

## *Ethnic and Religious Diversity as Determinants of Health Insurance Uptake in Ghana*

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Health insurance has been reckoned across the world as an important health policy that serves to protect households from the direct financial consequences of health care. In developing countries, health insurance, indeed, has emerged as an important mediating factor in providing relief to poor households hit by illness and requiring substantial health expenditure outlays. Uptake however has been a major problem for sustenance of publicly subsidised health insurance schemes in sub-Saharan Africa. We used two models to study this phenomenon. A zero-inflated Poisson model was used to capture two decisions simultaneously; the decision to join the scheme, and also the number of people that are insured in a household. The other comparative econometric approach is an application of a finite mixture model to analyse characteristics of latent class populations with respect to the uptake of the scheme. The result presents new evidence that shows that African countries can take advantage of their internal ethnic and cultural diversity to make health insurance reach majority of its people especially in its largely less educated and mostly rural communities. With Africa getting more and more diversified each passing day, new ways of including its people in the development process is imperative and studies such as this are key in providing the needed information.

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## ***1. Introduction***

The most sustainable and strong health system that protects households and the system itself is the one that provide sustainable health care financing through mobilising of adequate levels of resources, establishing broad-based risk-pooling mechanisms, and maintaining effective control over public and private health expenditure. Health insurance is widely believed as one of the most viable and authentic health financing system that meets the needs of the health system and at the same time provides a less hurting health payment system for households. In place of cost-recovery strategies and user-fees, health insurance has been recognised in much of the developing world as an alternative and preferable mechanism for financing health care provision. Extant empirical evidence finds health insurance to be associated with increased access and timely utilisation of regular and appropriate health care services by individuals and families. Health insurance also reduces the chances of out-of-pocket payments of healthcare bills at the point of delivery and ultimately reduces vulnerability and poverty.

Health insurance in low-income countries is in a nascent stage, albeit witnessing an impressive growth and spread lately. Coverage however remains a challenge as governments are unable to implement compulsory schemes to cover everybody. The preponderant growth in interest in Community-Based or District-wide Mutual Health Insurance (CBHI/DMHI) programmes is clearly linked to this inability. However, the voluntary nature of CBHI gives rise to serious problems of adverse selection and moral hazard which perhaps are equally huge challenges for growth and sustenance. In CBHI in particular, low demand and low willingness to pay pose a problem (Bennett, 1998, Meessen, 2002). A great deal of the work in the health economics literature explaining low participation or penetration of health insurance focuses largely on the financial reasons. In particular poverty and low incomes have been advanced as valid explanation of much of the variation in insurance coverage. Reasons such as these pose challenges for realistic policy direction especially in low-income countries such as Africa.

Poverty is already deep and widening and incomes are low. Africa governments remain at a crossroad in terms of spreading social protection programmes to her people with her limited resources. This means research must identify alternative mechanisms through which social programmes can reach majority of the people especially in Africa's largely less educated and mostly rural communities. Even though the empirical literature on determinants of health insurance uptake is growing in Africa, the approach is still conservative (the same hypothesis all the time). Meanwhile there are many other areas still left unexplored. Not enough attention has been given to a possible relationship between Africa's sociocultural diversity and people's predisposition towards health insurance participation. There is already a growing body of literature that documents the role of social diversity (ethnic, linguistic and religious diversity) in determining economic growth and provision of public goods. There are also more recent adventures using diversity as a determinant of people's participation in voluntary social action programmes that are for the good of the society. There are yet still theoretical and conceptual discussions about diversity and social trust and diversity and the perception of risk which are all important in explaining reasons for health insurance uptake.

With health insurance growing widely across Africa's diverse sociocultural landscape and coverage continuously being a challenge we think it is time to explore the possibility of using our

internal diversity to spread health insurance in Africa. In this study it is therefore hypothesised that since ethnic diversity is associated with high migrant communities who are generally individualistic and sometimes are not certain of their stay in destination communities will find the health insurance as an unworthy source of protection. We assume that migrants are uncertain about their source of support in the host community. Religiosity is known to reduce people's perception of health risk and a strong reliance on God and prayers for preventive health. All other things being equal if religious diversity is a good proxy for religiosity then a religiously diverse community should have low demand for health insurance.

The proceeding sections of the paper are: Section 2 reviews the literature on demand for health insurance and ethnic and religious diversity as explanatory variables, and discusses the theorized mechanisms underlying the relationship between ethnic and religious diversity and demand for welfare goods, including health insurance. Section 3 presents a brief background of the health insurance policy in Ghana. Section 4 discusses the data and methods. Section 5 presents summary statistics showing the patterns of NHIS uptake and penetration in Ghana. Section 6 presents the empirical analysis of health insurance demand and extent of penetration in the household. Section 7 provides a discussion of the results, and Section 8 presents conclusions.

## **2. Review of related literature**

### ***2.1 Determinants of health insurance uptake***

Across the main health insurance literature there are three sets of factors that jointly influence a household's demand for a health insurance policy; the household perspective, the quality of the healthcare system, and the characteristics of the health insurance policy itself. The empirical literature has consistently set up socio-economic and demographic characteristics of the household such as income level, education of household members, employment, health status, presence of children and aged, marital status, and sex of household head as significant determinants of demand for health insurance. Households' income level for instance has been found in both recent and past studies and in developing and developed countries to have a positive association with the probability of buying health insurance (Cameron et al. 1988; Propper, 1989; Osei-Akoto, 2004; Bhat and Jain, 2006; Osei-Akoto and Adamba, 2011). Income has also been found to significantly determine the number of household members covered or the amount of health insurance purchased (Bhat and Jain, 2006; Osei-Akoto and Adamba, 2011).

Health status and the presence of children and aged in a household also significantly influence the decision to purchase health insurance. Studies using visitation to the doctor, regularity and length of hospitalisation, and reported level of participation in activities of daily living or self-assessed health as proxies for health status have always found it to determine health insurance uptake (Barrett and Conlon, 2003; Cameron et al. 1988). The concept of "adverse selection" has been used to explain this relationship between health status and the decision to purchase insurance. Adverse selection is seen as the situation where consumers have differential health risk but are not charged a premium equal to the expected marginal cost of their insurance. As a result high risk consumers find mutual health insurance very attractive and tend to increase the amount purchase.

The second perspective which considers the entire health care system looks at the distribution of health facilities and personnel, the quality of these facilities, and the cost of health care services. Higher health expenditures arising out of low health status also gives rise to higher chances of purchasing health insurance (Feldstein, 1973; Cutler and Zeckhauser, 1998; Kronick and Gilmer, 1999; Bhatt and Jain, 2006). When cost of health care is paid with a household's resource it can lead to a reduction in socioeconomic welfare. So that as the price of health care increases due to medical advancement the risk of net worth depletion also increases. Feldstein (1973) notes that this increases in cost of health care should increase demand for health insurance. The theories of risk aversion and consumer rationality have been applied to explain why households will decide to purchase health insurance on the basis of expected utility gain (disutility minimisation). Because of risk averseness, consumers will generally choose to buy health insurance to minimise their risk of suffering out-of-pocket, and on condition of rationality, will choose a health insurance regime (in terms of the amount purchase) that maximise their utility gain.

The third perspective is the design or key characteristics of the health insurance policy itself. One of the key characteristics of a health insurance policy that is often subjected to empirical analysis is the domain of services and illness that a policy covers (quality of the basket), the price of the policy (premium) and the transaction cost. Whilst the cost of the insurance policy and the quality of services covered by the policy are not mutually exclusive, Bhat and Jain (2006) notes that if a health insurance policy is well designed to cover services mostly demanded by people or illnesses mostly suffered by people, the chances of buying such a policy is high.

Clearly, much of the work regarding the determinants of health insurance uptake focuses more on technical and financial aspects. There are also macro-structural and sociocultural issues which needs closer scrutiny as well. Sociocultural factors are characteristics (ethnicity, religious affiliations, socioeconomic status, etc.) that are determined by society and culture. Studies show that the feasibility of a particular health insurance design is also affected by the sociocultural dimensions of society. A community-based health insurance scheme is more likely to be feasible in a country where ethnic groups demonstrate high social cohesion (Wang et al. 2010). This review therefore presents possible insights for more adventurous hypothesis. In our view one more unexplored perspective in discussing the determinants of health insurance is the sociocultural diversity (ethnic and religious diversity) of the society which shapes people's perception of illness and diseases and the whole idea of solidarity and risk-sharing contained in the emerging community-based health insurance movement.

## ***2.2 Ethnic and religious diversity as determinants of public policy effectiveness/performance***

Ethnic diversity (also called ethnic fragmentation), originally developed by linguists as an ethnolinguistic measure by Soviet researchers in the 1960s, has become very common in empirical economics today. Ethnic diversity is a measure derived by taking the ethnic division of a population and calculating each ethnic group's share of the total population, summing the squared shares, and subtracting the sum from one (Alesina et al. 1999; Vigdor, 2002). A perfectly homogeneous society receives a fragmentation score of zero, while a society composed of many small groups receives a score approaching one. The index is commonly interpreted as the probability that two randomly selected individuals will not be of the same ethnic group (Easterly and Levine, 1997; Alesina et al. 1999).

Ethnic diversity has been associated with a number of social and economic phenomena: corruption and low economic growth (Mauro, 1995; Easterly and Levine, 1997; Rodrik, 1998), lower levels of public spending (Alesina et al., 1999), lower levels of participation in voluntary or civic organizations (Alesina and La Ferrara, 2000), and lower levels of trust (Putnam, 2007; Alesina and La Ferrara, 2002). A growing body of evidence suggests that countries or neighbourhoods with more ethnic and socio-economic diversity experience substantially more problems with the creation of various kinds of social capital, cooperation, trust and support necessary for collective action which is critical to the success of social welfare programs.

Most studies reveal that increasing levels of diversity pose a challenge to civic and redistributive values (various studies by Alesina and La Ferrara 1999, 2000 & 2002; Costa and Kahn, 2003; Delhey and Newton, 2005; Hero, 2003; Putnam, 2007; Soroka *et al.*, 2006). High levels of ethnic heterogeneity are accompanied by lower levels of trust. Putnam (2007) finds that ethnic diversity exerts negative short-term effects on trust in other people. These findings also confirm other works in sociology and psychology as well as in political theory, that suggests that trust prospers in homogeneous settings, and suffer when faced with heterogeneity (Miller, 1995). In essence, ethnic differences discourage the reliance on the behaviour of one's neighbours, friends and colleagues (Messick and Kramer, 2001) thereby reducing levels of trust, the capacity for cooperation and support for collective action. Ethnic diversity alters people's perceptions of risk and social or communal support.

Studies on the effects of ethnic diversity on a variety of health outcomes suggests that ethnic diversity may be a key explanatory variable in determining variation in health outcomes. Alesina and others (2003) found ethnic diversity to have a significant effect on infant mortality even after controlling for GDP per capita. Ghorarah and others (2004) also found ethnic diversity to be associated with lower public health spending as a percentage of GDP, and to have a negative, even though weak, effect on health-adjusted life expectancy. Religious diversity is as important as ethnic diversity in explaining social and economic phenomena.

Understanding the relationship between diversity and health insurance penetration (uptake) is important because of its implications for shaping people's perception, understanding and acceptance of the scheme. This further affects the marketing strategies for the schemes across the multi-diverse African landscape. We examine the importance of ethnic and religious diversity in contributing to gaps in health insurance uptake in Ghana. If health policy makers are to build viable health systems in communities in Ghana and Africa for that matter, attention to religious and ethnic diversity issues is imperative. One factor that is found to have a moderating effect on diversity is membership of social network groups. Stolle and others (2008) make this point unequivocally that, a diverse neighbourhood context may actually pose a lesser problem for people who have regular, personal interactions with their neighbours. That is, if you have social ties to others in your diverse neighbourhood, the diversity of that neighbourhood may not be as threatening to your level of interpersonal trust as for someone who lives in a diverse neighbourhood without such social interactions.

## *Conclusion*

Admittedly, health insurance is a social movement. Weaknesses such as low population coverage among others surely need greater attention. Since this is a social movement, an integrated and multidisciplinary approach would allow for community qualities such as ethnic and religious diversity to be mainstreamed into policy designs for marketing and service delivery. In Ghana the empirical literature on determinants of health insurance uptake is growing. But most studies are still conservative in their hypothesis. Meanwhile there are many other areas still left unexplored. The body of literature that documents the role of ethnic diversity in determining economic growth and development is enormous. There is however little discussion about how ethnic diversity (including religious diversity) influences peoples' attitudes towards spending on goods for their own good and for the good of all in the society. This study intends filling this gap.

### ***3. Brief overview of the National Health Insurance Scheme in Ghana***

There have been a number of reforms in Ghana's health sector since the mid-1980s to ensure effective and efficient delivery of services. Health care financing is one of the areas that has gone through many dynamics recognizing free health care at the eve of independence, introduction of a nominal fee in the 1970s and the introduction of cost recovery mechanisms through user fees (traditionally known in Ghana as "cash and carry") in the 1980s. The "Cash and Carry System" of paying for health care at the point of service was observed as imposing a financial barrier to health care access for the poor, resulting in major inequalities in health in Ghana. Through a Legislative Instrument, the National Health Insurance Act 2003 (Act 650), the National Health Insurance Scheme (NHIS) was established with the aim of abolishing this system and limiting out of pocket cash payment at the point of service delivery. The law allows for the co-existence of District-wide (Public) Mutual Health Insurance schemes (DMHIS), Private Mutual Health Insurance schemes and Private Commercial Health Insurance schemes.

Fundamentally, Ghana's health insurance scheme is a social health insurance policy with social protection as the underpinning principle. In terms of institutional structure, the National Health Insurance Act (650, 2003) established a National Health Insurance Authority, governed by a Council, to regulate the system, including accreditation of providers, agreeing contribution rates with the schemes, managing the National Health Insurance Fund and approving cards for membership. The President of Ghana is given sole power to appoint the chairperson and members of the Council. At the district level, the DMHIS which is our interest of study is managed by a Board, which is elected by a General Assembly comprised of Community Health Insurance Committee (CHIC) representatives. CHIC representatives represent geographically determined 'Health Insurance Communities' within each district. The CHIC exists officially to oversee the collection of contributions within its designated Health Insurance Community, to supervise the deposit of these into the District Health Insurance Fund, and to represent community interests in the management structures of the DMHIS. The policy allows each DMHIS to use its discretion to determine additional benefits it can provide beyond what the ACT provides.

### **Funding and exemption Policy**

The NHIS is financed mainly through taxes on selected goods and services (through VAT), retention on workers' Social Security and National Insurance Trust (SSNIT) contribution and

premium payment through membership registration. The NHIS Act, 2003 (Act 650) imposed a 2.5% VAT levy on selected goods and services in the country to finance the scheme, and a 2.5% of workers contribution to the SSNIT is deducted at source as their contributions to the scheme. That makes all SSNIT contributors automatically exempted from payment of premium. They are however required to register in order to benefit from the scheme. A premium, determined based on the income level of subscribers, is paid by all informal sector workers in order to have access to basic health services under the NHIS. Community members through CHIC help in the identification and categorisation of residents into social groups to determine the premium to pay.

Due to anticipated problems related to adverse and risk selection issues, and also due to low incomes, the framework established a fund to subsidize the cost of providing health care services for members of DMHIS. A portion of total mobilised funds for the scheme is repackaged as an 'exemption fund' and channelled through district implementing bodies to cater for the poor and vulnerable groups as defined under the Act<sup>2</sup>. According to the Act, there should be an efficient social grouping validation in place in all Districts/Sub-metro, to ensure that the real core poor are listed for Government to pay their contributions from the National Health Insurance Fund (NHIF). The CHIC are tasked to identify and categorize residents into four main social groups: the core poor or the indigent, the poor and the very poor, the middle class, and the rich and the very rich. The core poor<sup>3</sup>, together with SSNIT pensioners, people over 70 years, and children below 18 years are the people exempted from paying premium.

### **Membership and collection of informal sector workers' contributions**

An automatic payroll deduction of 2.5% from formal sector workers' contribution to the Social Security and National Insurance Trust (SSNIT) transferred to the NHIF makes them de jure members of the scheme. They however enjoy the health benefits package after having registered as a form of identification for the purpose of seeking health care under the scheme. Informal sector workers become members after having completed the payment of the stipulated premium. Contributions by those outside the formal sector is usually defined according to their income such that the lowest-income group pays a premium of 7.20 Ghanaian cedi (GH¢) or US\$ 8 while those in the highest income group pay a premium of GH¢ 48.00 or US\$ 53.2. Individuals are given the opportunity to pay their contributions in 12 maximum monthly instalments if they so wish.

There are two ways of collecting contributions of informal sector clients in particular. One involves collectors visiting individuals in their houses to receive payments. Secondly individuals are given bank accounts to pay their contributions directly or designated pharmacy or chemical shops using identification slips given to them. It normally takes a minimum of three months for a new registrant to receive a registration card and a maximum of six months in all (waiting period) to begin to use the card for health care. The waiting period serves to address issues regarding

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<sup>2</sup> It is believed that the district schemes will include more poor people than the private mutual schemes and private-for-profit insurance companies also allowed under the Act.

<sup>3</sup> The core poor are people with no visible source of income, have no fixed abode, are not living with an employed person with a fixed abode, or a person who has no consistent source of support from another person.

adverse selection and consumer moral hazard. This period also applies to persons who renew their registration only when “in need” of health care (renews more than 13 months after expiry).

### ***Research issues***

Recent studies on the NHIS find important issues concerning social inclusion aspects of the scheme that need to be handled to increase membership and increase contribution. Osei-Akoto and others (2011) observed that apart from affordability, a number of issues arise out of the arrangements to enrol and renew households and individuals from a large section of the population. Some of these issues relate to the perceived value of the scheme to households who reside in places that are far from the location of quality health care facilities. More importantly is the interpretation of the policy as a social protection programme and the understanding and acceptance of social solidarity.

Against the backdrop that there is widespread sociocultural diversity in we investigate the connection between the degree of diversity and decision to participate in the health insurance programme. We hypothesised in this study that ethnic and religious diversity have a negative effect on a household’s decision to participate in the health insurance programme. We also examine the effect of potential intermediating variables through which ethnic diversity may have only an indirect effect on health outcomes. These intermediating variables include membership of social groupings and attending community meetings. These variables are not only indicative of the quality of social capital building in society, but also are likely to have an effect on health insurance uptake in particular. Increased social networking reduces mistrust among people of diverse sociocultural backgrounds which has been found to increase the chances of buying participating in community programmes for the good of the community. Distance to health facility in the community is important for health insurance use because they are literally a two-way street – owning health insurance allows one access to health facility, and the availability or closeness of a health facility increases the benefits of owning a health insurance policy.

### ***4.1 Data and methodological issues***

We use data from a survey conducted in 2008 on behalf of the Millennium Development Authority (MiDA) in Ghana. MiDA is the authority that executes the Millennium Challenge Corporation compact signed with the government of Ghana in 2006 to implement a set of development programmes in Ghana. As part of a process of assessing the impact of the programme on the target population as well as the economy as a whole, the Institute of Statistical Social and Economic Research (ISSER) in conjunction with Ghana Statistical Service (GSS) implementing two main living standards surveys modelled on the framework of the existing Ghana Living Standards Survey (to be known as GLSS5+). The GLSS5+ survey covered six (6) out of the ten (10) administrative regions, twenty-three (23) administrative districts from these regions, and interviewed 9310 households. The survey collected detailed information on so many things including ethnic and religious background, membership of health insurance scheme, and general socioeconomic and demographic background of households.

The household is the unit of analysis in the paper. A household is classified as insured if at least there is one member of the household who is registered on the health insurance scheme. A simple summary statistic analysis shows that the average number of persons a household



registers is 1.90 with a variance of 2.98. The distribution further shows that the variable is over dispersed implying that the use of Poisson model (a natural starting point for count data models) will not be appropriate.

Extensions to Poisson, also using count data regression models, which have excess zeros, are employed to account for the over dispersion. The formulation of such mixing models is as follows [Greene, 2000]:

Define

$H = 0$  if regime 1 holds (household has never joined the scheme)

$H = 1$  if regime 2 holds (household ever joined)

$y^*$  be the outcome in regime 2, which is a Poisson process

$y = H \times y^*$  be the partially observed response

The probabilities for the observed  $y$  are given as:

$$\text{Prob}(y = 0) = \text{Prob}(H = 0) + \text{Prob}(H = 1) \times \text{Prob}(y^* = 0 | \text{Poisson})$$

$$\text{Prob}(y = j > 0) = \text{Prob}(H = 1) \times \text{Prob}(y^* = j | \text{Poisson})$$

The distribution underlying the model is:

$$\text{Prob}(H_i = 0) = F(x_i, \alpha)$$

$$\text{Prob}(y_i = j | H_i = 1) = \frac{e^{-\lambda_i} \lambda_i^j}{j!}, j = 0, 1, 2, \dots$$

$$\lambda_i = e^{(\beta'x_i)}$$

where  $H = 0$  is the decision to stay out of the scheme

$y$  = the number of household members fully registered

$x$  = the vector of independent variables

$\alpha$  = the vector of coefficients in the first equation

$\beta$  = the vector of coefficients in the second equation

$\lambda$  = the Poisson parameter

The model is estimated with either Zero-Inflated Poisson (ZIP) or Zero-Inflated Negative Binomial (ZINB) [StataCorp, 2001; Limdep, 1999]. The estimation is one of the applications of mixture models using count data. For ZIP or ZINB, the estimation involves fitting the regime switch, that is whether the binary is always 0 or not at the first stage, and computes the probability that it is 0. This probability is then used to adjust the Poisson model at the second stage. Both stages are estimated at the same time leading to estimation of a mixing distribution.

The application of the ZIP model does not require the use of exclusion variables because the Poisson model assumes away individual heterogeneity (no unobserved heterogeneity in the count data) that could be correlated to the unobserved effects in a typical sample selection model. When one suspects that in addition to the regime switching, there is effect of individual heterogeneity, then application of ZINB is required and exclusion variables may be needed.

Other models that can be used combine the degenerate model and the finite mixture model in a single specification. Applications of these models are usually based on panel data and rely on latent class specifications to control for unobserved individual heterogeneity by a finite number of classes. Applications of these models using cross-section data are sometimes faced with identification problems (Jones *et. al.*, 2007). Specifications that use flexible conditional functions can also be used to explain how individuals may belong to different latent classes (Gilleskie and Mroz, 2004). Even though one does not need to provide an intuitive description of the degenerate part of the model, it is sometimes difficult to label the latent classes in a convincing manner. The finite mixture models are flexible as compared to zero-inflated models but they are not that parsimonious and they involve significant computational challenges (Cameron and Trivedi, 2009).

### ***5. Summary descriptives and characteristics of insured and uninsured households***

The characteristics of the insured and uninsured households are quite dissimilar (Table 1). We confine our discussions to selected attributes of insured households and community/district variables. Almost all 9310 households had all the selected variables for the analysis. Of these households, more than half (55.4%) had at least one member insured. One of the key policy components of the NHIS in Ghana is age-specific exemption. The scheme exempts children under the age of 18 years and adults above 70 years from premium payment. As of 2008, the only requirement for this category of persons to benefit from the scheme is simple registration for the aged and a purchase by adult parents to cover children below 18 years. This means that a household with children below 18 years should be motivated to purchase the policy to enable children benefit. The data shows that on the average whether insured and uninsured, a household has about 3 children below the age of 18 years, whilst few households have people above 70 years.

TABLE 1 ABOUT HERE

Another important factor according to the literature that will motivate people to buy health insurance is health status. The essence of the insurance policy is to protect households from bearing the cost of health care directly from out-of-pocket. It is expected that a household which has people who report poor health will be more willing to purchase health insurance. With a household size of about 6 persons, on the average about a third of these members report very healthy status. This means that the other two-thirds suffer one form of illness or the other requiring medical attention. About 86 percent of the total number of households resided more than 5 km away from a hospital and nearly 70 percent resided more than 5km away from a health centre or clinic. This is expected to be a demotivating factor for uptake of health insurance since possession of the policy in itself without any health facility nearby to access when sick is not rewarding to the policy holder.

The key hypothesis being tested in this study is the role of diversity (ethnic and religious) in influencing people's attitudes towards health insurance uptake. The data shows that the districts are largely homogeneous in terms of ethnicity (with an index of 0.23). On the other hand, the districts are quite diverse religiously (with an index of 0.56). The most religiously diverse districts are in the Afram basin and Southern horticulture zone (diversity index of approximately 70%). Conversely, districts in the northern zone are religiously homogeneous. Islam is the most predominant religion in the Northern zone with over 80 percent of the population being followers of Islam.

Health campaigns are commonly used to educate and sensitise communities about emerging health issues. These are mostly done in both local language and English language depending on the issue and the community. It is believed that health campaigns help inform people on their health action decisions including to buy health insurance policies as they are much more aware of its benefits. Nearly 80 percent of households said they receive health campaigns in their communities. The expectation is that health campaigns should have a positive influence on the decision to buy health insurance.

We also expect membership of social networks to have some positive effect on peoples' decision to buy health insurance. It is suggested in other studies that membership of social network groups influences people's demand for voluntary community-based social programmes (such as community-based health insurance schemes). In this study we also think that if in a household at least one adult belongs to a social network group it will serve as a moderating effect on the divisive tendencies of sociocultural diversity. In about 67% of households there is at least one adult member who belongs to a social network group. We also expect attendance at community/village meetings to be very important in shaping peoples perceptions of public programmes including the health insurance policy. At such meetings health issues are discussed either as mainstream agendas or at the margins before or after meetings.

Employment is a key determinant of insurance uptake, but more importantly as well is the sector of employment and who is employed or the main breadwinner in the household. Employees in the formal sector in Ghana are expected to have an advantage joining as it is much easier since their premium is deductible obligatorily from their contribution to SSNIT. It is therefore only economically prudent for households in which there is an adult in formal sector to be insured than households with no formal sector worker. The data however shows that very few households have adults in formal sector employment (14%). Another key employment variable we employed in this analysis is the gender structure of employment in the household. There are four categories in the gender-employment classification of households. We have male-earner household (no female earner), female-earner household (no female earner), dual earner household (both female and male earners) and the non-employed household.

### ***6.1 Results of the empirical model***

The study modelled two set of variables that jointly determine household's participation in a voluntary community-based district-wide mutual health insurance scheme as in the design of the Ghana national health insurance scheme. These are community variables and household factors.

The key community variables are two factors that capture diversity in society (ethno-linguistic fractionalisation and religious diversity), distance of health facilities such as hospital and health centre within five kilometres of the household, and whether there are regular health campaigns in the community. We also included a district insurance coverage measure that proxy for district efforts to sell the scheme. Household variables included are policy-specific variables (e.g. number of children under age 18 years, number of people aged 70 years and over and number of formal sector workers in the household). Other household variables include total household expenditure (excluding expenditure on health care), total expenditure on medical bills alone, household members in social network groups, locality of household, and gender employment-type. Household size was used to control for the unequal sizes of the households since allowing that could have a bias influence on analysing the number of household members that are registered. We also control for the effect of participation in other social network organisations on the role of religion (Scheve and Stasavage, 2006).

Central to this study is the effect of ethnic and religious diversity on a household's decision to participate in the NHIS in Ghana. Our model estimates show that these two variables are positively associated with a household's decision not to participate in the scheme. But the probability that a household will not participate is higher in ethnically diverse communities than in religiously diverse communities (Table 2). The estimated marginal effect of ethnic and religious diversity on the probability of nonparticipation is about 10.5 percent and 4% respectively. Statistically, the effect size of religious diversity is however not significant. The other community factor included in the model that shows a positive and strong association with participation is the presence of a hospital within five kilometres of the household. The presence of a hospital decreases a household's decision not to participate by about 13.5 percent. We did not find the presence of a health centre/clinic and regular health campaigns in a community to have any strong influence on the decision not to participate. Rural localities are positively associated with nonparticipation.

#### TABLE 2 ABOUT HERE

For household specific factors, the presence of people aged 70 years and over, an increasing age of the household head, and the number of literates (persons who can read and understand in a local language and in the English language) in the household are negatively associated with nonparticipation (encourages participation). Presence of children under 18 years is however positively associated with nonparticipation by the household. The presence of aged people reduces the household's probability of nonparticipation by nearly 13 percent. Similarly, household heads who are advancing in age are more likely to participate. In terms of employment, a household with at least one person employed in the formal sector is positively associated with participation. This has the effect of decreasing the probability of nonparticipation by as much as 17 percent. Our gender employment-type variable is also very significant in determining participation of the household. As compared to dual-earner household type all the other type of gender-income earning structure is negatively associated with nonparticipation. The probability of nonparticipation reduces by 9% or 7% if a household is supported by a female-earner only or has dual-earners. The probability of participation is however higher in households

that have no income earner. This is obvious since such households are likely to receive free membership.

A household with high total annual expenditure (net of health expenditures) is also associated with the probability of participation. High consumption expenditure is generally associated with non-poor or wealthy households. If a household's total consumption expenditure is high, its probability of nonparticipation decreases by about 9%. Similarly, the probability of nonparticipation decreases if the household is associated with high direct medical expenditure. High direct medical expenditure is associated with more serious medical conditions and such households are more likely to depend on the health insurance scheme for support.

The results for the second part of the ZINB model which captures extent of participation (number of household members registered on the scheme) strengthens the earlier part that there is a negative association between ethnic diversity and participation in mutual health insurance schemes. The model estimates show that the probability of registering at least one person on the scheme reduces by as much as 9% in an ethnically diverse community. For religiously diverse communities, the effect is a little less (6%), and the sign of the coefficient although pointing in the right direction, is not statistically significant. This means that ethnic fractionalisation is more of a threat to the growth of mutual health insurance schemes than religious diversity.

What we find equally strong in encouraging high rate of participation in the health insurance scheme is the availability of a hospital facility within five kilometres of a household's reach. The effect of the presence of a hospital increases the probability of registering at least one or more members of the household by about 12 percent. The presence of a health centre or a clinic does not seem to have any significant effect on the extent of participation in the health insurance scheme.

At the household level the presence of aged people and the age of the household head increase the probability of registering at least one household member on the health insurance scheme by 12 percent and 0.13% respectively. The presence of children in the household does not seem to influence the decision to register any other additional member of the household. We also find that households with literates and households with persons in formal sector employment are likely to register at least one person or more on the health insurance scheme. The effect of the presence of a formal sector employee in the household is large (15%) and significantly strong. The effect of the presence of literates on the probability of registering at least a member is also 3.5% and significant.

In terms of the gender structure of the income-earning members of the household, we find that first of all the presence of income earners in the household increases the chances of registering at least one household member on the scheme. The effect is however higher in households where the only person who earns income is a female (7.5%) as compared to a male-earner only household and also higher even in households where there are dual-earners by about 0.5%. Similarly, we find that even though households that receive remittances are more likely to register a person on the scheme, the effect is higher when remittances go to a female-headed household. The probability of registering one or more members of a household increases by

about 27.4 percent if remittances come to a female-headed household. This evidence is vital for the benefit of poverty reduction programme designs that include cash handouts to extremely poor and vulnerable households.

## **7. Discussion**

At the onset of the health insurance movement in African, states wanting to implement health insurance programmes avoided the word “insurance” because of people’s prior experiences with other kinds of public and private programmes presented purportedly to alleviate poverty. The term “mutual health organization” was thus thought to be more socially acceptable because it emphasized social cohesion and more associated with people’s positive experience with mutual aid societies (Wang et al. 2010). In Ghana for example the *adinkra* symbol (Nkonsonkonson showing a chain links) which signifies solidarity and which reminds citizens that in unity lies strength and thus entreating people to contribute to the community, was the rallying symbol of most of the piloted health insurance schemes (Arhinful, 2003). More than seven years since the formal relaunch of health insurance in Ghana, participation is still problematic, borne partially as a result of lurking scepticism but largely as a result of its design in our view.

The design of the scheme, although ultimately intended to be national in character, is community-based/district-wide in coverage thus making it territorially flat in attraction. Except for employees in the formal sector and other workers who are mandatorily members due to their contribution to the national social security fund, membership is generally voluntary. Coupled with this is the lack of portability of the scheme. As noted from the forgoing the scheme is territorially non-transferable. This means that a policy holder cannot use it to access health benefits anywhere in another district except from the district of registration. This generally makes the scheme unattractive to non-indigenes.

The main assumption underpinning the scheme also lies in historical precedents of the successes of mutual aid societies, known as the *susu* system. The *susu* systems traditionally cover a wide range of social services such as funerals, marriages, and birth costs. These were actually referenced as evidence that the Ghanaian people will be accepting of the new NHI legislation (Singleton, 2006). What is missed in this thinking is that these mutual aid systems are largely organised around common-interest groups such as ethnic and religious lines or restricted to workers in the same sector or organisation (Arhinful, 2003; Develtere and Fonteneau, 2001). Interestingly many of these ethnic and religious networks have further adapted to urbanisation and migration, linking communities based in rural areas and urban settings and even across national boundaries. Besides, the sustenance of these systems is mainly based on mutual help and reciprocity rather than on solidarity. The difficulties in ensuring wide participation today can be traced to the neglect of this fact. The thesis that communities with a dense network of such systems – and thus with more ‘bounded’ solidarity - have a better seed-ground for the newly introduced ‘modern’ mechanisms can therefore not be sustained (Develtere and Fonteneau, 2001).

Our most outstanding empirical finding that reinforces the above discussion is the fact that societies which are ethnically and religiously diverse seem to be very difficult grounds for the sale of the scheme. In other words more ethnically fractionalised and religiously diverse

communities are less likely to participate in the NHIS. Considering that ethnically diverse communities are largely associated with immigrant communities coupled with the lack of portability of the scheme, migrants/non-natives are largely demotivated from registering with the scheme since they will not be able to utilise it back in their native districts. An ethnically diverse community with different migrant groups tend to organise themselves into ethnic enclaves and place their trust and solidarity in this smaller welfare groups for support. Migrants are also associated with personal independence and uniqueness.

In ethnically diverse communities, beyond the small welfare enclaves organised around ethnic groups, people are also generally more individualistic in outlook with low trust in others. Using multivariate analysis Basabe and Ros (2005) confirms the influence of ethnic diversity on individualism. As most cities and towns get more and more urbanised and ethnically more and more diverse, the relationship between ethnic diversity and social capital, especially trust, becomes increasingly difficult to mobilise. For marketing purposes therefore scheme marketers may have to de-emphasise the collective benefit of the scheme and rather espouse the household economic benefit in participating.

The magnitude of the effect of religious diversity on insurance participation is also appreciable, though not as large as that for ethnic diversity. This may be because as Alesina and others (2002) noted, there is a higher level of tolerance and freedom in societies where religious fractionalization is high. Nevertheless, if we assume that there is a positive and strong correlation between religious diversity and religiosity then the concept of self-efficacy can further be used to explain the negative effect that religious diversity has on health insurance participation. High religiosity is noted to be associated with self-efficacy which has to do with an individual's confidence in his or her own ability to self-regulate behaviour in various situations and to avoid health shocks. This self-belief factor is an important mediating rod between knowledge, attitudes, values, and behaviour towards use of health services. The low level of NHIS penetration in religiously diverse communities supports other views that higher religiosity is negatively correlated with support for social spending (Scheve and Stasavage, 2006) which then explains the low participation in the health insurance in such areas. Ghanaians are noted to be incurably religious (Thompson, 2002).

There is also rather a higher degree of solidarity and mutual trust and acts of collectivism in religiously homogeneous communities as compared to heterogeneous and diverse societies comprising people of different religious backgrounds. Homogeneous communities are more welcoming and more prepared and willing to contribute to programmes meant for the common good of all. Our data shows that in the Northern Region of Ghana where there is a largely religious homogeneity (dominated by Islam) participation in the health insurance scheme is significantly higher than Greater Accra region where there is higher religious diversity.

Our estimates of mainstream household variables though largely consistent with earlier studies in the literature, they only serve to further the literature on the significance of these factors in influencing a household's decision to participate in voluntary community-based health insurance schemes. Factors such as income, presence of literates, formal sector workers, aged, and children in the household, variously and significantly explain a household's chances of deciding to

participate in a community-based health insurance scheme. We also find that reported health status of household members cumulatively influences the decision to participate in health insurance scheme. As Cameron and others (1988) noted, it is the anticipation of future consumption of health care services that largely influences the decision to participate in a health insurance scheme. People who generally perceive that they are well and unlikely to fall sick do not find health insurance a worthy investment.

Similarly, the magnitude of health care expenses incurred by a household in a previous year influences their decision to participate in the health insurance scheme. Households that are prone to spending more on medical bills are more willing to take up health insurance to avert wealth depletion in the future. Economically, whilst this is prudent, it flogs the very principle of the community-based or district-wide mutual health insurance scheme such as in the case of Ghana's NHIS which is expected to thrive on mutual solidarity, risk-pooling and cross-subsidisation. The design of Ghana's health insurance scheme is organised in a social perspective, and principled on risk sharing between the healthy and the less healthy, and between the rich and the poor. This raises issues of adverse selection and self-selection which arises as a result of the inability of scheme managers to adequately screen buyers to differentiate between "milk-sharing" participants and "milk-seeking" participants. This arises due to a myriad of reasons from random variation in the health status or wealth status of individual buyers; and perhaps a greater level of information asymmetry about wealth status of buyers. In some jurisdictions, CBHI organizations actually refuse membership to individuals whose health or economic situation would pose an excessive burden (Ouimet et al. 2007).

A conditional cash transfer programme is being piloted in Ghana. And one of the aims is to scale-up participation in the health insurance scheme especially among the poor and vulnerable in society (NDPC, 2009). Beside the gender effectiveness of participation in health insurance and utilisation of health care services, the estimates show that when remittances are given to female-headed households the effect size on the probability of registering at least one or more members of the household is significantly higher than for male-headed households. This is an important empirical result for countries implementing conditional cash handouts to households as an alternative means of protecting the vulnerable in society. It is much better if the handouts are given to female-headed households if the additional intention is to scale up registration with a community-based health insurance scheme.

## ***8. Conclusions***

A basic conceptualisation of this paper is that our extreme diversity (ethnically and religiously fractionalised societies) does not only affect governance and the provision of common goods, but also affects our individual and group perception and participation in self-help and social protection programmes for our common good. One of the fundamental and shared goals of providing public services is to create opportunities for all to share in the benefits of development as well as participate in their growth and sustenance of programmes. Likewise, an important goal of national health insurance schemes is to ensure that good health care is more accessible and open to all especially the under-represented and the under-protected in society (children, mothers, migrants, poor and the vulnerable).



What this research has sought to provide is that making health insurance more accessible is much more complex than thought. Our very sociocultural foundation shaped by our ethnic and religious diversity serves as threatening forces to the growth and coverage of all. Specific strategies have to be developed to ensure that health insurance schemes are available and relevant to the diverse populations it is meant to serve. This paper seeks to highlight the point that relying on voluntary purchase alone to increase scheme coverage will only bring modest success. There is a tremendous amount of variability within sociocultural groups. And, each group can be characterized by differences in family structure, ethnic and religious inclinations. Embedded within that ethnic and religious diversity are a host of other variables which often remain implicit, including different emphases on family networks, social groups, values, attitudes, meanings, behaviours and political contestations.

The results presented in this paper are new evidence that shows that African countries can take advantage of our internal ethnic and cultural diversity to make health insurance reach majority of its people especially in the largely less educated and mostly rural communities. With Africa getting more and more diversified each passing day, new ways of including its people in the development process is imperative. We wish however to conclude that ethnic fractionalization is an important threat to NHIS success in terms of participation, than religious diversity.

Given the unique and entrenched ethnic, lingual and cultural diversity within African nations, the CBHI approach may be particularly promising for Africa because it allows adaptation to local conditions. More importantly however, note should be taken of the fact that the effect of the perception of illness, and thus of health seeking behaviour is substantially influenced by situational factors such as ethnicity, religion or socio-economic position. Instead of marketing the insurance schemes largely through the electronic media as in Ghana (NDPC, 2009) it is important that scheme providers apply different and innovative measures to make the scheme more attractive to clients.

We suggest that some of the measures to make CBHIs attractive include ensuring that health care service (health facilities and skilled personnel) comes as close as possible to potential clients, qualitative improvements of available facilities in communities (upgrading existing district health centres to hospital status with heads as skilled doctors), and engaging in promotional campaigns using mainly common and “in the basket-related” illnesses that are potentially expensive to treat. The design of the CBHIs has to consciously take these things into consideration to cater for the needs of all if the ultimate aim is to serve all at everywhere. The last suggestion is to make a conscious strategy of making health insurance compulsory for informal sector workers to help pool both health and financial risk.

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## Appendix:

Table 1: Summary of attributes of insured and uninsured households

Variable	Insured	Std. Dev.	Uninsured	Std. Dev.
Household size	6.23	3.70	5.54	3.14
Number of children under 18 years	3.21	2.49	3.05	2.26
Number of adults 70+ years	0.24	0.50	0.12	0.35
Number of males in the household	3.00	2.17	2.66	1.89
Number of females in the household	3.23	2.17	2.88	1.97
Head of household is female	0.27	0.44	0.26	0.44
Age of household head	50.05	15.28	45.24	14.14
Household expenditure	2862.96	2197.27	2065.26	1457.26
Total direct cost of medical care	219.67	759.00	157.59	582.54
Number of household members in formal sector work	0.24	0.54	0.77	0.53
Number of male earners in the household	0.80	0.63	0.61	0.66
Number of female earners in the household	0.87	0.77	0.05	0.24
Number of adults with secondary or higher education	1.07	1.42	0.49	0.90
Number of household members who reported that they are very health	3.38	2.53	2.85	2.20
Core poor	0.26	0.44	0.31	0.46
Relative poor	0.13	0.33	0.17	0.37
Non-poor	0.61	0.49	0.52	0.50
There are regular health campaigns in community	0.78	0.42	0.80	0.40
Ethnic diversity	0.23	0.16	0.22	0.17
Religious diversity	0.53	0.25	0.57	0.24
Number of adults who are members of social network groups	1.71	1.87	1.57	1.55
Number of adults who attended previous village meeting	0.52	0.97	0.66	0.97
Rural	0.61	0.49	0.82	0.38
Urban	0.39	0.49	0.18	0.38
Hospital within 5km	0.20	0.40	0.08	0.27
Health centre/clinic within 5km	0.36	0.48	0.28	0.45



Table 2: Results for factors determining participation and extent of participation in the district mutual health insurance scheme in Ghana

Factors determining the probability of participating in the NHIS	Probability of a household not participating in the insurance programme		Probability of one or more people participating in the insurance programme in the household	
	Marginal effects	z-value	Marginal effects	z-value
<i>Social diversity</i>				
Ethnic diversity	0.105	2.080	-0.092	-2.020
Religious diversity	0.044	0.630	-0.060	-0.930
<i>Demand-push factors in the community</i>				
District efforts to market scheme	-0.721	-5.870	0.728	6.500
Hospital within 5km of household	-0.135	-4.030	0.122	3.970
Health centre/clinic within 5km of household	-0.031	-1.240	0.024	1.030
There are health campaigns in community	0.060	1.180	-0.057	-1.230
<i>Household factors</i>				
Number of household members who are literate	-0.033	-5.450	0.035	6.240
Number of household members aged 70 years and above	-0.125	-5.810	0.121	6.210
Number of children 18 years and younger in the household	0.006	1.130	0.004	0.960
Age of household head	-0.002	-2.880	0.001	2.360
Household members with formal sector employment	-0.166	-6.010	0.153	6.030
Log of household expenditure	-0.094	-6.360	0.095	7.000
Log of household out-of-pocket expenditure on health	-0.006	-0.900	0.004	0.700
Remittance coming to female-headed household	-0.303	-3.390	0.274	3.360
Locality of residence (1=rural)	0.115	4.110	-0.111	-4.260
<i>Gender employment-type in the household (ref. type=male-earner only)</i>				
Female-earner only in the household	-0.090	-3.400	0.075	3.110
Dual earners in the household	-0.072	-4.030	0.070	4.290
No earner in the household	-0.105	-2.450	0.063	1.730

Table 3: Results for the finite effect of the factors determining participation and extent of participation in the district mutual health insurance scheme in Ghana

Variable	Equation 1			Equation 2			
	Marginal effects	Std. Error	z-value	Marginal effects	Std. Error	z-value	X
Ethnic diversity	-0.074**	0.034	-2.160	-0.312*	0.182	-1.710	0.341
Religious diversity	0.103	0.064	1.600	-0.331*	0.198	-1.670	0.538
Health campaigns	-0.030**	0.017	-1.770	-0.057	0.064	-0.890	0.765
Religious diversity and non-poor	-0.021	0.034	-0.630	-1.043***	0.128	-8.160	0.388
Ethnic diversity and social network	0.025**	0.012	1.990	0.294***	0.085	3.450	0.461
Number of literates	0.030***	0.007	4.080	0.188***	0.034	5.560	1.162
Age 70 and more	0.084***	0.016	5.330	0.265***	0.066	4.010	0.190
Age 18 and less	0.003	0.010	0.300	0.382***	0.03	12.680	1.979
Age of household head	0.003***	0.001	6.340	-0.003	0.002	-1.610	47.412
Formal workers	0.157***	0.017	9.110	0.00	0.058	-0.010	0.127
Log of total direct cost of health care	0.020*	0.011	1.850	0.032	0.029	1.100	2.218
Log of total direct cost of health care squared	-0.003	0.002	-1.490	-0.006	0.005	-1.250	11.277
Log of total household expenditure	0.485***	0.154	3.150	4.690***	0.7	6.700	7.431
Log of total household expenditure squared	-0.029***	0.010	-2.910	-0.265***	0.045	-5.870	55.677
Female is a member of social network	-0.001	0.001	-0.800	-0.016**	0.005	-3.090	3.453
Remittance comes to female-headed household	0.005	0.018	0.260	0.079	0.117	0.670	0.041
Rural locality	-0.124***	0.031	-3.950	-0.062	0.072	-0.860	0.683
Female-earner only household	0.109***	0.030	3.670	0.022	0.075	0.300	0.253
Dual-earner household	0.034	0.029	1.150	0.343***	0.076	4.490	0.285
No-earner household	0.106**	0.042	2.510	-0.643***	0.124	-5.200	0.086
District efforts of scheme managers	0.006***	0.001	6.950	0.023***	0.003	7.670	35.858
Hospital within 5km of household	0.043**	0.021	2.030	0.066	0.065	1.020	0.173
Health centre within 5km of household	0.004	0.015	0.240	-0.051	0.056	-0.920	0.361
Doctor in rural community	-0.034*	0.021	-1.650	-0.208*	0.112	-1.850	0.060
Nurse in rural community	0.080**	0.032	2.540	0.015	0.074	0.210	0.239
Health status of household	-0.007	0.008	-0.790	0.018	0.028	0.630	2.222