoH, 2004). In sum, there seems to be a complex mix of factors, some of them suggesting low demand, while others anticipate a demand for health insurance.

2.4 Conceptual Frameworks

Table 1:-Determinants affecting demand for health insurance

Community characteristics	Personal and household characteristics	Health care Characteristics	Insurance scheme design features	Availability of risk management alternatives
Solidarity and reciprocity, trust among and across	Socio-demographic aspects, affecting risk (perceptions), e.g., household size, sex, age, health Status.	Geographical access to health care	Attractive contribution rates and level of co-	Waivers and Exemption

communities			payments, level of penalties	
Social capital	Preferences and risk Aversion	Quality of services and availability of Drugs	Attractive benefit Package	Community- based health insurance and similar forms
Familiarity with formal institutions	Knowledge of costs and price sensitivity	Costs and variability	Adequate payment modes (frequency, timing, place of collection, flexibility)	Solidarity groups to cater for high cost events
Notion on insurability of health (illness is not destiny)	income and ability to pay	Catastrophic illness Costs	Appropriate enrolment procedures, enrolment unit	
Understanding and acceptability of insurance principles		Anticipated quality through health insurance ownership	Options for community participation	
			Credibility of funds	

			managers	
The more pronounced these are, the higher the utility.			The more attractive these are, the higher the utility	The more effective these are in providing financial protection, the lower the demand for insurance

2.5 Summary of variables.

Mode of insurance payments

Under the current law of the 1998 NHIF Act, NHIF membership is mandatory for all civil servants and formal sector employees. The formal sector comprises those employers registered with the registrar of companies. Monthly contribution rates through payroll deductions range from 120 Kenyan Shillings for a monthly income of KES 5000–5999 to KES 320 for an income above KES 15000 (as of 2006).

The self-employed and informal sector workers, i.e. .all persons who are not formal sector employees, can join the scheme on a voluntary basis. They pay a flat-rate contribution of KES 160 per month for their entire nuclear family. This contribution rate corresponds to an income range of KES 7000–8000 for formal sector workers. The informal sector is very heterogeneous, including some better-off income groups with a much higher income than those in the formal sector employees the informal sector consists of what can be called semi-formal employees, often organized in large regional or national association, such a taxi, matatu (bus drivers) and jua kali associations or farmer cooperatives. Whereas contributions from formal sector employees are deducted from the monthly payroll, informal sector members had to make upfront annual

payments of their insurance requirements at their nearest respective offices. In the event of default, the penalty amounted to five times the monthly contribution rate.

But this practice as well as the upfront payment obligation is now being changed. Previously, the contribution covered primarily the costs of bed occupancy ('bed costs') for inpatient care, whereas the remaining costs had to be borne directly by the patient. Since 2004, extension of the benefit package has been underway to cover up to 100% of inpatient care, depending on the hospital's services and the negotiated daily rebate. Co-payment rates thus vary across hospitals, which send their claims to the patient insurer to be reimbursed retrospectively.

Insurance policy

There is growing international consensus on the importance of extending social protection in health to the whole population in order to reduce financial barriers international journal of health planning and management

The option of social health insurance as a financing mechanism generating additional resources in typically chronically underfinanced health systems is receiving increasing attention. However, one of the major challenges to social health insurance in developing countries is integration of the expanding informal sector and inclusion of the poor. Various low-income countries including Kenya have introduced or are in the process of expanding social health insurance and are being faced with this. The informal sector is characterized by low and non-regular, non-taxed incomes, insecure employment and self-employment without social security. It is difficult to assess the income of informal sector workers, on the basis of which social security contributions can be deducted.

Hence policy makers wishing to introduce or upscale a national social health insurance for the informal sector and to include the poor are faced with a number of questions regarding insurance scheme design with respect to enrolment, revenue collection, risk pooling and purchasing of health services. Another critical task is promoting demand for and acceptability of social health insurance among informal sector workers during the introduction and scaling-up phase. Promotion of demand and acceptability starts from a sound understanding of factors affecting demand among informal sector workers and the poor. However, the literature addressing demand – side factors of health insurance in low-income countries is limited.

Econometric studies look at socio-demographic and socio-economic household and individual determinants such as age, sex, income, education and their correlation with health insurance ownership. It is found that persons with higher income and higher education are more likely to have health insurance. Yet econometric studies do not state why people have joined an insurance scheme, and especially why people with lower incomes, in whom we are particularly interested, have not joined. Research into people's preferences emphasizes the need to look beyond demographic and income factors to understand people's reasoning and decision making.

Determinants of health insurance coverage

Prepayment schemes, such as employment-based insurance, private individual health insurance and community-based insurance, are small scale and other than community-based insurance target wealthier and low-risk population.. Membership of NHIF was tested separately from other prepayment schemes because of its different nature.

Clearly one would expect those in employment to be much more likely to have NHIF membership. Conversely, those aged greater than sixty five or less than five are expected to be less likely to have those insurance. Further factors expected to have an effect on the probability of both NHIF and other insurance membership include household income, the education level of the household head, the sex of the individual, severity of disease, and the presence or availability of health insurance schemes at provincial level. For all of these factors other than health insurance availability, their positive effects was qualified to some extent by the compulsory nature of the NHIF. For severity of disease, this is further qualified by likely risk selection by private health insurers. Note finally that a potentially important factor effecting membership that couldn't be tested is an individual's attitude to risk, given the available survey questions.

2.6 Research gap

Health insurance is considered private when the third party (insurer) is a profit organization (Republic of Kenya, 2003a). In private insurance, people pay premiums related to the expected cost of providing services to them, that is, people who are in high health risk groups pay more, and those at low risk pay less. Cross-subsidy between people with different risks of ill health is limited. Membership of a private insurance scheme is usually voluntary.

Private health insurance has been offered by general insurance firms, which offer healthcare insurance as one of their portfolio of products. Therefore, their intention may be driven by the profit motive as business enterprises rather than the pursuit to promote the general health of Kenyans.

Wang'ombe et al (1994) identify two categories of private health insurance in Kenya: direct private health insurance and, employment based insurance. Nderitu (2002) notes that direct private health insurance is very expensive and only the middle and high-income groups afford it. In the employment-based plans, the employer provides care directly through employer-owned on site health facility, or through employer contracts with health facilities or healthcare organizations. These are both voluntary health schemes and are not legislated by the government.

According to Techlink International Report (1999), few firms provide healthcare insurance in the strict sense of insurance in private healthcare insurance in Kenya.

The general insurance firms offering healthcare insurance as one of their portfolio of products include American Life Insurance Company (ALICO), Apollo Insurance, GMD Kenya, Kenya Alliance Insurance Company Ltd, and UAP Provincial Insurance. Other firms run medical schemes and they are in two categories: the first category provides healthcare through own clinics and hospitals (these include AAR Health Services, Avenue Healthcare Ltd, Comprehensive Medical Services, Health Plan Services), while the other category provides healthcare through third party facilities). These medical schemes are also known as Health Management Organisations (HMOs).

HMOs are registered as companies under the Companies Act. The concept originated in the US, where HMOs also help the government to disseminate preventive messages to the public. They were introduced in Kenya a decade ago in response to a 1994 Government call on the private sector to assist in medical care. HMOs are filling a vacuum left by the public health insurance scheme. In HMOs, the patient pays a fixed annual fee, called a capitation fee, to cover the medical costs. Members of a HMO must go to the doctors of that HMO. In addition, to see a specialist, their HMO family doctor must refer them. HMOs have grown rapidly especially in the last few years, especially among those who are covered by employer-provided health plans, mainly because they have helped contain cost increases.

CHAPTER THREE

3.1 Research Methodology

3.2 Introduction

The chapter looks at the methods that were used in the survey of the determinant factors of Ownership of health insurance among people working in the informal and formal sectors in Kenya. This chapter is structured into Structured of data, Statistical Modeling, research design, population of study, data collection and data analysis.

3.3 Research Design.

This study used a cross sectional descriptive survey design. Survey designs are normally used to systematically gather factual quantifiable information necessary for decision-making about characteristics of populations that yield statistical data (Creswell, 2003).The research adopted a descriptive survey research design. Descriptive design is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals, (Orodho, 2009). It was used when collecting information about people's attitudes, opinions, habits or any of the variety of social issues, (Orodho and Kombo, 2002).

3.4 Structured of data

The responses variable was employment sector which had to outcome variable i.e. 0= informal and 1 formal. The explanatory variables gender, religion, education level, highest education level, marital status, health status, health insurance coverage and total annual expenditure. The response variable and explanatory variable made it appropriate to use Logistic regression Model.

i)Statistical Modeling

These Statistical modeling involves fours steps;

- Specifying model in two parts equation linking the response and explanatory variable and the probability distribution of response variable
- Estimating parameters used in the model

- Check how well the model fits the actual data
- Making inference

Logistic regression model

In logistic regression model we model the natural logs of odds of an event .From the equation below;

$$\log\left(\frac{p}{1-p}\right) = \eta$$

We have natural odds of an event .This equation shows that the link function for logistic regression is **logit**.Example is the response of interest was binary

Let $p=P(Y=1)$ i.e. success or being in the formal sector

Let $1-p=P(Y=0)$ i.e. success or being in the informal sector

Then the odds of an event is $\left(\frac{p}{1-p}\right)$ and the logit is $\log\left(\frac{p}{1-p}\right)$

ii)Simple logistic regression model

It is in the form of

$$\log_e\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_1 X_i \text{ where } \beta_0 \text{ and } \beta_1 \text{ are unknown parameters to be estimated}$$

The primary interest is in estimating testing hypothesis regarding β_1 we use wald test for test of hypothesis .the larger sample test (wald test)carried out as follows;

Hypothesis

$$H_0: \beta = 0 \left(\frac{\hat{\beta}_1}{\hat{\sigma}_{\hat{\beta}}}\right)^2$$

$$H_a: \beta \neq 0$$

Wald calculation

$$\text{test statistic} = x^2_{\text{obs}} = \left(\frac{\widehat{\beta}_1}{\widehat{\sigma}_{\widehat{\beta}_1}} \right)^2$$

$$\text{Rejection region} = x^2_{\text{obs}} \geq x^2_{\alpha,1}$$

$$p - \text{val: } p(x^2 \geq x^2_{\text{obs}})$$

$$\text{Reject the null hypothesis} = x^2_{\text{obs}} > x^2_{\alpha,1}$$

Interpretation of B

After testing hypothesis, the next step is interpretation. In this section, we describe how to interpret the parameters of the logistic regression model

We interpret $\exp(\beta_1)$ ODDS (or change in risk compared to unity. The odds ratio is defined as

$$(\text{OR}) = \exp(\beta_i) = e^{\beta_i}$$

Suppose X is categorical (eg Age), then $\exp(\)$ is the change in risk for every which compares their ODDS of events e.g ODDS for males relatives to females.

Inferences on β_i and ODDS Ratio

The next step after interpreting the meaning of the coefficient is statistical inferences. In making inferences odds ratio is used. That is e^{β} represents the change in the odds of outcome (multiplicatively) by increasing x by 1 unit .If $\beta = 0$, the odds and probability are the same at all x level ($e^{\beta} = 1$), if $\beta > 0$, the odds and probability increase as x increases ($e^{\beta} > 1$) and if $\beta < 0$ the odds ,the odds and probability decreases as xxx increases ($e^{\beta} < 1$)

Constructing 95% confidence intervals for Odds Ratio

The following steps are used when constructing 95% CI for Odds Ratio

Step 1: construct a 95% CI for β

$$\hat{\beta} \pm 1.96\hat{\sigma}_{\hat{\beta}} = \hat{\beta} - 1.96\hat{\sigma}_{\hat{\beta}}, \hat{\beta} + 1.96\hat{\sigma}_{\hat{\beta}},$$

Step 2: raise $e = 2.7118$ to the lower and upper bounds of the CI:

$$e^{\hat{\beta} - 1.96\hat{\sigma}_{\hat{\beta}}}, e^{\hat{\beta} + 1.96\hat{\sigma}_{\hat{\beta}}}$$

If entire interval is above 1, conclude positive association, if entire interval is below 1 conclude negative association and if interval contains 1 cannot conclude there is an association

iii) Logistic regression prediction

The predicated probability of depression was estimated using

1. Simple logistic regression

$$\hat{p} = \frac{\exp(\hat{\beta}_0 + \hat{\beta}_1 X)}{1 + \exp(\hat{\beta}_0 + \hat{\beta}_1 X)}$$

2. Multiple logistic regression

$$\hat{p} = \frac{\exp(\hat{\beta}_0 + \hat{\beta}_1 X_1 + \dots + \hat{\beta}_k X_k)}{1 + \exp(\hat{\beta}_0 + \hat{\beta}_1 X_1 + \dots + \hat{\beta}_k X_k)}$$

Adjusted odds ratio for raising x_i by unit holding all others predictors constants

$$OR_i = e^{\beta_i}$$

Model establish the factors

There is need to establish the best fitted model. That is model with predictors of employment sector

The model fitted was of the form

$$\text{Log (odds)} = \alpha + \hat{\beta}_1 X_1 + \dots + \hat{\beta}_k X_k$$

The explanatory variables xx were used to fit the best model are gender, religion, education level, highest education level, marital status, health status, health insurance coverage and total annual expenditure

Testing overall model

Before we carry model fitting we need to:

- a) Ask the question
 - Does model including given independent variables provide more information about dependent variables than model without this variable?

- b) Know the three tests used to identify the fit
 - likelihood ratio statistics (LRS)

1. Likelihood Ratio test

Just as an analysis of variance, we are often interested in conducting tests of hypothesis that introducing several model parameters simultaneously leads to a better overall model. In this case we cannot simply use single Wald statistic for hypothesis testing. Instead, the most common approach is to use the LIKELIHOOD-RATIO TEST. A generalized linear model assigns a likelihood to its data as follows:-

$$\text{Lik}(\bar{x}; \hat{\theta}) = \prod_i p(x_i / \hat{\theta})$$

Now suppose that we have two classes of model M_0 and M_1 and xx is nested inside M_1 (that is the class M_0 is a “special case” of the class M_1). It turns out that if the data are od are in the maximum likelihood estimates for M_0 and M_1 is well behaved. In particular, twice the log of the likelihood ratio is distributed as a χ^2 random variables with degrees of freedom equal to the differences k in the number of free parameters in the two models. This quantity is sometimes called the DEVIANCE.

Decision

The model is of good fit if $\chi^2_{obs} > \chi^2_{table}$ and xxx. That is the model is a good fit if p-value < 0.05

3.5 Statistics analysis plan

The data collected from the respondents were cleaned, coded, and analyzed using SPSS 17.0 for windows. The analysis consisted basic summary of Household characteristics univariate and multivariate analysis of the relation between Employment sector and various factors

Step 1. Data summaries: Frequencies, Mean, standard deviation, medium minimum and maximum will be used appropriately

Step 2: Exploratory model: The relationship of potential covariates to Employment outcome variables will be explored the data set.

Step 3: Logistic regression modeling: A logistic regression model will be fit between Employment sector outcome measure and the variables in step 2. Diagnostic procedures will be used in this model to determine any influential measurement.

3.6 Population of Study

The population of the study was in the form of secondary data obtained from the data collected during the 2013 Household Health Expenditure and Utilization Survey (HHEUS) which was sourced from the Kenya National Bureau of Statistics (KNBS).

3.7 Sample Population

The population of interest in this study consisted of information obtained from the employees working in the formal sector and those from the informal sector. This study was limited to the information of formal sector employees working in insurance institutions that operate within the country so as to obtain the relevant data on the subject matter. Simple random sampling was used in the selection of data.

3.8 Data Collection

This study was facilitated by the use of secondary data. It utilized survey methodology in which secondary data relating to the issue under investigation was obtained from the analyzed 2010 population census. This is a nationally representative sample survey of 8,444 women employees aged between 18-44 years and 3465 men aged between 15 and 54 years of age selected from 400 sample points (clusters) throughout Kenya. These data was divided into two parts i.e. the dependent and independent variables. The dependent variable will be health insurance ownership for purposes of coding the health insurance ownership outcome.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1.0 Introduction.

This chapter explains how the data collected was analyzed and findings presented. It is from these findings that conclusion were made regarding the distribution of households by socio economic activities and the health insurance coverage status of the heads of households in Rift valley province of Kenya. It is also here that the cause and effect of employment status, health insurance coverage and the socio economic factors of the households in the area of study will be established.

4.2.1 Socio economic profile and insurance choice of the household heads

This research study began by establishing the socio economic factors of the households with regards to gender, religion, highest level of education and marital status among other factors. It also established influence of such socio economic on the choice of health insurance cover. To begin with, majority of the households in the area under study were established to be headed by males (63.3%, n=776) as opposed to males (36.3%, n=442) from 75.2% (1047) of the actual households heads interviewed as shown in figure 4.1 below.

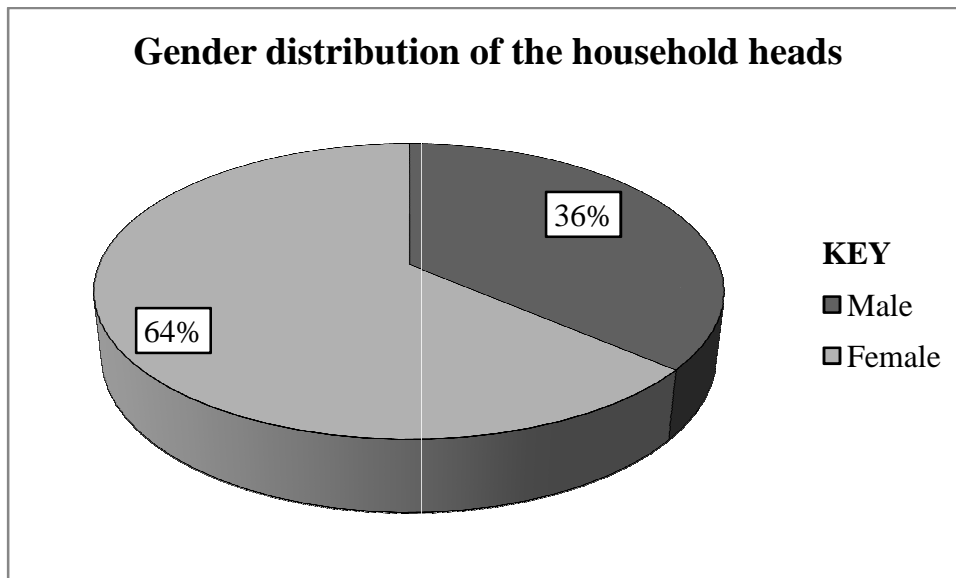


Figure 4.1 Distributions of Household Heads by Gender

Apart from gender, members of 98.5% (n=1377) households were Catholics while 1.6% (n=21) subscribed to Protestantism, (1.1%, n=15) to traditional forms of worship (0.4%, n=5) and (n=0.1%) to atheism as shown in figure 4.2 below

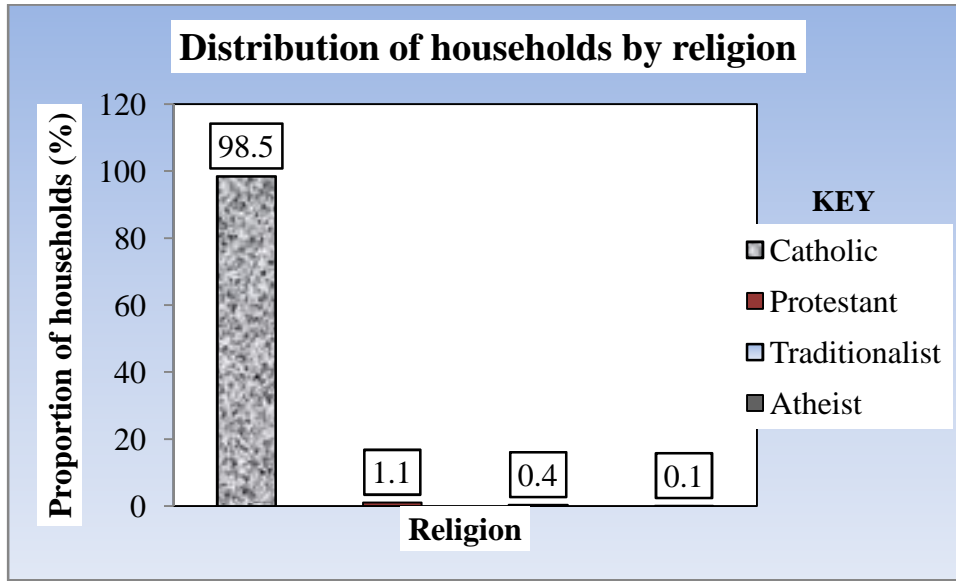


Figure 4.2 Distributions of Households by Religion

Of the households visited, 74.3% (n=1037) had their heads having attended school at some point during their life while in 25.7% (358) of the households none had attended any school in their entire life. Among those who mentioned having attended school, majority had gone up to primary level (57%, n=597) with those who had gone up to secondary, college or university, post primary or vocational training institutes, informal schools such as Madrassa and nursery schools being 28.6% (n=297), 12.1% (n=126) and 0.5% (5) as is show in figure 4.3 below.

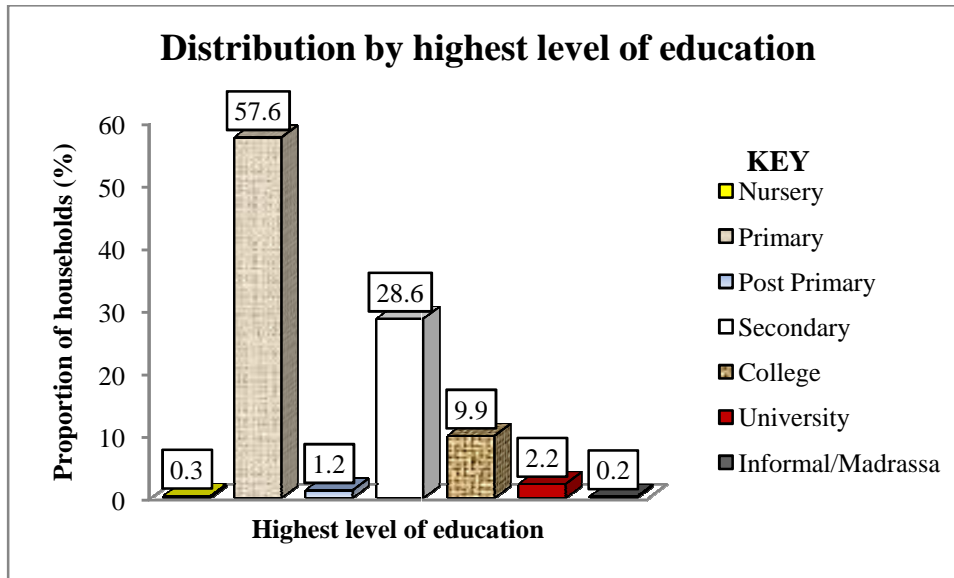


Figure 4.3 Distribution of households by Highest Level of education of the household head

The household heads who had never married or had not lived together with a man or a women constituted 9.8% (n=136) of the household heads interviewed while those who were married or were living together with a woman or man as husband and wife constituted 74.9% (1035) of the households. This category had the majority of the household heads. Of the remaining households, 4.1% (56) had their heads divorced or separated while 11.2% (155) of the heads of households were widowed as shown in figure 4.4 below.

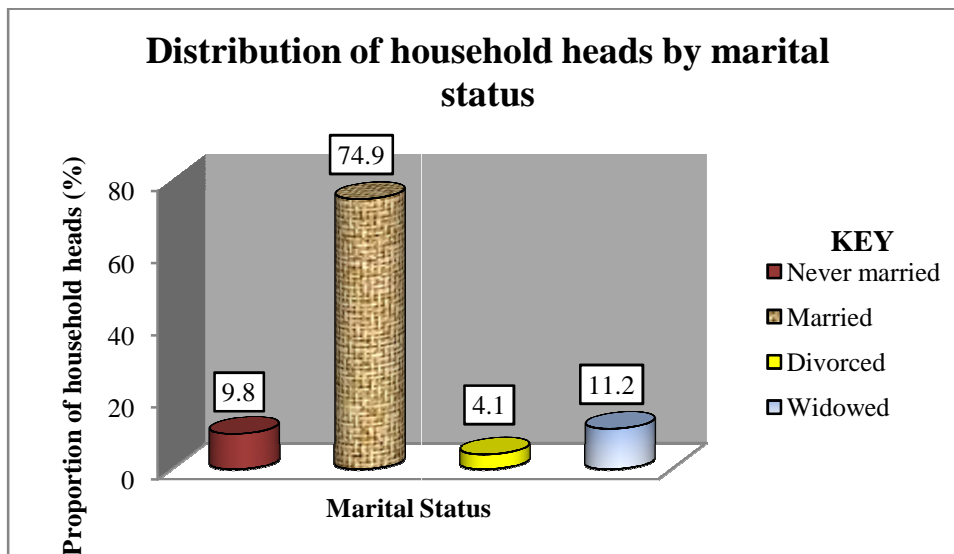


Figure 4.4 Distribution of household heads by marital status

Of all the socio economic determinants studied, only education status and marital status showed a significant correlation with the type of insurance cover by the households at $\chi^2 (1) = 5.038$, $p=0.025$ for education status and $\chi^2 (2) =6.081$, $p=0.049$ for marital status. Gender, religion, highest level of education, health status were all not significantly related to the type of health insurance cover used by the households included in this study. In addition to this significant odds were established between those who preferred NHIF to community insurance and were educated at OR= 0.20 (0.09 – 0.876), $p<0.05$. This was especially since majority of those who had NHIF cover were those who had not gone to school (62.2%, $n=28$) unlike those who had community based health insurance cover who majority had gone to school (68.4%, $n=13$). On marital status, majority of those who had not been married or lived with a man were covered by community based health insurance (5.3%). The same was observed for those who were married (78.9%, $n=15$) but not among the widowed who apparently were mostly covered by NHIF (42.2%, $n=19$) as shown in table 4.0 below.

Table 4.0 Socio economic determinants and insurance type for the households

Determinant	Attribute	Insurance type and Coverage	
		NHIF	Community Based Health Insurance
Education Status	Has been to School	37.8% (17)	68.4% (13)
	Has Not been to school	62.2% (28)	31.6% (6)
Marital status	Never married/Lived together	.0% (0)	5.3% (1)
	Married/living together	57.8% (26)	78.9% (15)
	Widowed	42.2% (19)	15.8% (3)

4.2.2 Employment Status of the household heads

Regarding the employment of the household heads interviewed in this study, (64.6%, n=941) were in some form of employment, 32.4% (n=450) while the other 1.0% (n=14) were either incapacitated or were in subsistence production and as such, were not sure whether or not they were employed or unemployed. Of those who were employed, 11.6% (n=162) were in the formal sector (civil servants, hoteliers, accountants, teachers and clerks among others). It was 66.2% (n=921) of the household heads who were employed in the informal sector (mainly farming, business and casual labor among others) even as 9.8% (n=137) were established to be homemakers, 3.2% (n=44) seeking work, 0.4% (n=5) students while 8.8% (n=122) were in other forms of employment as shown in table 4.1 below.

Table 4.1 Distribution of household heads by Employment Activity

Employment by sector	Proportion (%)
Formal sector	11.6% (162)
Seeking work	3.2% (44)
Homemaker	9.8% (137)
Student	0.4% (5)
Informal Sector	66.2% (921)
Others	8.8% (122)

From the findings above, it was clear that majority of the household heads interviewed in these households were employed in the informal sector with a considerable number out of employment (seeking work, homemaker or student). The proportion of those not working was higher than the number employed in the formal sector of the economy. It is also clear from the above findings that there are 4 in every 10 households that were headed by students and potentially minors. Among those employed, those in the informal sector were more than 5 times the number employed in the formal sector.

4.2.3 Health Status of the household members

The assessment of the household heads' own health status revealed that 29.3% (n=410) felt that their health was very good while the majority felt that their health was just good. This was even as 9.9% (n=138) felt that their health status was satisfactory, 3.6% (n=50) had poor health while 0.3% (n=4) were not sure about their health status as is shown in table 4.2 below.

Table 4.2 Distribution by health status of the household heads

Health Status	Proportion of Households
Very Good	29.3% (410)
Good	56.9% (795)
Satisfactory	9.9% (138)
Poor	3.6% (50)
Not Sure	0.3% (4)

On average, majority of the people considered themselves healthy with only less than 4 in 10 people mentioning having poor health or not sure about their health condition. Among the cases that health wise were not good, cancer cases constituted 4.6% (n=138), ulcers – 2.6% (n=36), arthritis and other bone disease – 1.9% (27), gout – 0.9% (n=12), diabetes – 0.7% (n=10), cardiac disorders – 0.2% (n=3) and finally HIV/AIDS – 0.1% (2) compared to non cases in each of the diseases. This is shown in table 4.3 below.

Table 4.3 Chronic illness conditions among household Heads

Disease Condition	Proportion of Households
Diabetes	0.7% (10)
Cardiac Disorders	0.2% (3)
Arthritis	1.9% (27)
HIV/AIDS	0.1% (2)
Ulcers	2.6% (36)
Gout	0.9% (12)
Cancer	4.6% (64)

The findings above suggest that most of the people in the area under study were suffering from various cancerous diseases followed by ulcers and other bone diseases such as arthritis. HIV/AIDS was the least prevalent disease in the various communities included in the study.

4.2.4 Health Insurance Coverage

Regarding health insurance coverage status of the households, the study revealed that only 5.1% (70) of the households under study were covered by health insurance. The majority of the locals were not having any form of health insurance cover (94.4%, n=1386) as is shown in figure 4.5 below.

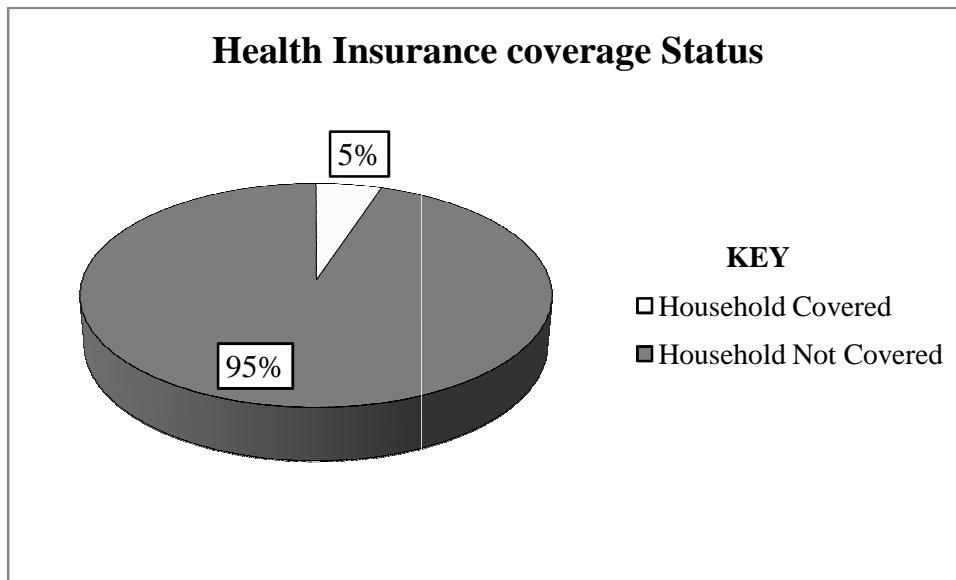


Figure 4.5 Health Insurance Coverage Statuses

Of the total number of households covered by health insurance, 70.3% (45) were covered by NHIF while the remaining 29.7% (19) were covered by various Community Based health Insurance arrangements as is shown in table 4.4 below.

Table 4.4 Insurance type and household coverage

Insurance Type	Coverage (%)
NHIF	70.3% (45)
Community Based Health Insurance	29.7% (19)

The premiums of the insurance policies covering the households in the area under study are paid by either employers or the household heads. It is the household heads that did however pay 80.3% (n=49) of the premiums. Employers to whom the members of these households render their services paid premiums on their behalf in 19.7% (n=12) of the cases as shown in table 4.5 below. It is also important to note that even in the cases when the employers paid for the insurance premiums for their employees, they did this on behalf of their household heads (employees) as this was deducted from their wages for such services rendered.

Table 4.5 Custodian of the cover (who pays for the cover)

Insurance sponsor	Households (%)
Household Head	80.3% (49)
Employer	19.7% (12)

In addition to this, 16.4% (229) of the households have their insurance premiums paid under a pensions plan, while 83.4% (1162) have their insurance premium paid up by a dependant with 0.2% (3) of the households covered but cannot quite tell who pays the premium for their cover and all these even as health insurance policies were established to cover only inpatient medical services.

Some of the socio demographic factors of the households established to affect the level of insurance coverage both in the urban and in the rural areas were religion (χ^2 (3) = 21.252, $p < 0.05$), education level (χ^2 (1) = 25.215, $p < 0.05$), marital status (χ^2 (3) = 37.096, $p < 0.05$), employment activity (χ^2 (5) = 23.096, $p < 0.05$) and the health status (χ^2 (4) = 12.602, $p < 0.05$) of members of the household. More specifically, more health insurance coverage was likely to be within the households that subscribed to Catholicism as opposed to any other religion say Protestantism or even among atheist and traditionalist. It was also highly likely among those who had gone to school irrespective of level to have a health insurance cover than it is among those who had not attended any school. This was also the case among married people and among those who did not have very good health conditions.

The odds of a male headed households having an insurance cover was established to be significant at 1.519 (0.897 – 2.570) implying that there was a high likelihood of a male headed household to have a health insurance cover than it is for a female headed household. Also, the odds of households headed by someone who has never attended school having a health insurance cover was significantly lower at 0.306 (0.188-0.497) implying that education status determined the uptake of insurance significantly as the insurance coverage was more prominent among those who had gone to school irrespective of the highest level they reached.

This study further delved into issue of distribution of socio economic factors in both the formal and informal sectors of the economy. It was established that more males employed in the informal sectors of the economy (informal – 43.0% (162), formal – 32.9% (275)) and more females employed in the formal sector of the economy (formal – 67.1% (560), informal – 57.0% (215)). By religion, it was established that there were no major disparities in the number of household members in both informal and formal sectors of the economy for both Catholics and Protestants. Majority of those who had not attended any school were in the informal sector (informal – 44.4% (199), formal – 16.4% (154)) with those who had attended school being majorly in formal sector of the economy in the area under study (formal – 83.6% (785), informal – 55.6% (249)). Majority of the married people were in both formal and informal sectors compared to other marital statuses (formal - 76.9% (714), informal - 71.4% (319)). Overall, both people in informal and formal sectors of the economy mentioned being at the least, satisfactory health wise though many of the few people who were poor health wise were working in the informal sector as compared to those in the formal sector (informal - 5.1% (23), formal - 2.9% (27)) as shown in table 4.6 below.

Table 4.6 Socio economic characteristics and Employment Sector

Characteristic	Attribute	Employment Sector		Statistical Significance
		Formal	Informal	
Gender	Male	32.9% (275)	43.0% (162)	$\chi^2 (1) = 11.348,$ $p < 0.05$
	Female	67.1% (560)	57.0% (215)	
Religion	Catholic	98.7% (928)	98.0% (441)	$\chi^2 (3) = 3.854,$ $p > 0.05$
	Protestant	1.1% (10)	1.1% (5)	
	Traditionalist	0.2% (2)	0.7% (3)	
	Atheist	0.0% (0)	0.2% (1)	
Education Status	Attended	83.6% (785)	55.6% (249)	$\chi^2 (1) = 125.498,$ $p < 0.05$
	Not Attended	16.4% (154)	44.4% (199)	
Marital status	Never married	11.2% (104)	6.9% (31)	$\chi^2 (3) = 30.222,$ $p < 0.05$
	Married	76.9% (714)	71.4% (319)	
	Divorced	3.7% (34)	4.3% (19)	
	Widowed	8.2% (76)	17.4% (78)	
Health Status	Very Good	29.5% (277)	52.7% (132)	$\chi^2 (4) = 13.975,$ $p < 0.05$
	Good	59.0% (554)	25.6% (237)	
	Satisfactory	8.5% (80)	12.2% (55)	
	Poor	2.9% (27)	5.1% (23)	
	Not Sure	0.1% (1)	0.7% (3)	

This findings revealed significant relationship between the sector of employment and gender of the respondents $\chi^2 (1) = 11.348, p < 0.05$, religion ($\chi^2 (3) = 3.854, p > 0.05$), education status ($\chi^2 (1) = 125.498, p < 0.05$), marital status ($\chi^2 (3) = 30.222, p < 0.05$) and health status ($\chi^2 (4) = 13.975, p < 0.05$). It was also established that there was no significant relationship between the sector one was employed in and the status of insurance coverage for such an individual at $\chi^2 (1) = 2.818, p > 0.05$ with the odds of one being employed in the formal sector and having an insurance cover to that of one having a cover but working in the informal sector was not significant (OR= 2.641 (0.813 – 8.577), $p = 0.106$).

In order to isolate the impact of various socio – economic factors on health insurance coverage logistic regression analysis was conducted of sex, religion, education status, highest level of education, marital status, health status and total annual expenditure by health insurance coverage status as determinants of insurance coverage. It was established to begin with, that considered individually, only sex, religion, education status, and highest level of education, health status and total annual expenditure showed significant relationship with insurance coverage status with significant odds ratio of 0.995 (0.991-0.999), 1.625 (1.136-2.325), 1.021 (1.007-1.036), 1.006 (1.004-1.009), 1.022 (1.005-1.039) respectively as shown in table 4.7 below.

Table 4.7 Socio economic determinants of insurance coverage

	Odds Ratio	z	P> z	[95% Conf. Interval]	
Sex	0.9952596	-2.33	0.02	0.9912884	0.9992466
Religion	1.625353	2.66	0.008	1.136081	2.325338
Education Status	1.021299	2.86	0.004	1.006663	1.036147
Highest Level of education	1.006372	4.58	0	1.003642	1.009109
Marital status	1.004686	1.02	0.308	0.9957005	1.013753
Health Status	1.021831	2.59	0.01	1.005289	1.038645
Health Insurance Coverage	1.235145	0.79	0.431	0.7299881	2.089875
Total Annual Expenditure	1.000001	4.28	0	1.000001	1.000002

When insurance coverage was further adjusted for employment sectors of the economy where the household heads interviewed in this study were engaged, it was established that sex, highest level of education and total annual expenditure were significant and as such were the major determinants of health insurance coverage in both the formal and informal sectors of the economy. The odds of a male employed in the formal sector and covered by a health insurance scheme to that of a female working in an formal sector and having a health insurance scheme was significant ($p < 0.05$) at 0.992 (0.988-0.997). There was also a likelihood of an increase in health insurance coverage as education level of the household heads employed in both formal and informal sectors of the economy. Finally, insurance coverage was affected by the household expenditure since it increased with the amount of expenditure by the household heads irrespective of the sector of the economy where they were employed as shown in table 4.8 below.

Table 4.8 Socio economic determinants of insurance coverage by the employment sector

	Odds Ratio	z	P> z 	[95% Conf. Interval]	
Sex	0.992446	-3.41	0.001	0.9881349	0.9967759
Religion	1.343276	1.06	0.289	0.778832	2.316791
Education Status	1.005956	0.62	0.534	0.9873099	1.024954
Highest Level of education	1.008464	5.63	0	1.005507	1.01143
Health Status	1.011644	0.97	0.332	0.9882505	1.035592
Total Annual Expenditure	1.000002	5.1	0	1.000001	1.000003

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.2.0 Summary.

5.2.1 Socio economic profile Households and household heads

Majority of the households in Rift valley province which is the area where this study was focused on are male headed with every female headed household having two corresponding male headed households in the area. The most common religion among the community members in the area under study is Catholic with every 9 in 10 households subscribing to this religion where as the other remaining 2 households likely to be Protestants, atheist or traditionalist. This implies that very few households in this area subscribe to the Islam religion. Majority of these households have their heads having some form of education mostly formal education with most of them having gone up to primary level with half that number having gone up to secondary level of education. Together, those who have gone up to vocational level of training and college and university level are slightly more than half the number that have gone up to secondary level. This implies a transition rate of only 50.0% from one level education to the next from primary level to higher levels. Finally, more households are having both parents in a stable marital arrangement than those in an arrangement where both or none of the household heads are in any form of relationship.

Education status and marital status are related to insurance cover status of the households in most parts of the region. Majority of those who have NHIF cover have not gone to school while most of those who have community based health insurance cover have gone to school. Most of the unmarried are covered by community based health insurance compared to those who are married, divorced or widowed. It is the widowed that are however most covered in comparison to the divorced with their most preferred cover being NHIF. Gender, religion, highest level of education or health status of the household head has no relationship whatsoever to the insurance coverage status of the households under study. In addition to this, it is highly likely for educated people to take up NHIF cover than those who are not educated.

5.2.2 Employment Status of the household heads

Majority of the household heads in this region are employed in the informal sector with a considerable number out of employment (seeking work, homemaker or student). The proportion of those not working is higher than the number employed in the formal sector of the economy. It is also the case that there is a 4 in 10 chance that any household in this region is headed by a student or potentially a minor even as those employed in the informal sector are likely to be more than 5 times the number of those employed in the formal sector.

5.2.3 Health Status of the household members

Majority of the people in this area are healthy with few people poor health wise or not sure about their health. Cancer is the most prevalent health condition with every 4 in 10 people likely to be suffering from some form of cancerous disease. This is followed closely by ulcers and other bone diseases such as arthritis. It is HIV/AIDS that is the least prevalent disease in this region.

5.2.4 Health Insurance Coverage

The health insurance coverage stands at only 5.1% of the households with 70.3% of these covered by NHIF and 29.7% by various Community Based health Insurance. In one way or the other, it is the household heads that pay for the premiums of the cover they have though in 80.3% of the cases, the household heads pay these premiums in person. Employers pay premiums on behalf of the households in only 19.7% of the cases. This is however deducted from the employees' wages. In addition to this, 16.4% of the insurance premiums are paid under a pensions plan, while 83.4% are paid up by a directly by those covered. All those covered by health insurance in this region can only use them to access inpatient medical services.

The level of insurance uptake among households is dependent on religion, level of education and marital status of members of a household. More Catholics, literate and the married have a higher likelihood to be covered by a health insurance than the non Catholics, illiterate and the unmarried members of a household in the area. The same as male headed households compared to female headed households.

The determinants of insurance coverage are mainly sex, religion; education status, highest level of education, marital status and total household expenditure. However, only sex, religion, education status, and highest level of education, health status and total annual expenditure that show significant relationship with insurance coverage status. When these are controlled for the employment sector of the household heads, only sex, highest level of education and total annual expenditure are significant and as such are the major determinants of health insurance coverage in the area under study. This means that there is likely to be an increase in health insurance uptake in male headed households who have gone up to higher levels of education and with a high disposable income.

5.3.0 Conclusion

With most households male headed, the most common religion being Christianity and Catholicism specifically, most people having gone up to at least primary level of education and most families stable, health insurance up take is determined in the Rift valley province by education status and marital status. Most of educated people prefer NHIF cover though a significant number of the uneducated also prefer it. Community based health insurance cover is also prominent among both the educated and the uneducated. Most of the unmarried are covered by community based health insurance while the widowed mostly covered by NHIF.

The health insurance coverage stands at only 5.1% of the households in this area with 70.3% for NHIF and 29.7% for Community Based health Insurance. Most of those employed in the formal sector of the economy are covered by NHIF and as such pay premium through their employers as a statutory requirement. It is however those who work in the informal sector that are covered in large numbers by health insurance (mostly community based) and prefer to pay by themselves as opposed to through their employer. Most of the health insurance premiums are paid directly as opposed to through pension plans. All health insurance covers in this region can only cater for access to inpatient medical services.

Finally, health insurance uptake considering the sector of the economy in this region is largely dependent, and significantly so, on highest level of education and total annual expenditure in that there is likely to be an increase in health insurance uptake among households headed by males who have attained higher levels of education and also have higher disposable income.

5.4.0 Recommendations

From the study, recommendations are given to the health insurance providers to revise their approach to their insurance marketing strategies to make them more accessible and such services affordable in the informal sector of the economy who are the majority and also the most uncovered by health insurance and finally to the insurance policy makers to come up with measures that cap unfavorable rates especially in the informal sector of the economy that has derailed up take of health insurance due to stringent rules and policies in the industry that scare away potential customers from this sector.

REFERENCES

- Kimani D, Muthaka DI, Manda DK (2004): *Healthcare Financing Through Health Insurance in Kenya. The Shift to A National Social Health Insurance Scheme*. Nairobi, Kenya: Kenya Institute for Public Policy Research and Analysis; 1-71.
- Mathauer I, Schmidt JO, Wenyaa(2008), M: Extending social health insurance to the informal sector in Kenya. *An assessment of factors affecting demand*. Int J Heal Plan Manag 23:51-68.
- MOE & HRD.(1999). *School management guide*. Jomo Kenyatta foundation, Nairobi.
- Murray CJL, Evans DB, editors.(2003) *Health systems performance assessment: debates, methods and empiricism*. Geneva: World Health Organization,.
- Mwangi M. (2009). *General psychology*, longhorn publishers, Kenya.
- NHIA. 2010. National Health Insurance Authority 2009 Annual Report. Accra:NHIA.
- Nketiah-Amponsah E. 2009. *Demand for health insurance among women in cross-sectional evidence*. *International Research Journal of Finance and Economics* (33):179–91.
- Nunes JF. 2008. Health, social insurance and income. *International Advances in Economic Research* 14: 329–35.of open learning.
- Orodho A.J. (2005). *Techniques of writing research projects and report in education*
- Orodho A.J. (2009). *Elements of education and social science research methods*, Kanezja
- Orodho, A. and Kombo, D. (2002).*Research methods*; Nairobi Kenyatta university, institute

- Osei-Akoto I. (2003). *Demand for voluntary health insurance by the poor in developing countries: evidence from rural Areas* . Conference paper. CEA 37th Annual Meeting, Carleton University, Ottawa,Canada, 29 May – 1 June 2003.
- Preker A, Carrin G, Dror DM et al. (2002). *Effectiveness of community health financing in meeting the cost of illness. Bulletin of the WorldHealth Organization publishers, Maseno, Kenya.*
- Sarpong N, Loag W, Fobil J et al.(2010). National health insurance coverage and socio-economic status in a rural district of
- World Health Organization:(EIP);(2006)*Health financing reform in Kenya: assessing the social health insurance proposal.* Geneva, Switzerland: WHO, Department “Health System Financing” (HSF) Cluster “Evidence and Information for Policy”
- World Health Organization:(2013)*Health financing reform in Kenya: assessing the social health insurance proposal.* In Department of Health System
- Xu K, Klavus J, Kawabata K, Evans DB, (2003)Hanvoravongchai P, Ortiz de Iturbide JP et al. *Household health system contributions and capacity to pay: definitional, empirical and technical challenges.*