

ESTIMATING WILLINGNESS TO PAY AND ITS DETERMINANTS FOR
NHIF COVER AMONG BODA BODA OPERATORS IN KAKAMEGA
COUNTY

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DECLARATION

This research paper is my original work and has not been presented for award of a degree in any other University

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This research paper has been submitted to the University of Nairobi for examination purposes with my approval as the University supervisor.

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DEDICATION

I dedicate this work to Almighty God for the guidance He has given me. Secondly, I dedicate it to my University Supervisor for assisting and bearing with me during my busy schedules. Your moral support and encouragement have contributed greatly to the completion of the research.

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LIST OF ACRONYMS AND ABBREVIATIONS

NHIF – National Health Insurance Fund

WTP – Willingness to Pay

UHC – Universal Health Coverage

CHI - Community Health Insurance

Bamwanda – Rwanda community health insurance scheme

UTM - Union Technique de la Mutualité Malienne

RSBY - Rashtriya Swasthya Bima Yojna (National Health Insurance Programme)

PhilHealth - Philippines Health Insurance Corporation Scheme

BPJS - *Badan Penyelenggara Jaminan Sosial* (social security administrative body)

NHIS - National Health Insurance Scheme

KHHUES - Kenya Household Health Utilization and Expenditure Survey

OOP - Out of Pocket Expenditure

WHO – World Health Organisation

USD – United States Dollar

Kes - Kenyan shilling

NAD - Namibian Dollar

URC - University Research Chair for Health system research

NACOSTI - National council of Science and Technology

IREC - Institutional Research and Ethics Committee

Kshs – Kenya shillings

VIF – Variance Inflation Factor

RESET - Ramsey Regression Equation Specification Error Test

ABSTRACT

In midst of rising health services provision costs and especially out of pocket payments (OOP), pooling of risk mechanisms serves as an alternative for Kenya's health care financing among Boda Boda Operators. Boda Boda operators experience rising out of pocket expenditure because of limited access to health insurance among them. With Kenya having a 7.9% health insurance coverage, more efforts are required to increase coverage and ultimately reduce OOP especially among the Boda Boda operators. The first section of the study was estimation of WTP. The WTP was determined using contingent valuation method on randomly selected sample of boda boda operators who had been in business for the last six months. Using a sample of 392 respondents randomly selected in the county and analysing the data using descriptive statistics, the study established that the boda boda operators had a WTP of Kes 393 per month on average. The final section of the research explored the determinants that affects the WTP among the operators. Using linear regression model, the determinants explained 17.41% of the willingness to pay. Education level, Income, marital status and comprehensiveness of the cover (benefits package) were statistically significant in determining WTP. Those respondents with tertiary and secondary education levels had a higher WTP for the cover compared to those with lower level of education. Those who were married had a higher WTP than those who were not married. Respondents with higher levels of income also showed a much higher WTP than those with lower levels of income. Age, number of dependents, quality of service and residence results indicated that they were not statistically significant. The policy recommendation is that the government ensure the NHIF package for boda boda operators is comprehensive in terms of covering most of the major health needs for this group and since the average WTP for this group was found to be 393, the current rate of 500 is high for this category of workers and that given income is significant in determining WTP, the government should consider reducing the amount to 393 per month. Government should also differentiate the cover to have married persons pay slightly higher than single persons. This is because married persons have a higher WTP than single person. The level of education also showed significant influence on WTP. This is suggestive that the government should conduct mass awareness creation forums on the health insurance to this category to enhance uptake.

CHAPTER ONE: INTRODUCTION

1.1 BACK GROUND

As the World gears towards Universal Health Coverage (UHC), Global development organizations have initiated plans across the world to scale up health insurance coverage among the population across the world. WHO (2000) advocates for UHC to ensure the population attain quality care and are protected from financial distress associated with catastrophic health expenditure. Financing UHC is key in ensuring that the world achieves UHC aspirations. WHO gives four guiding principles to help the countries in moving toward UHC: these are maximized mandatory prepayment, reduction of direct payments, establishment of pooling of risk mechanisms and the use of the general government revenues to pay for those unable to contribute. Across the globe, catastrophic health expenditure affects an estimated 150 million people due to OOP. About 100 million of the 150 million are pushed to poverty. Financing UHC is a key factor that governments need to prioritize. As per the WHO guideline, governments across the world are initiating various health insurance schemes that make a step towards UHC. This is a shift from the current models in which individuals and governments passively purchase health care to a more strategic model in which the users of health care have a more organised and planned purchasing of health care services. This strategic purchasing model uses data and evidence to make purchasing decision. This movement creates more sustainable financing. The pooling of risk models whether health insurance or subsidy pools will majorly contribute to aspirations of UHC.

According to the Oxfam report (Oxfam 2013 report), across the world, different countries have initiated pooling of risk mechanisms at different scales and designs. In Asia countries like Bangladesh, India, Nepal, Lao, Cambodia, China, Indonesia, and the Philippines have initiated and experienced some form of health insurance. In Asia, community health insurance (CHI) exist which got their existence from political processes. In China, CHI started out of the communist party controlled rural areas and again it was the first CHI named medical corporative in the 1940s. This scheme led to the countrywide establishment of similar schemes and by 1960s, about 90% of the people living in rural areas was covered by these schemes. Eventually, they collapsed in the 1980s following market-oriented reforms but later re-emerged in 2003. India, Nepal and Bangladesh, health insurance started as a mean to improve health coverage and protection

against financial catastrophe. Oxfam list 49 health schemes from these Asian countries out of which 30 were started after 1995. These CHI, later changed in form to micro insurance schemes. All of these schemes provided health insurance to the small scale farmers, farm labourers, vendors and other low income earners. As a result of these schemes, India experienced a rise in pre-payment share to about 2% from 1% in a span of seven years from the year 2000 - 2007. Over the same period, the OOP expressed as a fraction of total health spending fell marginally by 3% to 89%. Bangladesh performed poorly with a marginal decline of prepayment share as a percentage of National health revenue dropping to 0% from 0.1% in the period 2000 - 2007. In Africa, several countries have had a profound experience with health insurance. In the 1970s, the health systems in Africa deteriorated due to the worsening economic crisis. Several African Countries introduced user fees in the 1980s which resulted to limited access to health services. These schemes in Africa arose in order to raise funds for health services. In Democratic Republic of Congo, provider-driven Bamwanda emerged in 1986 supported by Belgians in Bamwada district so is Mutuelle Pharmaceutique de la Sainte Famille Tounouma in Burkina Faso. Thereafter several schemes with different structures developed in West and Central Africa then later East Africa. These African CHI had external support majorly from the development partners from 1990 and majority of them were following European type CHI. Slowly governments developed an interest in the schemes and started supporting them. Several West African countries and Development partners formed a consortium called La Concertation to champion the agenda of CHI in francophone countries in 1998. In 2004 this organization had 348 CHI. By 2006 these schemes had reached 626. Majority of these schemes had less than 1000 members who were mostly from a particular social class or setting such as profession, village or neighbourhood. Due to membership of these schemes coming from same social class or setting, risk pooling was limited and there were noted high transaction costs. Senegal accounts for the CHI movement as the starting point. CHI started in a rural area but now both rural and urban exist. The CHI continues to grow in bounds and form. In 2007, a scheme for school children was launched reaching 20,000 enrolees. As a result, Senegal's prepayments not including formal sector coverage increased from 7.1% to 17.9% from 2000 – 2007. Over the same period, OOP as a percentage of private health spending dropped to 78% from 92%.

African have tried a form of insurance that can contribute towards UHC. WHO states that any pooling mechanism is good to lead a country towards attainment of UHC.

1.1.1 Overview of National Health Insurance in Developing Countries

Lagomarsino (2012) explored how nine developing countries were moving towards UHC and noted the following:

India launched both the Rashtriya Swasthya Bima Yojna (RSBY) and National Rural Health Mission (NRHM). RSBY works with private insurance and hospitals to offer health care services to the poor at a fully subsidized cost and the NRHM purpose is to provide budget support geared at improving primary health care services in public health facilities. This insurance started in 2008 has covered 142 million people including informal sector workers such as domestic workers, street vendors and construction workers. This scheme is fully funded through government revenues. India provides subsidized health services to particular groups of people in the population. RSBY finds it difficult to segregate the population into income levels to subsidize the poor. India has used the incremental approach of risk pooling – starting with a target population like formal sector and slowly expanding to enroll other target population like informal workers with intention of having one ultimate risk pool for all – poor, rich, formal, informal. The RSBY covers those below the poverty line only.

Like India, the Philippines uses a hybrid health system model financed by, formal payroll taxes, household premiums and general government revenues. The scheme is administered by the Philippines health insurance corporation scheme – PhilHealth. It also subsidizes some target population such as pregnant women and children. Despite heavily relying on government taxes to fund the health system, the Philippines has attempted to collect the voluntary household premium. Voluntary household contribution accounts for 6% of PhilHealth's total revenue. PhilHealth has also worked hard to increase the household voluntary contribution by using technology for payment of the premium. The majority of the household payments are from informal workers who are hard to tax like the formal sector. PhilHealth incentivizes microfinance institutions and community based organizations to enroll their members to PhilHealth. Philippine has followed a single pool strategy modelled as a one umbrella risk pool with cross-subsidies among various income levels. This suggests that the movement is towards larger and few risk pools. Once revenues have been pooled, the Philippines seems to move toward the demand-side

purchasing model. For the last decades, there have been efforts to strengthen purchasing mechanisms. The purchases are from both public and private providers. It was also important to note that, the Philippines also maintain a supply-side purchasing model to public providers in addition to the demand side. It is important to note that PhilHealth claims to have enrolled 75% of the population into insurance.

Indonesia uses a hybrid of health system financing – Bismarck and Beveridge. It relies heavily on taxes to fund the system while offering subsidies to target population such as children and also funding is raised mainly through formal sector premiums. The funds are administered by Badan Penyelenggara Jaminan Sosial (BPJS). The body does not require copayments. The pooling of risk is conducted by pooling different health insurance programs that target different populations groups such as Government employee's schemes, formal sector workers schemes and the poor population schemes. Each program has a different source of revenue, benefits and delivery systems. However despite this fragmented kick-off, in 2011 Indonesia passed a law for merging all these programs – the BPJS.

Ghana has made a stride towards household premiums besides the general government taxes and formal payroll contributions. The Country has a National Scheme, the National Health Insurance Scheme (NHIS). It employs the hybrid health financing model. The household revenue collection targets informal sector workers. The report noted that the uptake has been moderate. Ghana utilized its community-based insurance schemes that existed to create a national coverage system and by so doing, informal sector workers were reached. Despite their effort to reach the informal sector, the informal contribution is only less than 5% of the total revenue of NHIS. Ghana has followed a single pool model for risk pooling. Ghana collects informal premiums through district-level insurance offices.

Nigeria also has a NHIS which is funded through household premium, general government tax, formal payroll deductions, and donor funding. Nigeria also gets some funding through debt relief programs to fund several coverage program for pregnant women and children. To boost household premiums from the informal sector, Nigeria has employed mobile phone technology to carry out enrolment including premium payments and beneficiary details. Nigeria has adopted the incremental model of pooling of risk – starting with the formal sector and increasing coverage across the population to reaching out to informal sector workers. The pool also

increases toward increasing coverage among pregnant women, children and elderly and vulnerable

Rwanda depends on funding from Donors, general government taxes, household premiums and payroll deductions. Rwanda's revenue collection allowed compulsory deduction from all citizens excluding only the poorest people. Rwanda used its fragmented Community health insurance schemes to create a national coverage systems by pooling the community schemes together into the National scheme.

From the KHHUES (2013), only 17.1% of Kenyan had some form of insurance cover for health. This means more efforts are required in Kenya to move towards UHC aspirations. Of these covered, 88.4% are under NHIF. This is purely due to mandatory deductions for those in formal employment.

To ensure the country moves towards UHC, the government must not leave the poor and the informal sector behind for few gains will be realized. The informal sector employees need to be supported to enjoy quality health care. Due to this realization, Kenya's government through NHIF started a health insurance package for the informal sector employees to bring them on board and to provide health care to them irrespective of their ability to pay for health. To be covered, an individual has to contribute six thousand Kenya shillings per year (Kes6000). This step will see more covered and increase the size of the pool which makes economic sense and at the same time bring the poor to the coverage. According to NHIF strategic plan, it plans to increase coverage to 25 million Kenyan by 2017. To attain this coverage, the major target should be informal sector workers who constitute about 80% of Kenya's labor force (Economic survey 2010 -2014, Kenya bureau of statistics) and majorly not covered currently since NHIF prioritized on formal sector employees before.

However, the uptake of the package among the targeted self-employed and informal workers has not been at the much-anticipated rate. There are many reasons as pertains to why the uptake is low such as lack of awareness of the cover, registration bureaucracy, and the cost. Sema health systems consulting (2016) study established that only 45% of the respondents had WTP of Kes500 for the NHIF Supa cover. This study included predominantly respondents who are existing members of NHIF. This may mean that carrying out a study purely on nonmembers may result in a lower WTP. According to this study, this could result in a 25% lower WTP. As the

result shows 45% of the respondent have a WTP of the current NHIF rate. NHIF never changed the rate hoping to rake in this 45%, unfortunately, this has been low. Probably because the study included current members yet to increase membership, nonmembers should be the target. This study, commissioned by NHIF when they increased the rate from kes160 to kes500 in 2008 and used by NHIF for decision making may not be applied to nonmembers in decision making and their endeavor to increase coverage.

1.1.2 Context of NHIF

From the website of National Hospital Insurance Fund (NHIF), NHIF is a Parastatal established in 1966 through an act of Parliament. Over the years due to changing health needs and situation in Kenya, the parastatal has evolved with various mandates being introduced. It is currently governed by 1998 Act 9 of parliament. The core mandate of NHIF is provision of medical insurance to Kenyan above 18 years of age and who have joined the scheme through monthly contribution of premium.

NHIF is mandated to pool resources for health care financing. Unfortunately, NHIF has consistently relied on the employed workforce for mandatory contribution ignoring the self-employed and informal workers. For formal sector workers, the contribution is mandatory and compulsory but for the informal sector, it is voluntary. To ensure the voluntary component is taken up by the targeted market, pricing models of the cover must be taken into consideration. Providing cover for Boda Boda Operators is complicated by the fact that they have low income and are at a higher risk of poor health due to their occupation. Unfortunately, pooling of risk is the core function of health insurance and UHC aspiration is to improve health status for all Kenyan. It is crucial then to develop a proper pricing models for the voluntary contribution to move the country towards attainment of UHC. It is crucial to underscore that, the size and the number of the pooled fund in a country – the bigger and fewer the funds the better the pooling of risk as opposed to having small and many pooled funds. Thus increasing the size of NHIF and reducing the many ad hoc fragmented pooling mechanisms is the sure way of improving health financing towards UHC.

1.2 Problem Statement

OOP for health care has been rising in Kenya. According to Kenya's household health utilization and expenditure survey (KHHUES, 2013), OOP accounted for 62% of total health expenditure up from 43.9% in 2007. OOP is associated with catastrophic health expenditures which put families into financial distress (WHO, 2010). OOP most affects those at the bottom of the pyramid and has extreme consequences since this group have little economic resources to cushion them from OOP. In Kenya, the bottom of the pyramid is working in the informal economy which constitutes 83% of the labor market in Kenya (Kenya Bureau of statistics, 2015). This indicates that the majority of Kenyan are at risk of catastrophic health expenditure. Pooling risk mechanisms provide a solution to reduce OOP and as a consequence the health of the population improves. Policymakers in government thus require information to develop policies that will increase uptake of pooling of risk mechanisms. Of the 17.1% Kenyan who had some form of health insurance in 2013, 88.4% were under NHIF cover. The study showed that coverage was high in urban areas at 26.6% compared to rural at 12.1%.

9.7% of Kakamega county population has some form of health insurance cover. This translates to a figure below but close to 9.7% for NHIF cover in the county. With this low health insurance coverage in the county and increasing out of pocket payments, the residents of the county are at risk of catastrophic health expenditure. Given their low level of income and the fact that their occupation is more prone to accidents and respiratory diseases, Boda Boda riders whose population is 8935 (Census report, 2009) are more on the verge of facing catastrophic health expenditures.

1.3 Research Questions

This study will answer the following:

1. What is the WTP for NHIF's Supa cover among Boda Boda operators in Kakemega County?
2. What are the key determinants influencing their choice of WTP?
3. What is the policy implication on NHIF cover for informal workers?

1.4 Objectives of the study

To estimate the WTP for NHIF Supa cover among Boda Boda operators and determine the key factors influencing their choice.

Specific objective: the specific objectives that this study intends to achieve are:

1. Estimating WTP for Boda Boda operators in Kakamega County
2. Determining factors that influence their willingness to pay
3. Establishing policy direction for pricing NHIF cover targeting Kenya's informal economy.

1.5 Significance of the study

By determining WTP among Boda Boda operators and the factors that determine their WTP, the government policymakers will have a valid set of information to use in designing a premium amount – pricing decision -that is acceptable by the Boda Boda operators. Low-income earners like Boda Boda operators are price sensitive and thus a higher pricing mismatch (even with a small amount) from that amount they consider sufficient for premium, causes them not to purchase health insurance. Determining WTP thus provides a figure that is generally accepted among the Boda Boda operators and thus reducing the possibility of them refusing to purchase health cover designed specifically for them. With this average WTP, the government can provide health insurance subsidies programs to cover for those who cannot afford the premium that has been determined to cover costs involved if is higher than the estimated WTP.

The second part of the study identifies those determinants that influenced their WTP. By understanding these factors, policymakers will be in a position to design a health insurance product and policies that better mirror their determinants so as to ensure sustained uptake of the cover by the Boda Boda operators over time. This will limit dropping out of the cover since policymakers can use the major determinants of WTP in designing both the cover and the policies that govern the cover such as payment methods, timing of payments, frequency of payments, social mobilization strategies for registration among others. The information will also create an understanding of designing advocacy campaigns for enrollment and designing a benefits package that will lead to increased uptake of the cover.

Subsidies design centered on WTP and its determinants will leads to a sustained and increased uptake of the NHIF cover among Boda Boda operators in Kakamega County thus increasing health insurance coverage. This will contribute toward the achievement of universal health coverage.

CHAPTER TWO: REVIEW OF THE LITERATURE

2.1 Introduction

This section presents theoretical Framework and empirical literature relating to factors affecting health insurance and willingness to pay determination

2.2 Theoretical Framework

In economics, consumer theory assumes perfect information which implies certainty. With certainty assumed, consumers are expected to make rational decisions that maximize utility. A health insurance cover is assumed to be a normal good whose price effect on demand is inversely related. Factors such as taste and preferences in health insurance concern things to do with the education status, the awareness created and understood and other social factors. These factors influence health insurance demand through tastes and preferences. However, health economics theory asserts that there is uncertainty in one's health status. Future health status is unknown for individuals and thus consumer theory as is does not really answer the questions around health insurance demand due to uncertainty because consumer theory assumes certainty.

2.2.1 Uncertainty and demand for health insurance

According to Koc (2004), uncertainty exists in the health care markets. This can be seen in success of treatment and in the occurrence of diseases in that no one can tell when he/she will be unwell as well as if the treatment being administered will be successful. As a result, individual's demand for health care services can be said to be random hence uncertain. The implication is that the cost paid by individual to access treatment or health services is a random deduction from his/her income. To protect their income from these random deductions, individuals demand for goods and services that can offset such uncertain deduction. They therefore enter into insurance contracts by paying a certain premium to cover their health needs in case they fall ill. Such individuals entering into insurance contracts are not selected randomly but factors related to individual's health may influence the individual's decision to sign the contract. According to Koc (2004), changes in risks that influence the future health state of an individual affects the individual's health insurance demand.

The model specifies individual's behaviors relevant to insurance decisions and health care. The study made the following assumptions: Individual follow two period planning horizons, period zero and one. At time zero, the individual has exogenously determined income Y and knows his/her health state s_0 . The individual chooses health insurance σ at time zero. In period zero, health state in time one, s_1 , is unknown. The model further assumes that an increase in health state, s , is an increase in health stock. The individual time zero budget constraint is represented by:

$Y = Y' + R(\sigma)$, where $R(\sigma)$ represents insurance premium and Y' is the income after paying premium. At the start of period one, the individual is now aware of his new health status and uses Y' to purchase consumption goods and health care services/goods.

The individual's time one budget constraints is now $Y' = p_g C + \sigma p_k m$, where C is Consumption goods whose price is p_g . p_k is the price of health care, m .

The individual utility function is assumed to be continuous bounded and concave and is represented by:

$$U = U(c, H(m,s), \alpha)$$

With $U_1, U_2 > 0$ and $U_{11}, U_{22} < 0$. H is a production function for health that determines the health produced with input m in state s . α is an ordinal risk aversion parameter. It is assumed that an increase in α represents an increase in aversion for risk.

According to this model, the choice of health insurance, σ , depends on health state, s , the individual then predicts his/her health care requirements based on his/her prediction about health status in period one. The model assumes the expected future period's health status, s , is based on current period health state, s_0 . This expectation about the future health state is depicted by probability distribution $F(s/s_0)$. The allocation problem to solve is now the maximization of utility derived from health utilization and consumption of goods and services subject to the two periods budget constraints.

Model conclusion

The model concludes that an improvement of health status decreases the risk of spending an individual's income on seeking health care services and thus leads to a reduction in health

insurance demand. The study analysis observed that an improvement in pre-treatment health led to reduction in the demand for health insurance. The results supports the economics of information signaling and asymmetric information in that the results observed from this model show that low risk consumers have low insurance demand and high risk consumers have high demand for health insurance. The model results regarding the effects of uncertainty found out that the demand for insurance increases in response to increase in risk. Finally, an increase in risk aversion is increases expenditure risk. With increase in expenditure risk, individuals now seek more health insurance cover.

This theory brings out uncertainty effects in health insurance and to a greater extent brings out factors such as uncertainty in treatment, health status, income as factors that determine how individuals choose a health insurance policy. Uncertainty in treatment can also be thought of as the quality of treatment/health service that is a factor in determining health insurance. The theory provides some information on uncertainty in health. Spending on health in the future is seen as expenditure whose risk is dependent on current health status and as current health status remains good or improves, the expenditure risk decreases and this reducing health insurance uptake. Though the model is good in explaining uncertainty, it falls short of explaining in an exact manner how the uncertainty affects WTP.

2.2.2 Demand for health insurance by Nyman

Nyman (2003) new theory of demand for health insurance argues that an individual acquires an insurance for health care in order to obtain an income transfer from the healthy individuals in the pool if she/he were to fall ill. This implies there is a form of risk pooling and subsequent benefits that individual obtains once insured. According to Nyman (2003) the transfer of income is from the healthy covered individuals to individuals who are ill and now accessing healthcare under the cover. This obtained transfer of income allows the ill individual to consume more health care good and services and also other consumer goods and services than she/he would not have consumed if she was not under the pool of insured. The transfer of income further allows the sick individual to access more specialized medical care that would have been unaffordable without the cover. According to Nyman, this income transfer is achieved because payments made by the insurance company on behalf of the insured reduces the absolute medical cost for the insured when ill. Due to these reasons, the access to medical care afforded through health insurance makes the health insurance more valuable to the consumer. As individuals consume more medical care due to this price reduction, the overall welfare improves. This may also results to moral hazard, where individuals consume health care service that may not have been required. Nevertheless the efficient portion of the additional medical care dominates the moral hazard portions resulting to overall conclusion that welfare increases. In this new theory, risk preferences are considered extraneous and that if they are introduced, they would reduce the demand for health insurance. This is so because additional income when ill generates additional medical expenditure. If medical expenditure with health insurance is more than medical expenditure without insurance, then insurance could not result in certainty. Finally, the theory also states that the purchase of health insurance constitutes a quid pro quo transaction: the insurance premium when healthy is like an exchange for an income transfer when sick and thus voluntarily purchasing of insurance makes the consumer better off.

This theory notes that low income and availability of government free health care for some conditions and charity mostly explain why the majority of people remain uninsured. The theory concludes by looking at policy implication and suggests that rather than reducing the quantity of health care as conventional theories suggest, it is advisable to reduce price instead.

The theory has brought out some factors that might determine WTP such as income, a package of care, availability of free government health services and premium. The theory opens up for this study to examine if some of the factors raised really determine WTP for health insurance for Boda Boda operators.

2.3 Empirical literature review

Tegur et.al, (2016) study examined why informal workers in Indonesia were not participating in the Indonesia health insurance scheme. Observing 400 participants and using triple bounded – dichotomies- choice contingent valuation method to observe the WTP, found out that 70% of the respondents preferred to pay a lower premium than the one that was existing then. Using linear regression they established that availability of hospital, insurance literacy, size of family, and the experience of being an inpatient or outpatient, the sex of the head of family, income and accessibility to the internet are highly correlated to the likelihood of informal worker joining a health insurance scheme. This study was conducted in Indonesia and thus it is crucial also to investigate the same for Boda Boda operators in Kenya so as to establish the core factors that determine WTP as well as their WTP. The study also used contingent valuation method and regression, methods to be also used in this study.

Kukla et.al, (2015) in their study looking at the insurance among the Nairobi County informal settlements, employed a focused group discussion and household survey and analyzed the data using linear regression models and found out that this population believed that insurance for health is for the rich and those in formal employment. They also showed WTP of 200-500 per month and to them, the cost was the significant barrier to health insurance. This study cannot be generalized to other populations like Kakamega county Boda Boda operators. Also using focus group discussion to estimate WTP may not give good estimates. Contingent valuation method has strong theoretical underpinning due to its use of a prototype of the good/service being valued hence better than focus group discussion.

Atinga et.al, (2015) collected cross-sectional data from 600 respondents who resided in slums in Accra, Ghana, who had dropped out of health insurance. Atinga used descriptive statistics and multivariate logistic regression models. Non-affordability of the premium was the main reason for leaving the insurance. This was followed by respondents having few illness episodes, the package

of care being limited and health facilities offering poor quality of service. Respondents who had low levels of income mostly reported premium affordability as the major reason for dropping out while among younger respondents, few illness episodes was a common reason so is to those working in the informal economy and those with a higher level of education. This study points out the factors that affect the health insurance up take from the point of view of reasons for drop out. Though the study doesn't estimate WTP, the premium as a factor brings the aspect WTP in the sense that if taken into consideration in pricing, it could lower the dropout rate. Atinga study also mirrors the theory on uncertainty in that it talks of rare illness episodes is similar to pretreatment health being better and hence low uptake of insurance.

Timothy (2015) while studied the factors influencing uptake of NHIF cover among the informal economy workers and found out that female enrolled on high numbers than men, the age of the participant influenced the uptake as those who were aged above 46 years and above had a higher enrolment, marital status – married had higher enrolment than those not married, level of education had significant influence on enrollment. Cost of premium, benefits package and methods of premium payment also influenced uptake. He used a descriptive study design. This study brings out premium as a factor of uptake which to my study is closely related to WTP and also study intends to estimate.

Raghavan et.al, (2014) in their study of acceptability and WTP for community based health insurance found a WTP of USD 27 per month and that this amount was influenced by design of health insurance, quality of provider services and alternative source of financial support. They used the contingent valuation method and linear regression. This study used the methods of analysis that my study will use. It thus contributes to the understanding that contingent valuation and regression will give plausible results in Kenya. This study's weakness is that its findings cannot be generalized.

Shafie et.al, (2013) in their research on WTP for voluntary community-based health insurance in the state of Penang, Malaysia found out that 63% of the sample interviewee were willing to participate in the community health insurance at a rate of inte\$ 114.8 per month per household. The WTP found was determined by ethnicity, level of education, household monthly income, the presence of chronic diseases and the presence of private insurance coverage. The study used a

contingent valuation method. Though this study gives finding relevant to my study, it was not conducted in Kenya.

Mulupi et.al, (2013) explored a study of perception and understanding of insurance during the period when the government of Kenya was planning to roll out social health insurance. In their study they established that there was high awareness about insurance among the respondents, there was perception that public health system offers poor quality services and that respondent preferred a package that is comprehensive with no copayments. Data collection methods included a cross-sectional household survey and focus group discussions. This study points out some variables that are relevant in my study.

Kimani et.al, (2012) while using data from Health and Demographic Surveillance System for Nairobi concluded that 89% of the sample respondents did not have any form of insurance for healthcare and that informal sector employees are less likely to take up NHIF than formal sector workers. Females and those who were in some form of the union such as marriage or cohabitation were more likely to take NHIF. The study used regression analysis. This study underscore the importance of my study in the sense that the targeted study subjects are assumed to have low insurance cover.

Donfouet et.al, (2011) studied factors influencing WTP prepayment schemes in rural Cameroon. Using a contingent valuation method they established that rural Cameroonians were willing to pay USD 2.15. The WTP was determined by age, religion, profession, insurance knowledge, awareness, disposable income and involvement in associations.

Wright et.al, (2009) looked at WTP for health insurance, an analysis of the potential market in Namibia. Using double bounded contingent valuation, established that Namibians had a WTP of NAD 48 per month to insure about 3.2 individuals in a household. Those Respondents who were in the poorest quartile would pay up to 11.4% of their income. This study did not consider the factors that determined their WTP.

Onwujekwe et.al, (2009) explored WTP for community-based health insurance in Nigeria and found out that less than 40% of those who participated in the study were willing to contribute. 7% of rural respondents (dwellers) had a monthly WTP of USD 1.7 and the urban community had a

WTP of USD 2.9. Male and highly educated respondents reported had higher WTP compared to females and less educated people. This study cannot be generalized outside Nigeria.

Barnighausen et.al, (2007) in their study of WTP for social health insurance among informal economy workers in Wuhan, China found out that on average the workers had a WTP of 30 Renminbi for social health insurance. They used contingent valuation methods. The study did not determine the factors influencing the WTP.

Mathauer et.al, (2007) explored the demand for health insurance among the informal workers and concluded that lack of knowledge about NHIF is the most critical barrier to enrolment, its enrolment options, and process and ability to pay were positively related to lack of uptake. But generally, the informal sector workers were interested to join a scheme. This study used a focused group discussion to collect data. This study did not estimate the WTP but pointed out that the workers were willing to pay. My study will bridge this gap by determining how much WTP is.

Kirigia et.al, (2005) looked at health insurance determinants among South African women and found out that age, residence, education, marriage and environment rating were all statistically significant determinants of insurance ownership. Their study did not estimate WTP but it gave crucial factors that determine insurance ownership.

Kwadwo et.al, (1997) in their study of WTP for health insurance in the informal economy in Ghana, used a contingent valuation method and established that 63% of the respondents were willing to pay USD 3.03 per month for a household of five persons. They also used the probit model to determine the factors that influenced this WTP. They noted that the level of WTP was determined by dependency ratio, income level, difficulties in paying for health care, sex, level of education and health care spending. Their study brings out WTP and its determinants only that is not generalizable in Kenyan context and also was for the informal sector as a whole not a group like Boda Boda operators.

2.4 Overview of literature review

As noted in the review of the literature, the ability to pay, design of package, knowledge, age, marital status, education, enrolment options, area of residence, environmental rating positively determine health insurance. Onwujekwe et.al, (2009) found out that WTP was determined by

residence, education, sex and Barnighausen et.al, (2007), found out that informal sector workers had WTP of 30 Renminbi which was influenced by the stated factors.

Although there is sound literature on WTP and determinants of health insurance uptake, there has never been a study in Kenya on record so far that estimate WTP and the factors influencing WTP. Most of the studies look at factors influencing demand for health insurance only or just WTP for health insurance. Also, there is no known literature that focusses only on Boda Boda operators. This study will, first estimate WTP among Boda Boda operator then in the second part, examine the factors that have influenced their WTP using both contingent valuation method and descriptive statistics in the first part and linear regression in the second part.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

The study has two parts: Estimation of WTP and determinants of WTP. This chapter discusses the theory of contingent valuation method, the conceptual framework for estimation of WTP using contingent valuation method, estimation of WTP method, the model specification for determinants of WTP. Thereafter, a brief discussion of data sources and types.

The first part involves estimating the WTP for a sample of Boda Boda operators using contingent valuation methods and estimating the average WTP using descriptive statistics. The second part involves using the linear regression equation to determine the variables that influenced this WTP for each of the respondents. This model thus satisfies the study objective: To estimate WTP and its determinants.

3.2 The contingent valuation method

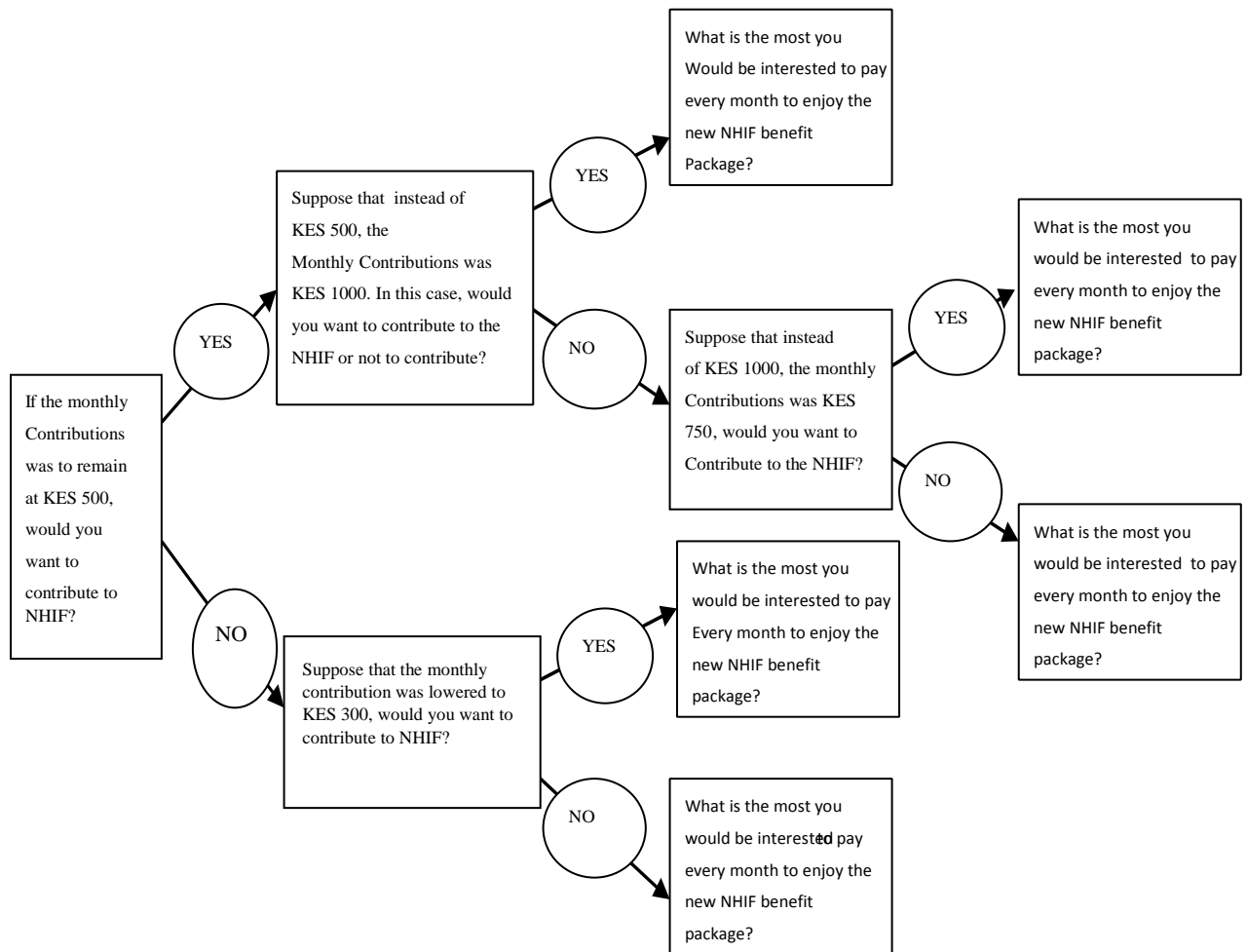
According to theory, contingent valuation methods is a way of estimating a monetary value of goods and services that do not have market determined values. (Bateman et.al, 2004). It is a stated preference approach for eliciting economic values. It assumes that an individual has a WTP for a good or service even though he doesn't directly use it. They assert that contingent valuation methods can derive the WTP. Contingent valuation methods infer the value of a good or services by asking the individual how much they are interested in paying instead of observing the same from the market prices determined by the law of demand and supply. According to Carson et.al, (2005), contingent valuation is able to measure the value of a good and or service even if someone will not use it.

Contingent valuation methods require, for it to be successful, the exact definition of the good/service, the method of payment and how the good/service will be provided. Contingent valuation method has a theoretical underpinning in that it gives the preferences of the respondent. According to Bateman et.al, 2004, one limitation of contingent valuation is a cognitive limitation to stating preferences (Individuals may not understand complex goods and services which may hinder valuation). However, this can be overcome by providing and ensuring a good description is well explained to respondents. Another limitation of contingent valuation is

based on the types of questions commonly used – yes and no type questions. This may lead to ‘yea saying’. This may be caused by respondents wanting to please the interviewer by saying yes when the correct response is no. The open-ended question is the solution to yea saying as opposed to the closed-ended question in contingent valuation.

3.3 Graphical representation of conceptual framework using contingent valuation method

Figure 3.1



3.5 Estimation of WTP using contingent valuation method

Using the contingent valuation model, the NHIF cover package for informal sector workers was introduced to Boda Boda operators and were asked how much they were interested to pay every month in order to get healthcare services through the cover. The respondent was presented with a price (NHIF price of Kes500) which was increased every time the respondent accepts and was reduced every time the respondent rejects the price.

In this study, as depicted in the conceptual framework diagram above, the participant was asked a question starting from the current NHIF rate of Kes 500 per month. Each time the respondent rejects, the amount was lowered to Kes300 until the respondent either accepted the price or ended up giving his price. The accepted price was recorded as WTP for that respondent. If the respondent gives, from the reference point of Kes500, a higher WTP, the amount was increased to Kes1000 until that respondent reached the maximum amount. If he rejected the Kes1000, the amount was lowered until WTP was determined. NHIF Supa cover was introduced to the respondent but its price was not shown – in other word the reference point of Kes500 was not specified as the current NHIF price to avoid biases in estimation.

After each respondent's WTP was recorded, each respondent was presented with a set of questions that relates to factors that affect WTP he has determined. These factors, obtained from literature, were: Income, marital status, education, sex, age, residence, number of people in the household, previous month expenditure, package benefit, Quality of service.

3.6 Determinants of WTP

To establish the relationship between WTP and its factors, the observed WTP for each respondent was the dependent variable in the ordinary least square equation. The independent variables were the hypothesized variables that affect willingness to pay as per literature as elaborated in the table below. In the regression equation, as stated below, X represent hypothesized variables affecting WTP. The b_i 's are the coefficients of each of the variable and 'a' is slope coefficient and ϵ - error term.

$$\text{WTP} = a + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_nx_n + \epsilon$$

Definition of variables

Table 3.1

Variable	Explanation	Measurement	Sign (source – Literature review)
Dependent variable WTP	The amount each responded is willing to pay for the cover	Continuous variable	
Independent variables			
Total number of dependents	The members of a household in number	Quantitative continuous variable	Higher number of household members will have a higher WTP (+)
Age of respondent (AGE)	How old the respondent is in years	Quantitative continuous number	The older the people, the higher the WTP (+)
Sex	Male / female	1=male 0=female	Females will be more willing to pay than males
Level of Education	Whether the respondent had any education	1=Primary 2=secondary 3=Tertiary	Education is expected to increase WTP
Total household spending or expenditure (EXP)	Previous month expenditure before interview	Continuous quantitative measure	The higher the expenditure the lower the willingness to pay (-)
Marital status (MAR)	Whether the respondent is married or not	0 = single 1= married	Married have higher WTP

Residence (RES)	Area of residence	Rural - 1 Peri urban -2 Urban – 3	unknown
Income (Y)	Previous Month income	Continuous variable	We expect a positive effect WTP (+)
Quality of service (QL)	The perceived quality of service at the health facility	Good = 1 Average = 2 Poor - 3	The better the quality of service, the higher the WTP
Benefit package (BP)	The NHIF package of care for Informal sector	Comprehensive – 1 Not comprehensive -0	

3.7 Source of Data

This section looks at the type of data and diagnostic testing.

3.8 Data source and type

This study used primary data that was collected from Boda Boda operators in Kakamega County using a questionnaire that was administered to each of the 393 study participants.

3.9 Sampling

This section discusses the sampling frame, sampling method, and data collection method and sample size.

3.10 Sampling Frame

The sampling frame is the total estimated population of bodaboda operators in Kakamega county which is 8935 (Census report, 1999).

3.11 Sampling method

The site for data collection in the County was selected using stratified sampling first then random selection. Stratified sampling classified county sites into urban, peri-urban and rural as there was a need to have a sample representative of all the economic zones of the County. The exact site for data collection was then selected randomly from the stratified classes. Kakamega - urban, Lurambi - semi-urban and Nyaporo – rural were selected randomly from each class.

3.12 Sample size

In Kakamega, there are an estimated 8935 Boda Boda motorcycles. (Census report 2009). Using the formula for calculating a sample by Yamane (1967) based on proportion at 95% confidence level and 5% precision error we got a sample of 383.

$$n = N/1+N(e)^2 = 8935/1+8935(0.05)^2 = 383 \text{ (approximated), } e = \text{precision error.}$$

The sample was selected randomly. The site allocation is done based on the fact that urban is more populated, then peri-urban then rural (Census, 2009). The proportion of people living in Kakamega town is 50% of the Kakamega district population and it reduces to 20% in rural areas across the urban-rural spectrum (Census, 2009). This resulted in the distribution of sample as follows.

Kakamega town 50% – 192

Lurambi - 30% – 115

Nyaporo 20% – 76

Total - 383

3.13 Inclusion/exclusion Criteria

The sample included only Boda Boda riders in the sampled areas who have operated the business for at least six months. The six month cut off is due to understanding that such operators have faced the business challenges including the risk involved and thus can determine WTP. Also, they have had a considerable amount of time of income and expenditure and thus able to gauge and estimate their WTP as well as factors.

3.14 Why Kakamega County?

9.7% of Kakamega county population has some form of insurance cover. This translates to a figure below 9.7% for NHIF cover in the county. Kakamega has out of pocket expenditure per capita per year of Ksh 985 for outpatient services (KHHUES, 2013). This exposes Kakamega residents to possible catastrophic health expenditure. Going by the target population, Boda Boda riders, they become more exposed to catastrophic health expenditures given their low level of income.

Another reason for choosing Kakamega County is to augment the ongoing health systems research that is being conducted by the University Research Chair for Health system research (URC). This, at the end of the research, we will have results covering most areas of the health system such as clinical, behavioural, health economics and financing

3.15 Data clerks training and Pretesting of the questionnaire

Data clerks were trained before data collection. Ten data clerks and one supervisor were trained on the elicitation of preferences using contingent valuation method process and the administration of the questionnaire. Thereafter, the pretesting of the questionnaire was done and data collected analyzed using Stata to determine the efficiency of the questionnaire to deliver expected results. During pretesting, 40 questionnaires were administered. Pretesting proved that the questionnaire was adequate and efficient in collecting the required data.

3.16 Data collection

Using a questionnaire, each respondent was taken through the contingent valuation to state his WTP after the NHIF cover was fully explained to him. After this, the questionnaire contained questions that had hypothesized variables that determine WTP. The respondent was taken through the questionnaire and his response recorded. The success rate of 101% was recorded.

3.17 Diagnostic Testing

The following diagnostic testing was carried out to establish the fitness of the data to carry out regression analysis.

3.18 Multicollinearity

Multicollinearity refers to existence of a very high association or interrelation among the independent variables. Presence of multicollinearity in the research data may renders the statistical inferences unreliable. It may be caused by inaccurately using a dummy variables, by the inclusion of a variable in the model which is computed from other variables in the data see. In a nutshell, it arises when the explanatory variables are highly correlated to each other. By removing highly correlated predictors in the study and use of partial least square regression or principle components analysis, this will correct the multicollinearity.

3.19 Normality

Linear regression assumption assumes that the data set is normally distributed (a bell-shaped curve). A linear regression model cannot be used to analyse a data set that is not normally distributed. Most tests are also based on the normal distribution of data set and hence it will make it difficult to test for statistical inference. To correct this, if present, we use nonparametric methods.

3.20 Heteroscedasticity

This occurs if the values of the error term differ across the independent variables. It is caused by the presence of outliers in the data set. The consequences of heteroscedasticity are that it causes

statistical inference to be ineffective. If present, it can be corrected by the use of robust standard errors in inference testing.

3.21 Model Misspecification

This is a test to establish if there is no omitted variable in the model. It arises when relevant model variables are excluded from the model. If present, use theory to gather more relevant variables to include in the model.

CHAPTER FOUR: DATA ANALYSIS AND RESULTS

4.1 Introduction

The chapter presents the descriptive statistics of the study data and important findings of the research. The chapter also lays the foundation for discussion.

4.2 Descriptive Statistics Analysis

The results shows that on average, the respondents were willing to pay Kshs 393.7913 per month, where the minimum amount was Kshs 100 and the maximum Kshs 800. Also, all the respondents were male aged 30 years with the minimum age of 18 years and the maximum age of 59 years, and most of them had 5 dependents each. Most of the respondents were found to have attained some level of education, with some of them having attended primary and secondary school and the minority had attained tertiary education level. The most of the respondents were married, and live in rural areas, with a mean monthly Total Expenditure of Ksh 7,864.377 and a mean monthly Total Income of Ksh 14,488.78. Most of the respondents said that they received services of good quality and comprehensive Benefits Package. The results are shown below.

Table 4.1 Descriptive Statistics results

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Monthly Willingness to Pay (Kshs)	393	393.7913	125.5849	100	800
Number of Dependents	393	5.3690	3.0370	0	20
Age in Years	393	30.7000	6.7900	18	59
Sex (1= Male, 0 otherwise)	393	1	0	1	1
No education (1= No education, 0 otherwise)	393	0.1221	0.3279	0	1
Primary (1= Primary education, 0 = otherwise)	393	0.4173	0.4937	0	1
Secondary (1= Secondary education, 0 = otherwise)	393	0.3868	0.4876	0	1

Tertiary (1= Tertiary education, 0 = otherwise)	393	0.0738	0.2618	0	1
Marital Status (0= Single, 1= married)	393	0.8448	0.3626	0	1
Rural (1=rural, 0 = otherwise)	393	0.5165	0.5004	0	1
Peri-urban (1= Peri-urban, 0 = otherwise)	393	0.2723	0.4457	0	1
Urban (1= Urban, 0 = otherwise)	393	0.2112	0.4087	0	1
Monthly Total Expenditure (Kshs)	393	7,864.377	3,714.842	400	20,000
Monthly Total Income (Kshs)	392	14,488.78	7,006.835	4,000	90,000
Quality of Service (0= Poor, 1=Good)	393	0.9695	0.1723	0	1
Benefits Package (0= Not comprehensive, 1= Comprehensive)	393	0.8957	0.3061	0	1

Frequency distribution Table of Willingness to Pay (WTP)

Table 4.2

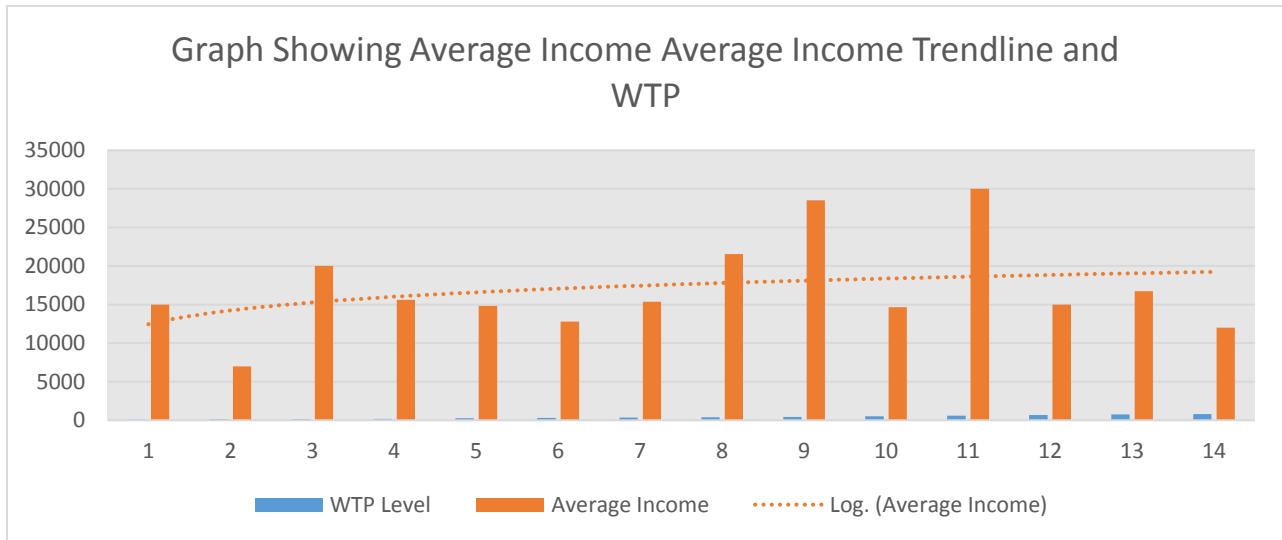
WTP Range	Observations	Cumulative distribution	% Frequency Distribution	% Cumulative Distribution
100 - 200	28	28	7%	7%
201 - 300	157	185	40%	47%
301 - 400	30	215	8%	55%
401 - 500	165	380	42%	97%
501 - 600	1	381	0%	97%
601 - 700	1	382	0%	97%
701 - 800	11	393	3%	100%
Sum	393		100%	

The table highlights the distribution of respondents against a range of WTP. This frequency distribution table shows that more respondents recorded a WTP of Kes401 – Kes500 followed by

Kes201 – Kes300. Cumulatively, 97% of the respondents had a WTP of between Kes100 – Kes500 and only 3% had WTP of between Kes501 – Kes800.

WTP and Level of Income

Figure 4.1



The trend line shows that as the level of income increases, the WTP increases but marginally. This is consistent with economic theory.

4.3 Diagnostic Test Results

4.3.0 Correlation matrix

Table 4.3: Table showing the variables correlations

	Dependent	Age	Primary	Secondary	Tertiary	Marital Status	Peri-urban	Urban	Monthly Income	Quality of service	Benefits Package
Dependent	1.0000										
Age	0.4354	1.0000									
Primary	0.0400	-0.0467	1.0000								
Secondary	-0.0857	-0.0024	-0.6713	1.0000							
Tertiary	-0.0157	0.0451	-0.2397	-0.2237	1.0000						
Marital status	0.4079	0.4928	-0.1067	0.1229	0.0138	1.0000					
Peri-urban	-0.0191	-0.1011	-0.0205	0.0092	0.0018	-0.1003	1.0000				
Urban	-0.1028	-0.0916	-0.0675	0.0827	0.0224	0.0305	-0.3151	1.0000			
Monthly Income	0.1906	0.0611	-0.1412	0.0885	0.0986	0.0395	0.0877	-0.0169	1.0000		
Quality of service	0.1440	0.1691	0.0006	0.0798	0.0502	0.2505	-0.0906	0.0914	0.0897	1.0000	
Benefits package	0.1191	0.0983	-0.0819	0.1335	0.0648	0.1522	0.0410	-0.0702	0.1769	0.4716	1.0000

The table above illustrates the correlation between the variables in the study. The correlation between each variable to itself is one as shown in the table. From the table several correlation can be noted. For example, there is a negative correlation between benefits package and primary level of education of -0.0819 and a positive correlation between age and monthly income of 0.0611.

4.3.1 Multicollinearity

Variance Inflation Factor (VIF) was the test used for multicollinearity. The VIF of all independent variables was less than 5 indicating that the data did not suffer from severe multicollinearity. This is shown below.

Table 4. 4: Results of Multicollinearity

Variable	VIF	1/VIF
Secondary (1=Secondary education, 0 = otherwise)	2.72	0.367385
Primary (1= Primary education, 0 = otherwise)	2.64	0.378100

Tertiary (1= Tertiary education, 0 = otherwise)	1.54	0.648670
Marital Status (0=Single, 1= married)	1.51	0.661381
Age in years	1.49	0.673081
Number of Dependents	1.42	0.703313
Quality of Service (0= Poor, 1=Good)	1.40	0.714457
Benefits Package (0= Not comprehensive, 1= Comprehensive)	1.37	0.732039
Urban (1= Urban, 0 = otherwise)	1.17	0.851238
Peri-urban (1= Peri-urban, 0 = otherwise)	1.15	0.869568
Monthly Total Income (Kshs)	1.11	0.903316

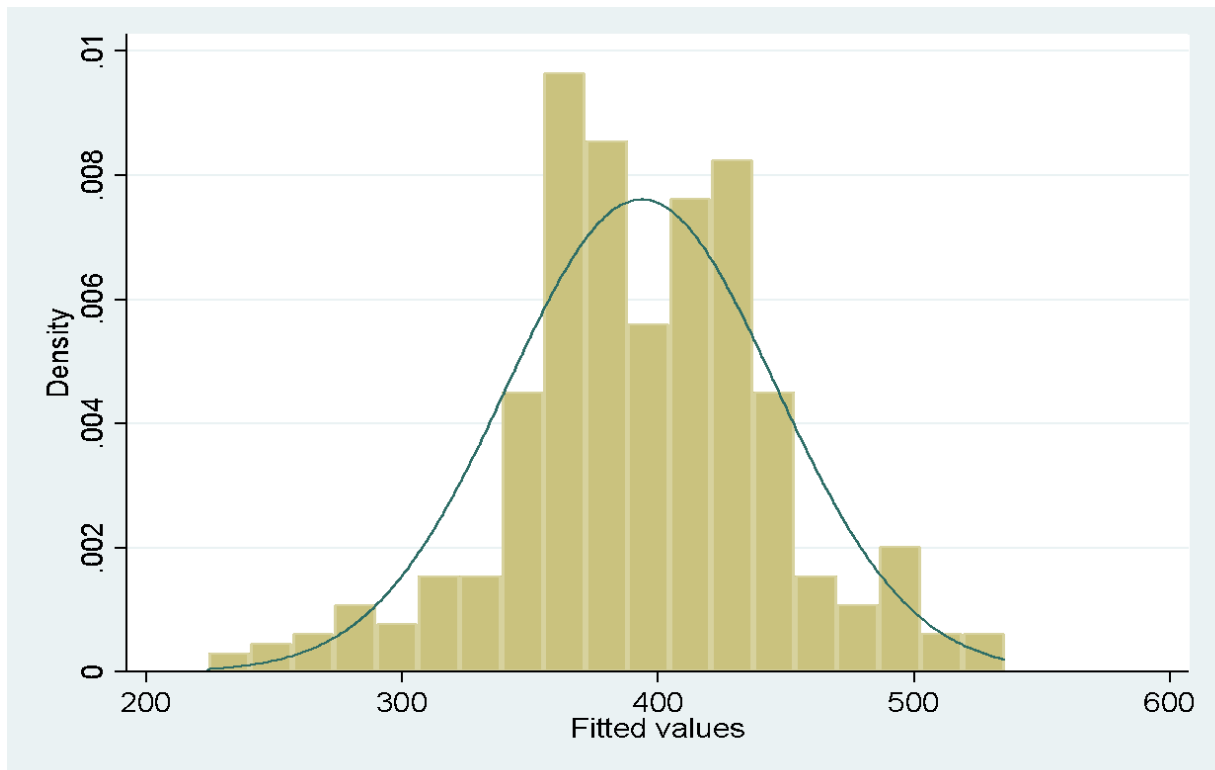
Mean VIF = 1.59

4.3.2 Normality Test

This study tested for normality of the error term using a histogram and normal curve. The results shows that the distribution of the error is bell shaped implying that it follows a normal distribution.

The results suggest that error term is normally distributed (figure 4.1).

Figure 4. 2: Normality Test



4.3.3 Heteroscedasticity

Heteroscedasticity test was done using Breusch-Pagan / Cook-Weisberg test. The results show a chi square of 10.05 with a p-value of 0.0015. The p - value was less than 0.05 suggesting the rejection of the null hypothesis. This implies that the data suffers from heteroscedasticity. The study accounted for heteroscedasticity by using robust standard errors.

Ho: Constant variance

Variables: fitted values of WTP

Chi2 (1) = 10.05

Prob > chi 2 = 0.0015

4.3.4 Model Misspecification

This study used Ramsey RESET test for omitted variables. The results show F test of 1.83 with a p-value of 0.1403 that was greater than 0.05 indicating that the study failed to reject the null hypothesis of omitted variables. This finding suggested that the model did not suffer from omitted variable bias.

Ramsey RESET test using powers of the fitted values of Willingness to Pay

Ho: Model has no omitted variables

$$F(3, 377) = 1.83$$

$$\text{Prob} > F = 0.1403$$

4.4 Regression Results

The study estimated two regression models namely, linear and log-linear model, and presented the results in table 4.3. The reason for estimating the two models is to reduce or mitigate the effect of the noted heteroscedasticity through comparison of the two model results. The results showed that the F statistic was significant for both models at 99% level indicating that jointly the explanatory variables explain the WTP. Additionally, the R square was 17% for the two models indicating that 17% of the variations in the willingness to pay are explained by the independent variables. The p-value for level of education (secondary and tertiary), marital status, monthly income and benefits package were all statistically significant implying that these variables individually determine WTP. However, number of dependents, age, residence and quality of service variables coefficients were found not to be statistically significant and thus do not individually determine WTP.

Table 4. 5: Regression Results

Variables	(1) Linear Model	(2) Log-Linear Model
Number of Dependents	-3.2644 (2.1288)	-0.0061 (0.0057)
Age in years	0.1012 (1.1683)	-0.0013 (0.0033)
Primary (1= Primary, 0 = otherwise)	18.3541 (15.6370)	0.0267 (0.0430)
Secondary (1= Secondary, 0 = otherwise)	59.9196*** (16.6958)	0.1358*** (0.0444)
Tertiary (1=Tertiary, 0 = otherwise)	127.0146*** (27.0116)	0.2993*** (0.0618)
Marital Status (0= Single, 1= married)	32.6819* (19.3094)	0.0819* (0.0489)
Peri-urban (1= Peri-urban, 0 otherwise)	14.3678 (14.1384)	0.0302 (0.0361)
Urban (1= Urban, 0 otherwise)	8.1318 (16.3498)	0.0009 (0.0446)
Monthly Total Income (Kshs)	0.0024* (0.0013)	0.0001* (0.0000)
Quality of Service (0= Poor, 1=Good)	28.5412 (28.4831)	0.0838 (0.0937)
Benefits Package (0= Not comprehensive, 1= Comprehensive)	63.0645*** (20.6839)	0.1903*** (0.0667)
Constant	215.5054*** (34.8549)	5.4952*** (0.1031)
Observations	392	392
R-squared	0.1741	0.1668
F- Statistic	9.82***	9.08***

(In parentheses are standard errors) *** p<0.01, ** p<0.05, * p<0.1

4.5 Discussion of results

Dependents

The number of dependents is not statistically significant hence this variable does not determine WTP. This is different from the findings of Tegur et.al, (2016) that family size positively influences the health insurance uptake.

Education

The primary education level was found not to determine WTP. However, Secondary and tertiary education levels both have significant effect on WTP. This is in line with the literature.

Grossman (1972) documents the important role played by education. Educated people can make better informed decision concerning insurance for healthcare. Kirigia et.al, (2005) also found similar results. The study finding agrees with the possible explanation that educated people understand health insurance and its benefits to them as individuals hence the willingness to pay more because they value the benefits that will accrue as much significant in improving their health status.

Residence

Place of residence did not have a significant effect on WTP. This finding differs with that of Onwujekwe et.al, (2009). Paying for health is not depended on residence since individuals will seek health care irrespective of place of residence.

Monthly Income

As expected and consistent with the literature, monthly income positively and significantly influenced the WTP. The results shows that a unit increase in monthly income would cause 0.0024 units increase in WTP. This finding is similar to one of Timothy (2015), Shafie et.al, (2013) and Donfouet et.al, (2011).

Marital status

Married respondents' WTP was more than those not married. This is in agreement with the literature in the sense that married people have responsibility for their wives and children. Having health insurance to cover for their family is quite important for them. The study by Timothy (2015) agrees with this finding.

Quality of service

Perceived quality of service was established to be not significant in determining WTP. This finding differs from some of the findings in literature. According to Koc (2004), a better quality of service signifies treatment success rate that can influence payment when ill. Atinga et.al, (2015) established that poor quality service caused non-payment of premium leading to insured dropping out of the insurance scheme.

Benefits package

The finding has established that WTP is determined by the comprehensiveness of the benefits package. A comprehensive benefits package increases the WTP for NHIF. This is the same results found by Atinga et.al, (2015) and Timothy (2015). According to economic theory, the more the comprehensive the package is, the more the benefits that individuals receive that maximize utility.

Age

Age did not significantly determine WTP. This is in contrary to literature. According to Grossman (1972), as one age, the stock of health reduces and that individual requires more medical care to replenish the stock. One possible reason why this study shows no significant effect may be because the population under study is all youthful with short term goals that do not go into the future.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

This section presents summary, conclusion and recommendation.

5.2 Summary

The main objective of the study was to estimate the WTP for NHIF cover among Boda Boda operators and determine the key factors influencing their WTP. The specific objectives were: estimating WTP for Boda Boda operators in Kakamega County, determining factors that influence their willingness to pay and establishing policy direction for pricing NHIF cover for informal sector workers. The study collected primary data from 392 Boda Boda operators and established that on average they had a WTP of Ksh 393 per month for NHIF Supa Cover.

The study estimated two regression models namely, linear and log-linear model. The results showed that the F statistic was significant for both models at a 99% level of significance indicating that jointly the explanatory variables explain the WTP. Additionally, the R square was 17% for the two models indicating that independent variables jointly explained 17% of the variations in WTP. The study found that education, marital status, monthly income, and benefits package significantly influenced WTP. People with secondary or tertiary education would pay more as compared to people with primary education. The study also found that married people had a high WTP than people who were not married (single). The study found that monthly income positively and significantly influenced willing to pay. Regarding the benefits of the package, people had a higher WTP for a package that is comprehensive compared to a benefits package that was not comprehensive. Age, number of dependents, residence and perceived quality of service were not statistically significant in determining WTP.

5.3 Conclusion

The study was undertaken after realizing the low uptake of the Supa Cover whose intended beneficiaries are informal sector workers in Kenya but zeroed to Boda Boda operators in Kakamega County. Non-uptake of health insurance cover by the Boda Boda operators exposes them to catastrophic health expenditure. The study thus examined what would be their WTP for this cover and possible determinants. The idea being a well-studied WTP and subsequent policy change that mirrors the WTP may increase uptake and subsequently reduce catastrophic health expenditure. The study further examined factors that influence WTP. This enhances policy formulation as it provides more insights and information regarding health-seeking behaviors for this category of informal sector workers.

The study found an average WTP of Kes 393 and that level of education, marital status, total monthly income, benefits package are statistically significant in determining WTP. The number of dependents, age, residence and quality of service were not statistically significant determinants of WTP. These findings are important in policy formulation regarding Supa Cover.

5.4 Policy Recommendations

The current health insurance coverage in Kenya at 7.1% is low. The study has established a number of policy variables that need to be implemented in order to increase the coverage. To start with, the Government of Kenya should ensure the NHIF package for informal economy is comprehensive in terms of covering most of the major health needs among this group. The package of care that is covered by the insurance should be broad and designed in a manner to include the majority of the ailments that bedevil the group. Second, the study found out that the average WTP for this group was Kes393. The current rate of Kes500 is high for this category of workers and that

given income has been found to be significant in determining WTP, the government should consider reducing the amount to 393 per month. Further the study has established that married people have a higher WTP for cover than the single people. The Government should redesign the cover to have some high premium for those married since they show significant affinity to pay more. This will serve to increase resource envelop as the government balances the revenue generation among this group. This will assist in creating a form of graduated premium as opposed to a flat rate. One statistically significant variable was level of education. Thus there is need for government to conduct mass awareness creation among this group on the importance of health insurance.

5.5 Further Research area

The study looked at the demand side of insurance for healthcare. The supply-side determinants of health insurance for informal workers gap persist. This is an area that requires further studies. The further study should look at the supply side factors that influence health insurance uptake. Specifically the behaviors of the suppliers such as government, private insurance companies and other economic consideration that may motivate the suppliers to target this category of consumers of their health insurance products.

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Addendums

1. The Research questionnaire
2. The NHIF Supa Cover for informal sector
3. The Plagiarist check results

1. The research Questionnaire

Introduction:

How are you?

My name is _____. I am a data clerk. I am collecting data for a research to determine willingness to pay for NHIF informal sector health insurance cover and the determinants of willingness to pay. This research will give information that can be used in designing NHIF policies.

I will take 20 minutes of your time. Are you willing to participate in the interview: yes/ no:

(Proceed if the responded accepts to participate)

Section two

Have you been operating boda boda for the last six months? Yes/No: _____

(if no, stop. Do not proceed)

1. Respondent characteristics

Name of the responded: _____ sex: _____ age: _____

Residence: _____ marital status: _____

- Covered by NHIF? Yes or No. Answer: _____

- or other Insurance: _____

2. NHIF Cover

Please proceed and introduce the NHIF benefit package for the informal sector workers (copy provided). Explain in details the benefits to the respondent and ensure he understands the package. Allow the respondent to ask question(s) concerning the cover if any and reply accordingly.

Questions section

1. How much are you willing to pay in order to have the NHIF benefits under supra cover? (Use the attached flow chart to elicit WTP and record final amount here).

Amount arrived at: _____

Part two: factors determining willingness to pay:

- A. What is the number of your dependents? _____

- B. What is your level of education? (1. Primary 2. secondary 3. Tertiary 4. No education).
Answer: _____
- C. How much in Kenya shillings did your family spend last month? _____
- D. Where do you reside? (1. Urban 2. Peri-urban 3. Rural). Answer: _____
- E. What was your total income last month? _____
- F. Do you feel the NHIF benefits are comprehensive or not? (1. Comprehensive 2. Not comprehensive). Answer: _____
- G. What is your perceived quality of service at NHIF selected hospitals? (1. Good 2. Average 3. Poor). Answer: _____
-

Thank you so much for your time.

Signed by interviewer: Name

2. NHIF Supa Cover for informal sector

Introduction of NHIF package to respondent

Interviewer: Please read out this section to the respondent:

The NHIF introduced a package of benefits for its members. The benefits will be paid for through voluntary monthly contributions by people who work in the informal sector. The benefits will include both outpatient and inpatient services.

For outpatient services, members will be required to select a facility from a range of public, private and faith-based organizations where they will register. They will have an opportunity to change their outpatient provider every six months. You will not have to pay any money before you access outpatient services. There is no cover limit for outpatient services that you can use

For inpatient care, members will have access to any NHIF empanelled facility and will not require to be referred from the outpatient facility. These facilities are categorized as:

- Category A** are public hospitals for which the NHIF pays the entire bill accrued
- Category B** are low-cost private hospitals and most faith-based hospitals for which the NHIF will pay all of the general medical bill, the maternity bill and some of the surgical bill. The member will have to cater for the balance themselves either from their own pocket or through additional insurance e.g. from private insurance.
- Category C** are high cost private hospitals for which the NHIF will pay a standard fee per day only. The member will have to cater for the balance themselves either from their own pocket or through additional insurance e.g. from private insurance.

A. Outpatient benefits:

- General consultation
- Diagnostics and treatment of common ailments
- Prescribed laboratory and X-ray investigation services
- Prescribed drugs administration and dispensing
- Management of chronic ailments (HIV/AIDS, diabetes, asthma, hypertension, cancer)
- Treatment of sexually transmitted diseases
- Minor surgical services
- Family planning/midwifery/antenatal & post-natal services
- Referral for specialized services
- Renal dialysis

Exclusion

- a) Cosmetic or beauty treatment and/or surgery
- b) Massage (except where certified as a necessary part of treatment following an accident or illness)
- c) Any investigation, injury, disease or illness not specified in the benefit package for the particular level.
- d) Claims arising from non-accredited health facilities and / or un- authorized referrals
- e) Treatment chiropractors, acupuncturist and herbalists, stays and/or maintenance or treatment received in nature cure clinics or similar establishment or private beds registered within a nursing home, convalescent and or rest homes or cures attached to such establishments.
- f) Infertility treatment.
- g) Vaccines other than those of KEPI
- h) Specialized Optical and Dental Services.

B. Inpatient benefits:

- Comprehensive family based cover:
 - Contract A: no co-payment
 - Contract B: co-payment for major surgery (excluding caesarean section)
 - Contract C: balance billing for amounts greater than NHIF rebate
- Comprehensive maternity cover: including caesarean section & tubal ligation (during the admission under maternity cover)
- Dialysis & surgical transplant: through a co-payment arrangement at contracted facilities
- Drug and Substance Abuse Rehabilitation Cover: at Mathare Hospital
 - a) Medicine dispensed and used in hospital
 - b) Medicine dispensed on discharge from hospital
 - c) All general medical and surgical care.
 - d) Professional/consultation fees
 - e) Surgical operations and procedures
 - f) Ward accommodation
 - g) Intensive care and high dependency units
 - h) Visits and consultation by a GP and / or Specialist (while hospitalized)
 - i) X-ray and pathology (while hospitalized)
 - j) Blood transfusion
 - k) Internal prostheses

Source: NHIF Website