

DETERMINANTS OF DEMAND FOR HEALTH INSURANCE: A CASE STUDY OF PUBLIC SERVICE EMPLOYEES IN ZIMBABWE

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ABSTRACT

The study empirically investigated factors that influence the demand for health insurance cover by the public service employees in Zimbabwe. This came in the wake of deteriorating health standards and nonparticipation in health insurance schemes on the part of most of these employees and the generality of Zimbabweans. Understanding these factors explained the reason why most public service employees are not insured. The study used the convenience and judgment sampling procedures. Open ended questionnaires were used to interview 149 government employees at the Mukwati Government offices in Harare to obtain primary data about on the demographic characteristics and perception on health insurance. Given the binary nature of Health Insurance Participation, the data presentation and analysis were done using descriptive statistics and the probit model. The regression results pointed out that premium paid, employment type, place of residence, access to information, education level and insurance quality are all significant predictors of participation in health insurance schemes. The study recommends that the Government should continuously provide health care information in learning institutions and at workplaces, so that individuals see the need to prepare for catastrophic healthcare expenses. The study argues that, for the health insurance industry to maintain greater involvement in the nation's educational achievements and productivity stimulating, they should together with relevant financial institutions provide diverse and competitive insurance packages that lure clients to them.

Keywords: - *Demand for Health, Healthcare Insurance, Zimbabwe*

1.0 INTRODUCTION

Health insurance by definition is a means of paying for some or all of the costs of health care needed by an individual, Nyman (2003). It helps protect insured persons from paying high unexpected treatment costs in the episode of sickness. The proportion of households

experiencing “catastrophic” health expenditures (medical spending that exceeds a sure threshold percentage of total or non-subsistence family unit spending) has been seen to be on the increase in Zimbabwe, especially after the rise in the prevalence of non-communicable diseases which are largely influenced by people’s lifestyles. Many Zimbabweans according to a health survey by the Demographic and Health Survey (DHS) of 2016 are said to not know they are vulnerable to or are living with such diseases as cancer or diabetes and usually get to know about this at the advanced stages of such diseases. In such circumstances many of the individuals are seen not to have financial protection and hence get to spend all they have trying to circumvent the virus which in many cases like ours leads to high consultation fees, air flights, foreign currency requirements for foreign treatment and high costs of medication. This study seeks to establish the factors that affect health insurance participation among public service employees in Zimbabwe. Public service workers primarily help determine the demand side forces of Health insurance. For any nation to implement credible policy instructions that help manage this market, they should know these participation determinants profoundly.

1.1 Relevance of the Study

Health care financing in developing countries like Zimbabwe is still characterized by the supremacy of out-of-pocket (OOP) payments and the relative lack of prepayment mechanisms such as tax and health insurance, (O’Donnell et al, 2008). Improving health status of citizens is central to the Sustainable Development Goals. However, equity and financial accessibility to health care by a majority of public service employees in Zimbabwe particularly the poorer ones is distressing and hence these employees are vulnerable to high out-of-pocket medical expenditures. In this regard the health status of our citizens is at risk.

Right through the 21st century, health insurance in Zimbabwe has been growing rapidly, when compared to its previous state before independence in 1980. However, there are a majority of civil servants who still do not possess health insurance policies. On an overall perspective the number of health insurance policy holders are still left behind compared to other nations in the SADC region, ZDHS (2017). In Harare most, public service employees have an employer supported health insurance scheme where the employer provides a proportion of the premium payment. However, besides these employees getting a subsidy from their employer the government, some employees still do not take up this supported health insurance even in the prevailing conditions of high out of pocket fees. Most are seen to attend to medical costs when needed thus the payment out-of-pocket at time of service and not beforehand. Small out-of-pocket expenses are harmless for individuals who can afford and not the poorest users. It is advisable that high cost expenses, should be covered via prepayment to steer clear of the risk of impoverishment, or of doing without the needed care Kimani et al (2012). In view of the fact that the poorer a person is, the lower is the threshold for catastrophic costs, the out-of-pocket share have to be lower in poorer countries like Zimbabwe. However, the reverse exactly occurs at low incomes, the average out-of-pocket share is high and extremely inconstant.

Over the past few years, health care costs both planned and unplanned ones which comprise of prescription drugs, dental care, caesareans, vision care and other health-related items have been spiralling out of control and of course it had led to an increase of medical expense as well. Medical costs are expected to continue increasing in the years ahead and this is confirmed as a lot of surveys have been done and almost all of them predicted that the medical costs will rise as much as 15% annually, ZDHS (2017). Medical expenses tend to affect everyone as what Chin

(2014) mentioned, medical inflation is presently at 10% yearly and predicted to be rising. Next, taking a reference of Korea, Lee (2013) found the total hospitalization treatment to be increasing by 21.76% yearly.

With knowledge of the above imperatives, a better understanding of the determinants of health insurance demand among the public service is unquestionable. This study will establish the rational why people opt out of magical insurance when the medical expenses are unaffordable. It does this by exploring issues to deal with whether civil servants are aware of and have knowledge about insurance schemes, medical costs they incur and the premiums paid to health insurance firms. This is likely to benefit other vulnerable and or excluded population groups as well as the entire society. Key policy recommendations are provided on the way forward from the findings.

2.0 LITERATURE REVIEW

2.1.0 THEORITICAL LITERATURE REVIEW

2.1.1 Grossman Health Production Model

Michael Grossman (1972) first proposed and developed this model and it is based on expected utility theory. He recognized that health care is a both a consumer good as well as an investment good. He pointed out that healthier people are happier since their welfare is improved and also health care enhances the quality of human capital. Human productivity is as well improved since when an individual invests in health care hence the number of healthy days increases for other productive activities. Grossman's model investigates on how age, education, health status and income influence the production of health through the demand for health capital. He further outlines specific features that distinguish this kind of demand from other traditional demand approaches. The first is that, people want health hence they demand medical care inputs to produce it. Secondly, health is not passively purchased from markets but rather it is produced after combining time with purchased medical inputs. The third feature is that, health is a capital good implying that it does not depreciate instantly.

In his analysis of human capital theory, he suggested that the consumer apply health inputs as investment in health capital which later not only improves consumer's health but also maintains his stock of capital. The stock of health may grow, remain constant or decline slowly with age or more rapidly with illness or injury (Grossman, 2001). Grossman maintains that the final goal of a consumer is health output demonstrated by healthy productive days. This final goal dictates how much time and other resources for example money to invest in health stock in order to purchase inputs like medical care. Sometimes these inputs may be unaffordable in case of illness. This leads us to appreciate the role of health insurance in enhancing purchase and consumption of more health care. In the model it is pointed out that health insurance is a derived demand of health. The decision to purchase health insurance is further explained by the utility theory. Individuals in this case the public service employees, will compare the benefits of purchasing insurance with health care expenditures without insurance, given their risk preference motivated by both social and economic shocks. If the benefits of health insurance are greater than the cost out-of-pocket payments, the household will purchase the plan. The benefits of health insurance are revealed only when individuals become ill thus, their knowledge and forecast of future health conditions are expected to have a significant impact on their decision to purchase health insurance.

Therefore, when expectation of illness is highly associated health care a cost, the public service is more likely to purchase health insurance. The decision to purchase health insurance also depends on an individual's reactions to risk for example increasing risk aversion also increases the probability of purchasing insurance as supported by this model and Nyman's access theory. In this model the purchase of health insurance as the dependent variable is related to various independent variables. Several variables have been found to have an influence in households' or individuals' decisions to purchase health insurance. These include access to health care services, quality of services in health care centres, health care expenditures, households' or individuals' income level, education level, age, family size, and number of adults in households. From this assertion, this study came up with the determinants of health insurance in Zimbabwe.

2.2.0 EMPIRICAL LITERATURE REVIEW

In Kenya, in the month of May 2013 Isabela Kiplagat carried out a research on the determinants of health insurance choice among the Kenyans. While utilizing the 2008-2009 Kenya Demographic Health Survey (KDHS) data, a multinomial logit model is estimated. She found out that wealth index, employment status, education level and household size are important determinants of health insurance ownership and choice. Similarly, lack of awareness stops many from enrolling in any arrangement of health insurance scheme. In a study by Sandra Hopkins (2014), she found out that the proportion of the Australian population with private health insurance had declined considerably. She went on to explore a number of important issues in the demand for private health insurance in Australia. The socio-economic variables which influence demand were examined using a binary logit model and a number of simulations were performed to highlight the influence and relative importance of various characteristics such as age, income, health status and geographical location on demand. First, evidence was that of the presence of adverse selection in the private health insurance pool, second, the notion of the wealthy uninsured was refuted, and finally it was confirmed that there were significant interstate differences in the demand for private health insurance. Awiti in 2014, carried out a study on poverty and healthcare demand in Kenya. He used a multinomial probit model and used data from a survey that was carried out in 2005-2006 on the effects of poverty on healthcare demand. Their results indicated that for all age groups, the predictors of poverty include large household sizes and longer distances to the nearest health facility. They went on to conclude that poverty reduces the probability of visiting a modern health care provider amongst all age groups. Tapen Sinha in 2015 carried out a research on the determinants of the demand for group insurance in Mexico. In his analysis he used a logit model. He came to the conclusion that income has a very significant impact on the demand of this type of insurance. He showed us that the income of the employees had an impact on the claims in a significant way. In 2015, Raymond W Pong, carried out a research in rural China. He wanted to determine the determinants of the demand for healthcare service in the area of Gansu. While using a linear regression model, his results showed that price and distance played significant roles in choice of health care provider. Also, Insurance status had a significant impact on the choice of public village clinics relative to self-treatment. Additionally, age and the attributes of sickness are also statistically significant aspects.

3.0 METHODOLOGY

3.1 Empirical Model Specification

When the response for Y is binary, with the values 0 and 1; the probit equation is

$$P = \Pr (Y = 1/X) = \Phi (X' \beta) \dots\dots\dots(1)$$

Where: Pr = probability.

Φ = cumulative distribution function (CDF) of the normal distribution.

β = vector of unknown parameters.

X = vector of known regressors.

Y = sequence of independent binary variables that take values of 1 and 0.

The characteristics of X are taken at average and regressed against Y to settle on the influence of each of the variables on the probability of an individual to decide to demand health insurance or not to demand it. Jutting (2003) elucidated that, participation depends on present household income (Y), characteristics of the household head (H), household characteristics (Z), community characteristics (C) and the error term η .

Correspondingly, in this research health insurance demand (HID) can be presented as a function of a number of variables. This include the level of income, level of education, sex, marital status, age, family size, one’s employment status as well as whether one has a part time or full-time job. This can be shown thus:

$$HID = f (Y; H; Z; C) \dots\dots\dots(2)$$

Where:

- HID:** Health Insurance Demand
- R:** Residence i.e urban or rural (expected sign: +)
- Le:** Level of Education (expected sign: +)
- D:** Number of dependents (expected sign: +)
- S:** Sex, (gender) (expected sign: +)
- Ac:** Access to Insurance information (expected sign: +)
- Et:** Employment type, i.e part time or full time (expected sign: +)
- C:** Chronic illness (expected sign: +)
- R:** Religion (expected sign: -)
- P:** Premium paid and flexibility of payment (expected sign: -)
- Iq:** Insurance quality (expected sign: +)

From the above specification, HID is a binary variable and it takes the values of either 0 or 1. Data will be collected through interviews and administration of questionnaires. A total of 180

questionnaires were distributed to the government staff and 149 were returned earning a response rate of 83%. However interviews scheduled were not successful, the persons managed to fill up questionnaires only. Data collected was presented into tables and charts and analysis was made resulting in conclusions to be drawn. To this degree the research will heavily rely on primary data.

The Probit model can then be stated as:

$$HID = \beta_0 + \beta_1 Re + \beta_2 Le + \beta_3 P + \beta_4 Iq + \beta_5 D + \beta_6 S + \beta_7 Ac + \beta_8 Et + \beta_9 C + \beta_{10} R + \epsilon, \dots\dots\dots(3)$$

3.2 Study Population

Saunders (2010) defined a study population as a universal set of elements with one or more common characteristics that a researcher is interested in, in the course of the research. Bryman (2012) further outlined that the population is a target group from which a researcher can sample individuals in which the researcher will be interested in gaining data and drawing conclusions. For the function of this study, the population considered was the employees and management of the Harare, Mukwati government offices specifically from the human resource department, transport department, cleaning services department, finance department and the public service commission committee.

3.3 Sample Design and Procedures

Due to budget and time constraints, it was impossible for the research to be based upon the entire population and thus a sample had to be selected. According to Scott and Morrison (2013), a sample can be defined as a small proportion of a larger group drawn for observation and analysis. Burns and Groove (2012) further described a sampling as the selection from a large population, of a subset of individuals to represent the population. Sampling can be done by either using probability sampling methods or non-probability ones, according to Good or Hatt (2013). Probability sampling is a method whereby the probability of any population unit being drawn is unknown. In this study, non-probability sampling techniques were used namely judgmental and convenience sampling.

3.4 Sample Frame

The research sample was selected using the judgmental and convenience non-probability sampling methods. The management and employees of the Harare, Mukwati government offices specifically from the human resource department, transport department, cleaning services department, finance department and the public service commission committee were the target population from which the sample was drawn. Due to a limited timeframe, a sample of 180 was chosen as a representative of all the public service employees at the government offices questionnaires were administered to the individuals chosen through simple random sampling within the five departments noted. This sample size was above 5% of the total population. Questionnaires consisted of closed ended questions. Some of the questionnaires were signed in the presence of the interviewer, but most of them were left to the respondent to complete on their own, given that most of the staff were either busy or during the time of questionnaire distribution. Visiting individuals at their offices during working days guaranteed a higher response rate, which would have not been obtainable, if they were to be completed or administered on weekends. The choice of who, from the selected sample, to respond to the questionnaire was based on who was available and willing to respond.

4.0 RESULTS PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Descriptive statistics

Public service employees form a small community of the larger population working population in Harare. This is the first-time health insurance ownership is assessed in the civil service in an effort to determine healthcare accessibility. From the survey results, focus is given to responses to questionnaires issued to determine the determinants of health insurance demand by the public service employees. Of the 180 questionnaires issued, 149 were successfully completed and this converts to 82.77% response rate. The response rate is high and the results from this research can be used to infer factors that influence demand for health insurance by public service employees in Zimbabwe. A total of 149 respondents returned answered questionnaires and of the 149, 39% were male employees and 61% were women. The proportions of public service employees covered by health insurance of any form, thus either private or public were 42% and the rest were not insured. This is shown in figure 1 below, the survey results are in accordance with DHS 2017 survey results that highlighted that less 50% of the Zimbabweans are enrolled in any health insurance whether private or public insurance.

Figure 1: Percentages of Health Insurance coverage

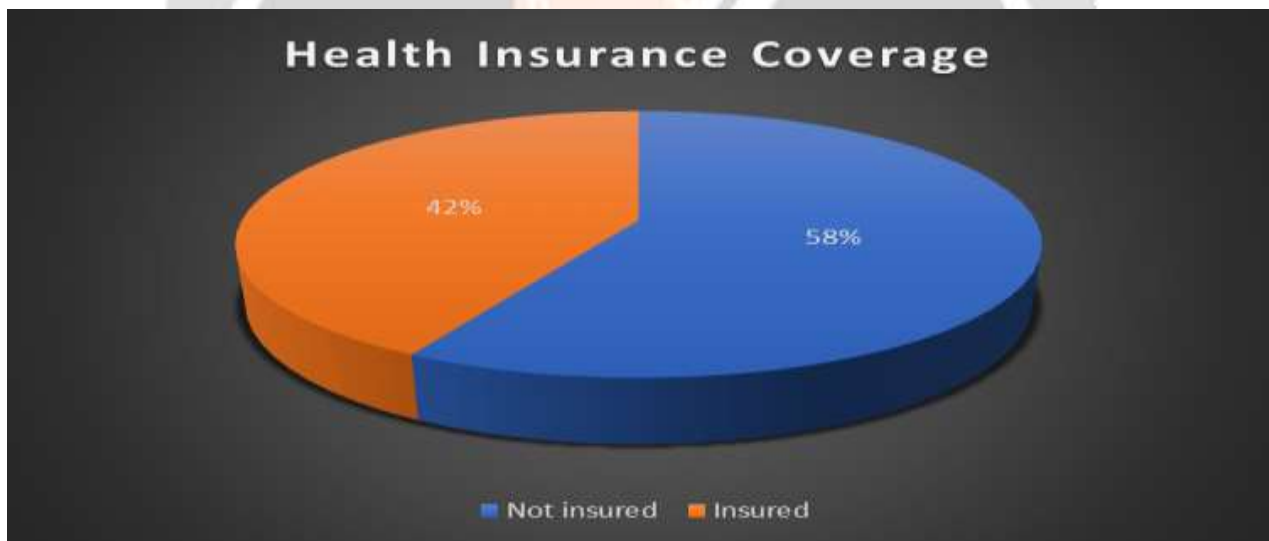


Figure 2: Types of Health Insurance owned by employees

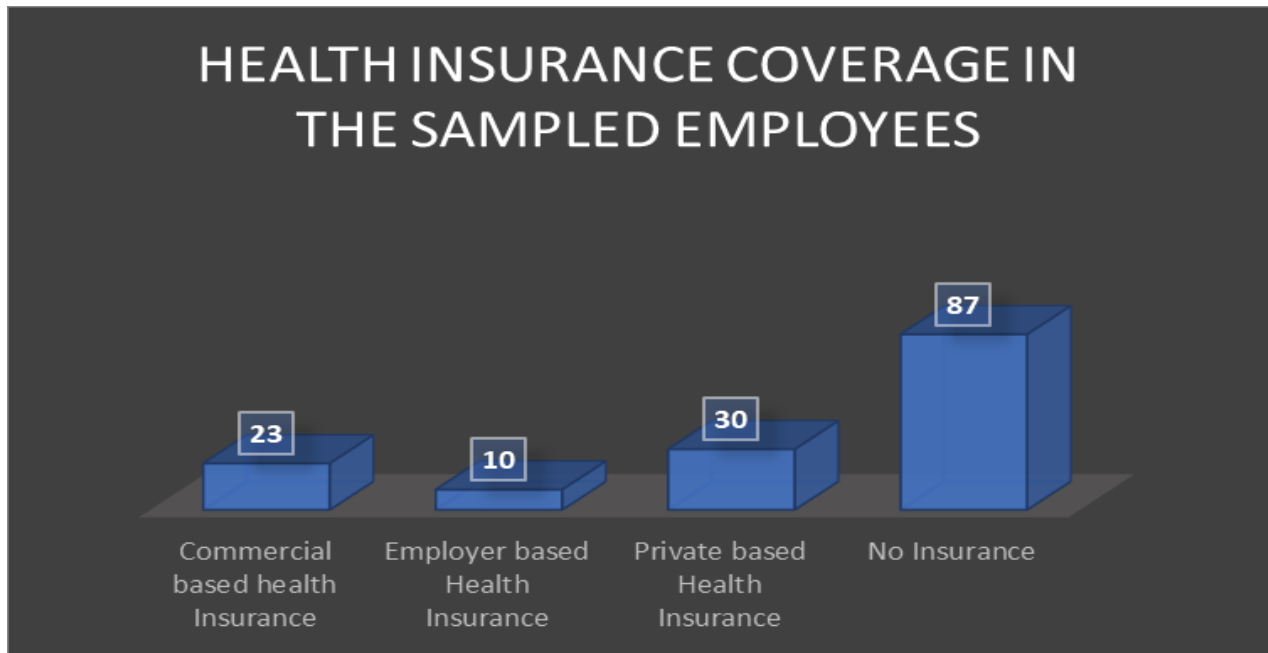


Table 1: Summary Statistics

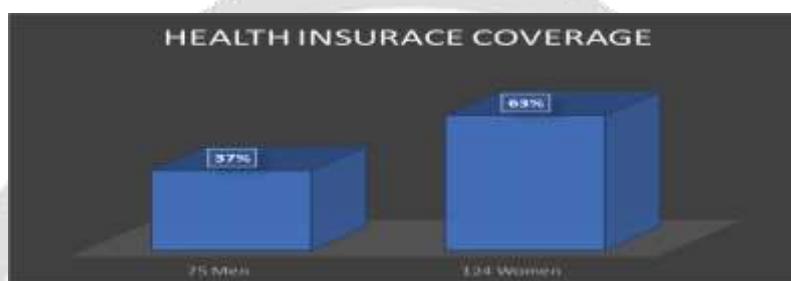
Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Health insurance	149	0.4161074	0.4945742	0	1
Access	149	0.7248322	0.7785907	0	3
Sex	149	0.6107383	0.4892273	0	2
Religion	149	0.9194631	0.88162	0	2
Education	149	0.6174497	0.6837626	0	2
Employment type	149	0.3154362	0.4662566	0	1
Place of residence	149	0.6845638	0.4662566	0	1
Chronic disease	149	0.3355705	0.4737821	0	1
Number of dependents	149	2.66443	1.998684	0	9
Insurance quality	149	0.9127517	0.7437386	0	2
Premium paid	149	0.114094	0.3189976	0	1

From table 1 above one can see that of the respondents interviewed, 42% of them had insurance cover. This can be attributed to the fact that the majority of the employees tend to attend to an illness when they face it. Among the respondents especially the young ones they boasted of not getting sick frequently no wonder they were not covered. They went on to say that they usually succumb to short term illnesses like migraines and influenza. This can be related to a study by Orayo (2015), where he found that the able bodies youths saw no need to part with their finances as they do not get sick that much, compared to their older counterparts.

Table 2: Access to information and Knowledge about Health insurance schemes available

Access	Frequency	Percent	Cum
0	91	45.50	45.50
1	99	49.50	95.0
2	10	5.0	100

From table 2 above one can see that most of the respondents come across health insurance information less than once in a week, this is shown by the high percentage of 49.50%.

Figure 3: Men and Women insured**Figure 4: Cross tabulation of education and health insurance ownership**

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EDUCATION	HID		Total
	0	1	
0	84	26	110
1	29	38	67
2	12	11	23
Total	125	75	200

4.2 Descriptive analysis of other explanatory variables

In the study we also considered the religion of the respondents, we started of our research with an assumption that the apostolic sect would require fewer medical services, hence they will be fewer of them insured. According to the survey results of the 125 respondents not insured, 28.8% of them were members of the apostolic sect and the other 28.8% were members from the Pentecostal sect., the rest where members who were either not apostolic or belong to the traditional churches available. Over rally, the model showed us that of 75 respondents insured; only 14.6% were from the apostolic sect.

Employment type had two categories in the study, thus permanency and being temporary. Of the 75 people with insurance cover in the survey, 61% were permanent and the rest were temporary workers. This goes hand in hand with past studies that permanent workers tend to take health packages offered or rather, have more stable incomes to purchase health insurance unlike their temporary counterparts. This variable had a mean of 35%.

Also place of residence was a key factor in this study, it had a mean of 64%, and thus there was a higher probability of a person staying in the urban areas being insured. Of the 125 with no insurance, 56.8% were rural area dwellers while of the 75 insured 77.3% were urban area inhabitants.

Also, in the study we researched on the effect of the number of dependents that one has on his/her demand for health cover. The minimum number of dependents was zero and the maximum was nine, the average number of dependents one could have was three dependents.

Chronic disease was another variable and it had an average of 34%, thus if any family member had a person suffering from a chronic disease, he/she would have a 34% probability of being insured. This does not relate to most studies, but one can see that people tend to seek coverage when the disease is at its hype and tend not to prepare for it.

The last two explanatory variables in the study are insurance quality and premium paid. Insurance quality had an average of 0.98, thus the higher the quality of service the higher the chances of an individual demanding health insurance cover. Also, the premium paid was assessed and it had an average of 0.11, thus the higher the premium to be paid and its inflexibility of payment, the lower the health insurance cover demanded.

4.3 Presentation of Regression Results

The aim of this study is to estimate the determinants of health insurance demand among the public service employees in Zimbabwe using the probit model. The results from Table 7 below reports the probit regressions for health insurance coverage with coefficients associated with the unobserved linear equation described in details in chapter three ($y^* = X_i\beta + \varepsilon$) This in turn implies that the coefficients are interpreted as changes in the probit index. To this effect, we estimated the marginal effects and average effects for continuous and dummy variables respectively. The marginal effects computed for various independent variables shows the change in the probability of being covered by health insurance. For example, as the dummy for education changes from zero to two, we observe the change in the probability of owning health insurance cover.

4.3.1 Probit Regression Results

The probit binary outcome model helped us see observations that were symmetric to the mean. The results in table 3 helped us see the direction of the effect of the independent variables on the dependent variable. In the table the significant variables are going to be commented on. Six of the variables below were significant and only religion was an insignificant variable commented on.

We can see that the higher the level of education one has, the more likely one will demand health insurance cover. Also, we can tell that when a public service employee is permanently employed by the government, the more likely he/she will demand health insurance. More so, the higher the quality of health insurance entails that one is more likely to enrol in an insurance scheme offered.

When it comes to the premium paid, the regression results tell us that the higher the premium paid, the more likely a civil servant will demand health insurance. More so, it can be noted that urban dwellers are more likely to demand health insurance more than their rural counterparts. Access will also make civil servants be more likely to demand health insurance.

Religion was insignificant and also had a negative impact. One can see that members of the apostolic faith are less likely to demand health insurance cover, as shown by the regression results. After obtaining the Probit regression results in table 3, the estimated model for health insurance participation can be presented thus:

$$HID = -2.39 + 0.56Re + 0.71Le - 0.01D + 1.02P + 0.38Iq - 0.13R + 0.08S + 1.02Ac + 0.71Et + 0.24C \dots\dots\dots(4)$$

However, the parameter estimates in Table 3 gives only the direction of the effect of the explanatory variables on the dependent variable (health insurance demand). Instead, Table 4 shows marginal effects for the probit model which are going to be interpreted.

Table 3: Probit Regression Results

Number of obs = 149 LR Chi2(9) = 76.43 Pseudo R2 = 0.3777

Prob > Chi2 = 0.0000 Log likelihood = -62.956164

***, **, * significant at 1%, 5% and 10% respectively

Hid	Coef.	Std. Err.	Z	p> z	[95%. Conf	Interval]
Sex	0.0845868	0.2694417	0.31	0.754	-0.4435093	0.6126829
religion	-0.1307952	0.1480401	-0.88	0.377	-0.4209484	0.159358
education	0.4375757**	0.214941	2.04	0.042	0.0162992	0.8588523
Employment type	0.7135201**	0.3067757	2.33	0.020	0.1122508	1.314789
chronic	0.2352023	0.2803009	0.84	0.401	-0.3141775	0.784582
dependents	-0.0070382	0.0706823	-0.10	0.921	-0.145573	0.1314967
Quality	0.3848236**	0.1833939	2.10	0.036	0.0253782	0.7442689
premium paid	1.017024**	0.5122907	1.99	0.047	0.0129525	2.021095
residence	0.5604238*	0.2944536	1.90	0.057	-0.0166947	1.137542
Access	1.023659***	0.1854491	5.52	0.000	0.6601852	1.387133
Cons	-2.386157	0.511964	-4.66	0.000	-3.389588	-1.382726

4.4 Assessing the overall model fitness

The Pseudo R2 is 0.3777, that is, 37.77% of the variations on the demand for health insurance cover are explained by combined variations in explanatory variables within the model, this model is considered a not so good fit, though the figure is acceptable when using primary data.

Pseudo R2 helps give information concerning to the overall significance of the model. The instantaneous implication is that the relationship between HIP and the explanatory variables cannot be by chance. However, these factors indeed influenced 40% of health insurance participation. This, relates to studies by Kipgat (2011) and Orayo (2015), who had pseudo R-squared of 34% and 47% respectively. The P value of the statistic is 0.0000 and is significant at 1% level of significant. This means that at least one of the regression coefficients in the model is none zero. Also, by using the estat command in STATA we saw that the model was correctly specified by 83.22%, which means our model was a good one.

Also, Prob > chi2 = 0.0000 reports a null hypothesis of no monotonic association between health insurance demand and the explanatory variables, which shows that the F-test has a probability value of (0.0000). The value of the log likelihood function when all coefficients are zero is -62.956164 for the probit model which justify a better fit for the log transformation of variables estimated by the model.

4.5 Marginal effects for the Probit model

The table for marginal effects below highlights only the significant variables. Interpretation will be done for these only.

Table 4: Marginal effects of the probit model

Variables	Marginal Effects dy/dx	Std. Err.	z-statistic
Education	0.1061311**	0.0501706	0.034
Employment type	0.1730595**	0.0710085	0.015
Insurance quality	0.0933364**	0.0426082	0.028
Premium paid	0.2466723**	0.11877802	0.038
Place of residence	0.135927**	0.0692112	0.050
Access to information	0.2482818***	0.034148	0.000

***, **, * significant at 1%, 5% and 10% respectively

4.5.1 Discussion of Marginal Effects Results for demand for Health Insurance cover by public service employees.

Education (Le)

In line with expectation, the estimated coefficient for educational level was positive and significant at 5%. This implies that, other things being equal, educational level increases the probability of a public service employee to demand health insurance cover by 10.61%. This is in line with the works of Joe & Mishra (2009), who found that higher educational level, attract higher incomes which in-turn increases the possibility of one demanding health insurance cover. The results are also in line with the hypothesis that educated people have the ability to not only to acquire skills and knowledge but also to make informed choices on health-related matters amongst them is the decision to purchase health insurance in a bid to avoid catastrophic health expenditures. This imperative part played by education is well documented by Grossman (1972). Kirigia *et al.*, (2005), Nketiah-Amponsah (2009), Kidd and Hopkins (1996) and Bourne and Kerr-Campbell (2010) among others obtained similar results. In Zimbabwe those who have

tertiary education, thus diplomas, undergraduate degrees and post graduate qualifications tend to be exposed to health cover information and are the masses that had insurance cover in this study. Also, these individuals tend to have stable and high salary paying jobs that allow them to part with some of their income, unlike their counterparts with lower level of education.

Employment type (Et)

Also, in line with the expected sign, the employee's employment type has a positive relationship with health insurance ownership. From Table 8, it can be seen that if one is permanently employed by the government holding other factors constant, this increases the probability of purchasing health insurance coverage by 17.31%. The estimated coefficient was significant at 5%. This is line with Kiriga et al (2005) who argued if one is permanently employed, he/she will have health benefit likely to be financed by the employer. Permanent employees are more likely to have health insurance which may be mostly work related than their part time counterparts or those on short term contracts see also Kimani, et al. (2010), Kiplagat (2011) and Ballestas (2008). In Zimbabwe the government as the employer of the civil servants offers a voluntary employer-based insurance scheme, which it subsidises the subscription to be paid by the employees. This in turn increases the probability of one having insurance cover, though the number are subdued, cases of the quality of service and consumer preference come into place. However, the flexibility of payment and awareness are made known to all employees. This is also in line with Bourne and Kerr-Campbell (2010). He found out that permanent employees are twice likely to choose employer-based cover than their part-time or unemployed colleagues which is because employers are mandated to insure their workers.

Insurance quality (Iq)

The insurance quality offered by insurance firms was found to be significant at 5%. It also has a positive relationship with demand for health insurance cover, thus the higher the quality of service offered by insurance firms the higher the chances of one being insured by 9% holding other factors constant. This is line with works by Sibanda (2017), who also found the insurance quality being a significant factor in influencing demand for health insurance. Kirigia *et al.* (2005) and Owando (2006) also found insurance quality with a positive effect on health insurance demand. Kidd and Hopkins (1996) found that high insurance quality increased the demand for health insurance especially among the educated individuals. In Zimbabwe one can see that quality of service has an effect on the health cover demanded, the current employer-based insurance cover is said to have lower quality when compared to that of the private insurers, hence it has a lower demand. Public service employees in this study despised the service offered by PSMI the third party in the employer-based insurance scheme the government offers.

Premium Paid (P)

In addition, the premium paid or to be paid per month by a civil servant has a positive effect at 5%. This indicates that a dollar increase in the premium to be paid, increases the probability of one demanding health insurance cover by 25%. This is not in line with the expected sign, but can be justified by the South African survey in Pololwane (2011). They found out that clients see paying premiums as a form of saving if they are to get cash backs if a time lapses without them demanding cover. Hence higher premiums are associated with higher interests on cash backs hence the higher the demand. Kiriga (2005) and Orayo (2014) from their studies they attributed the positive effect of high premiums as having being caused also by the flexibility of paying the

high premium. Households which cannot afford to pay the premium at once, if allowed to pay in instalments, thus weekly or per fortnight, this makes the premium affordable than doing a once off payment. Fronstin et al (1997) also linked high premiums with the timing of collection. He found out that giving dates customized to their pay days is important. Having one date for the subscriptions is not flexible. In Zimbabwe this is the case as private insurances firms, have an automated system which in collaboration with the client's bank, deducts the premium when the wages reflect in the bank account. This in turn is not rigid and premiums are payable.

Place of Residence (R)

Place of residence was seen to be positive and significant at 5% in this study. In this an increase in the probability of a civil servant living in an urban area increased his/her probability of purchasing health insurance cover by 14%. Fronstin., et al. (1997), found out that those whom at most times reside in urban areas are expected to purchase health insurance since they can easily access the facilities and they have relevant information than their rural counterparts. Hopkins and Kidd (1992), in his works found out that urban residents are most likely to be in private health cover, perhaps because they can afford it and they are conveniently located to the service providers. Owando (2006) and Orayo (2014) also found that urban dwellers are more likely to demand and have insurance cover. This is the same case in Zimbabwe as we found that urban dwellers are in proximity with the insurance firms like PSMI, Marsh and CIMAS are located in the Central Business District (CBD) area, hence they are easily accessible. A few of these have branches in rural areas and hence low subscribers emanate from rural areas.

Access to information (Ac)

Access to information which involved the frequency of surfing the internet, listening to the radio, watching television or reading the newspaper by a civil servant was considered by this study. This was revealed as a significant factor which illustrated a positive relationship with health insurance utilization. Public service employees who had access to mass media increased purchase of health insurance cover by 25% holding other factors constant. Mass media created awareness on health insurance schemes available in the country and thus led to utilization of health insurance by some civil servants. This was in line with the findings established by Yellaiah and Ramakrishna (2012) while studying health insurance demand in India. Kiriga (2005), also had similar results. These results are not startling since, Nketiah-Amponsah (2009) in Ghana and Bhat and Jain (2006) in Gujarat appreciated that awareness and knowledge about health insurance were significant explanatory determinants of health insurance coverage. Similarly, the study by Mathuer *et al.* (2008) on demand for Social Health Insurance of informal sector workers in Kenya established that lack of information was a major barrier to enrolment. Access to information therefore becomes a vital component. Considering theoretic assumptions presented above, it can be concluded that that public service employees in Zimbabwe utilize health insurance services as means of acquiring more medical care and knowledge and thus achieving good health and that they decide what type of health insurance scheme to purchase, using the information available to them. This depends on the costs (premiums) for that particular package and the associated benefits.

4.5.2 Overall discussion of the determinants of demand for health insurance by public service employees.

The probit regression results provided us with the statistically significant variables that help determine the demand for health insurance by public service employees. The six determinants can be classified into psychological (personal) factors, acquired (social) and environmental factors. For the environmental factors we can see that place of residence had a high significance in this study, with urban dwellers more likely to purchase health insurance, this is due to their proximity to health insurance providers and exposure to health insurance information, like bill boards and road shows. The personal factors are employment type and premium paid insurance quality and access to health insurance information. Orayo (2014) noted that a consumer's occupation type and purchasing power influence purchasing decisions and buying behaviour. The income level affects what consumers can afford, thus the premium and the perspective towards money.

Nketiah-Amponsah (2009) in Ghana and Bhat and Jain (2006) in Gujarat realized that awareness, insurance quality and access to knowledge about health insurance were significant determinants of health insurance coverage. Same goes in this study the three significantly influenced the Zimbabwean public service employees' demand for health insurance to a greater extent. To note was the type of contract one has with the government, permanent employees are seen to be more stable in the civil service and they usually have better knowledge of the employer and the systems, hence many of the permanently employed civil servants had health insurance, whether employer-based or private insurance depending on their perception of the service offered. More so, the acquired factor in this study was education and we can note that the learned civil servants are more likely to demand health insurance than their counterparts. In this regard one can note that the personal (psychological) factors significantly and to a greater extent influenced the decision to purchase health insurance by the civil service.

4.6 Diagnostics Tests

4.6.1 Model specification tests

4.6.2 Ramsey RESET test

Table 5 RESET results

Ramsey RESET test

Ho: model has no omitted variables

$F(3, 135) = 10.49$

Prob > F = 0.0000

The Reset test was done in STATA using the `ovtest` command. It helps us see whether the powers of the explanatory variable do not have an effect on the explanatory variables in explaining the dependent variable Gujarati (2004). The powers of independent variables result from Ramsey RESET test show that the model is correctly specified. The p-value (10.49) is statistically significant at 5% level and the null hypothesis that the model is specified cannot be rejected, hence the results of the model are less likely to be biased.

4.7 Likelihood tests

4.7.1 Heteroskedasticity Test

Table 6: Heteroscedasticity Test Results

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho: Constant variance	
Variables: fitted values	
chi2(1)	= 17.12
Prob > chi2	= 0.0000

A heteroscedasticity chi-square statistic of 17.12 was obtained with the p-value of 0.0000. At 5% level of significance, we failed to reject the null hypothesis that the variance is homoscedastic (017.12 > 0.05) and conclude that the variance of error term is constant. In this instance, efficient results are obtained (BLUE) for both the probit model since the variance of the error term is constant. The Hettest command was used to obtain this test in Stata 13.

4.7.2 Multicollinearity Test

This can also be termed as the test for correlation. It was conducted to elicit the nature of relationships among variables. The results show no evidence of multicollinearity as there is no correlation static above 0.8 in absolute value (Table for RESET test). In this case, explanatory variables do not move in a systematic way meaning that there is no exact linear relationship between independent variables (Gujarati, 2004).

4.7.2.1 Variance Inflation Factors

The VIF test measures how much variance of an estimated coefficient increases due to collinearity. In other words, the variance inflation factors are used to determine if any pair of independent variables becomes highly collinear. Therefore, for VIF values greater than 10

and 1/VIF values less than 0.10 Multicollinearity is considered to be present.

$$VIF = \frac{1}{1-R^2}$$

Where VIF= variance inflation factor, R2= Coefficient of determination and 1/VIF=Tolerance (Tolerance is the amount of variance of a specified quantity). From Table 6 below, we confirm the absence of Multicollinearity since all variable have coefficients which conform to the requirements stated earlier.

Table 7: Variation factors

Variable	VIF	1/VIF
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Education	1.35	0.739258
Premium Paid	1.37	0.728721
Insurance quality	1.25	0.799155
Access to information	1.14	0.878912
Employment type	1.16	0.859803
Number of Dependents	1.08	0.922670
Chronic disease	1.11	0.897714
Place of Residence	1.07	0.930981
Sex	1.11	0.899820
Religion	1.04	0.961076
Mean VIF	1.17	

One can see that our mean is less than 4 which means that the standard errors are not being inflated.

5.0 CONCLUSION AND POLICY INFERENCES

5.1 Conclusion

The public service has for a long time have been characterised by social marginalization and thus loss of social networks. These are the workers that survive on minimum wage and still expect to enjoy the same benefits like healthcare service, that is received by their counterparts in the private sector. This has extended to utilization of health care services which might impact negatively to the kind of work force relied by the country to contribute to economic growth. Therefore, there is need to consider the important factors described as contributing to the decline of health insurance services in order to improve utilization of health insurance services and consequently increase access to utilization of health care services. In, considering all these this research was generally quite successful. The study managed to provide answers to all the research objectives and questions. It managed to assess whether health care users were aware and have knowledge of health insurance as well as ascertaining the effect of premiums paid on Health Insurance demand. The research also managed to establish more effective strategies, which can be used by the Ministry of Health and the Ministry of Education in collaboration with health insurers so that they increase access to health insurance information and ensure public service employees' perception over health insurance is improved. The study also managed to come up with the determinants of health insurance demand for the public service employees, thus psychological, acquired, environmental and personal determinants/ factors. These were religion, sex, place of residence, education, employment type, insurance quality, premium paid, number of dependents, access to information and chronic disease. Of the ten, six were found to be statistically significant and of the statistically significant variables the psychological factors, thus insurance quality, access to information, employment type and premium paid had a greater effect in determining health insurance demand by the public service employees in Zimbabwe.

Since this study managed to meet the objectives of the research, the research was quite successful.

In the study we also saw that once there was an assurance of medical cover, one could tackle other family issues such as children's education, housing projects and other pressing issues. Regardless of the high premiums paid, the study showed us that health insurance is the best substitute for the "Cash and Carry" system, it helps one not to pay for medical care directly at the point of service. An agency takes care of that and that hiccup of making down payment before treatment is carried out and eliminated. This is seen to have relieved people from making instantaneous payments when they are ill. However, the greatest challenge seen in the study was that of the sustainability of high claims payment, corruption and political interference on the part of the public insurers like PSMI. On the whole, the bulk of the respondents supported the view of the health insurance as a way of covering medical care. Insurers and policy makers ought to bring out competitive health insurance packages and policies that will induce individuals to enrol or enjoy medical cover. Creating working class awareness around the existence and the process of health insurance is very vital. People should be enlightened through the mass media on the existence and operations of the various insurance schemes from a tender age.

5.2 Policy Implications and Recommendations

Having identified the major variables which significantly affect the demand for health insurance cover it is now proper to indicate areas that need attention. If the insurance firms are to attract more subscribers from the civil service there is need by them and the government to come up with insurance packages and policies that will fit the diverse beliefs of the public service employees from different faiths. This will help the employees to consider purchasing health insurance. We came up with this recommendation as from the sample 65% of the people belonged to a faith yet, the higher this probability of one belonging to a faith led to a 4% decrease in the probability of one demanding health insurance cover *ceteris paribus*. This implies that the uptake of the product is greatly discouraged by various religious groups. Also, to overcome these challenges the government is advised to come up with a compulsory insurance scheme which is tailored to everyone's beliefs, this helps increase membership by these employees. Development of a Zimbabwe National Insurance scheme is greatly supported by this study.

Educational level was seen as a positive and significant (5%) factor in influencing the decision to demand health insurance. One of the nation's macroeconomic objectives is that of stability and economic growth.. These two can be achieved in a nation where we have a healthy labour force and the government has managed to do that through providing affordable education for the majority of the nation. In line with the Education Sector Strategy Plan (2016-2020), which supports the Sustainable Development Goal (SDG) 4 and the aspiration of the Paris Declaration on Education, we recommend that the government keeps on engaging with the Ministry of Education so that awareness of health insurance schemes is made know to the children from kindergarten to tertiary level. This can be done by increasing the allocation to education, adding to the curriculum health issues and the need to be ready for any illnesses that may arise as compulsory modules. Also, policies that encourage college and tertiary attendance would be beneficial to the healthcare users. In this regard, the government may offer education subsidies, given that the welfare of the consumers is at the heart of the government. In addition, policies that promote universal education should be maintained by policy makers in order to improve

consumers' welfare. This suggests that any expenditure on education by policymakers would be a worthwhile investment and not a cost as the learned come back and seek for employment in the civil service. Learned public service employees stand a better chance of enrolling for insurance schemes.

More so, it was seen that the premium paid had a positive impact in this study and was significant at 5% level of significance. It is so as people with excess income see paying premiums as a better way to save their money. However, prevalence of this habit was only seen when people were dealing with private players like Marsh insurance. It is the hope of this study that government in conjunction with the Ministry of Health and Childcare have insurance packages that offer facilities like those of cash backs when one exceeds a certain period without claiming. This creates good consumer will and many of the clients will pay premiums willingly knowing they will get cash backs, this also reduces the problem of adverse selection and moral hazard among the subscribers and if well explained to the consumer, it leads to a win-win situation for both the insurance company and client, hence economic growth and higher health insurance participation.

Another variable found significant at 5% was the Insurance quality. Higher quality of service in form of early reimbursements, emergency hospitalization and no need for cash when needing service were seen to be increasing the quality of service, this increases the demand for health insurance. This study advises health insurance firms to have easier ways of paying premiums through mobile transfers so that paying premiums is automatic and simpler. Also, if a member is to default, they should be given a grace period in which they explain the reasons for defaulting and if they wish to continue. Many employees deter from buying insurance because they know if you default one will be removed of the scheme and prior contributions will not be considered. Also, to increase the quality of service, insurance firms should continue being electronic so that when a person needs the service, they just rehearse their membership number to the third party and they will be helped unlike being asked for identification and the membership card itself. This form of convenience allows for higher participation by the public service employees to numbers more than found in this study.

From the study, awareness on the various forms of health insurance positively affects the decision on health insurance coverage. Building awareness about health insurance coverage is vital. There is need to increase awareness levels on risk protection and risk reduction for risk takers especially male employees. This can be done through online advertising, media, and ministry of health workshops, scheme providers' adverts and social marketing activities.

Also, in the study the higher the probability that one stayed in an urban area increased his/her probability to demand health insurance. Place of residence had a positive effect at 5%. It is advised that insurance firms in order to increase subscription, they should continuously reach to the marginalised communities and have branches in almost every city and town so that after being made aware of a certain package they can visit the facilities and infer on which packages which best suit them in a convenient way.

Last but not least, the government; in order to give a sense of stability to its employees, so that they take up the employer-based insurance schemes: it is advised that they should make their employees sign long term contracts so that they feel safe in the civil service. In the study it was seen that an increase in the probability of one being a permanent civil servant, increases the demand for insurance.

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