Socioeconomic Characteristics of Enrollees in Community Health Insurance Schemes in Africa

Francis Okello
Frank Feeley

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Abt Associates Inc.
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1001 G Street NW • Suite 400W • Washington DC • 20001-4545
Telephone (202) 220-2150 • Fax (202) 220-2189 • www.cmsproject.com

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ABOUT THE AUTHORS
Francis Okello is a Regional Research Manger for Anglophone Africa with the CMS project and Senior Analyst with Abt Associates Inc. Frank Feeley is Clinical Associate Professor of Public Health at Boston University and has served as Health Financing Advisor for the CMS project.

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ABSTRACT
The CMS project provided technical assistance to the Nkoranza Health Plan in Ghana (a hospital-based plan primarily offering inpatient care — the only exception being outpatient care for dog and snake bites) and the Lacor Health Plan (a hospital-based plan offering inpatient and outpatient care to small groups in war-torn northern Uganda). A study of willingness to pay for a new benefit — normal obstetric delivery — in Nkoranza and the evaluation of the Lacor plan provided two data sets, from which the characteristics of joiners and non-joiners were analyzed.

KEY WORDS
Lacor Health Plan, Nkoranza Community Health Plan, community-based cooperatives, health plan, employment groups, health insurance, Gulu District, impact, intervention group, comparison group, Ghana, Uganda, USAID, Commercial Market Strategies project.

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Contents

Introduction

The CMS project provided technical assistance to the Nkoranza Community Health Plan in Ghana (a hospital-based plan primarily offering inpatient care) and the Lacor Health Plan in Uganda (a hospital-based plan offering inpatient and outpatient care to small groups in the war-torn Gulu district of the country). A study of willingness to pay for a new normal obstetric delivery benefit in Nkoranza and an evaluation of the Lacor plan provided two data sets on the characteristics of residents who joined the health plans, as well as on those who did not join. Both data sets were analyzed using bivariate analysis and multivariate logistic regression models.

The results show consistent correlations between the propensity to buy health insurance and increasing education. In addition, smaller household size and use of the sponsoring facility are also predictive of plan enrollment. Significantly, however, the expected correlation between improved living standard and plan enrollment did not occur at both sites. In the region served by Ghana's Nkoranza plan, the poorest quartile in the standard of living index (SLI) was more likely to join the plan than households in the two middle quartiles. In the Gulu district served by Uganda's Lacor plan, poorer members of eligible groups were less likely to join the plan, although a significant portion of plan enrollees — 15 percent — still came from the poorest quartile in this impoverished district.

Objective

The analysis uses data recently developed for marketing and evaluation purposes at two sites in different African countries to identify the effect of selected socioeconomic characteristics on a household's propensity to join a community health insurance scheme.

Background

Community Health Insurance

Donors and policymakers are increasingly interested in creating private-sector community health insurance schemes in developing countries. Given the shortfall in current levels of donor assistance and government spending, such countries are unable to meet all the health needs of their populations. The practice of assessing user fees in public facilities to make up the revenue gap is widespread. At the same time, private markets for curative medical care and drugs are substantial — as a proportion of total health spending, out-of-pocket spending is higher in poor countries than it is in wealthy ones.[1] Rather than having medical expenses fall unevenly and unpredictably on uninsured households stricken by illness or accident, the monies that these households would otherwise spend on health care can be combined in a risk pool through community health insurance schemes, which offer a degree of social protection to those who enroll.

The World Bank and the International Labor Organization recently published a book showing how the risks incurred by such small community health insurance schemes might be spread over a much broader risk pool through a reinsurance mechanism,[2] thus encouraging the spread of community health insurance. And the Commission on Macroeconomics and Health (Sachs Commission) appointed by the World Health Organization concluded that community health insurance schemes do have the potential to make health services more accessible in the developing world. A report submitted to the Commission in 2001 summarized the existing literature on community health insurance schemes as follows:

> …[T]he main strengths of community financing schemes are the extent of outreach penetration achieved through community participation, the contribution to financial protection against illness, and an increase in access to health care by low-income rural and informal-sector workers. The main weaknesses are the low volume of revenues that can be mobilized from poor communities, the frequent exclusion of the very poorest from participation in such schemes without some form of subsidy, the small size of the risk pool, [and] the limited management capacity that exists in rural and low-income contexts….[3]

Recent developments show continuing interest in using community health insurance schemes to achieve national health goals. For example, the Ghanaian government is actively pursuing a policy to stimulate the creation of community insurance schemes nationwide (such as the Nkoranza scheme described in this article) in order to risk pool what otherwise seem to be inevitable user fees for public-sector health services.[4]

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[1] Muskgrove, P.; R. Zeramdin; and G. Carrin. "Basic Patterns in National Health Expenditure," *Bulletin of the World Health Organization*, 2002, 80(2), p. 137.
[2] Dror, D. and A. Preker, editors. Social Re, 2002. World Bank, Washington, DC.
[3] Preker, A.; G. Carrin; D. Dror; J. Melitta; W. Hsiao; and D. Ahrin. "Role of Communities in Resource Mobilization and Risk Sharing; a Synthesis Report. September 2001, p. iii. HNP Discussion Paper, World Bank, Washington, DC.
[4] *Daily Graphic*, "Health Insurance Takes of Today," January 15, 2004.

The literature contains a number of articles describing individual community health insurance schemes. But, as Bennet and Creese[5] note in their survey of such reports, many of the articles focus on questions of plan design, structure, and implementation, with less emphasis on analysis of plan impact on equity, health care-seeking behavior, and impoverishment associated with medical expenses. In 1999, Musau reviewed plans at Kisiizi in Uganda, Chogoria in Kenya, and a multi-center community finance plan in Tanzania. He noted that even though all the plans were designed to cover user fees and not the full cost of care, they generally did not earn premium income equal to user fees foregone. His analysis also noted that only the Tanzanian plan attempted to offer premium exemptions to the poorest enrollees, and generally failed to do so due to administrative problems.[6]

Although not totally lacking, little data is available on the characteristics of those who choose to enroll, or not to enroll, in community health insurance plans. This is understandable, since such an analysis requires community surveys and cannot simply be derived from the records of a plan or those of the medical providers that serve it.

At Bwamanda, in the Congo, surveys showed relatively little difference in plan membership based on housing, education level, family size, and religion. However, community members with relatively high cash income (>US$200 month) or relatively low cash income (<US$20 per month) were less likely to enroll in the Bwamanda plan.[7] This is in a context where annual enrollment in the scheme varied from 40 percent to 66 percent of the district's population in the early 1990s. [8]

An analysis of four mutuelles (community-based schemes) in Senegal, based on a community survey conducted in 2000, found that enrollment was positively correlated with literacy and income.[9] On the other hand, a scheme in Bangladesh enrolled 80 percent of the destitute and 46 percent of the poor, but only 20 percent of the middle class and 10 percent of the wealthiest group within the service area.[10] Another Bangladesh plan examined by the same authors also had much higher rates of enrollment among poor families than among higher-income families.[11]

Schneider's analysis of the community health schemes built around District Health Centers in Rwanda found that while the prepayment scheme reached the poor, the destitute did not join. In exit surveys at selected health centers, 53 percent of the insureds were poor, 21 percent were middle income, and 26 percent were higher income. At the same time, 69 percent of the uninsured attending the clinic were poor, while approximately the same proportion (20 percent) were middle income. Only 11 percent were from the higher-income group.[12]

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[5] Bennet, S.; A. Cresse; and R. Monasch. 1997. "Health Insurance for the Non-formal Sector." WHO Division of Analysis and Assessment, Geneva.
[6] Musau, S. "Community-Based Health Insurance: Experiences and Lessons Learned from Eastern and Southern Africa." August 1999, p. 17. Abt Associates, Partnerships for Health Reform, Bethesda, MD.
[7] Criel, B. et al., "The Bwamanda hospital insurance scheme," 1999, quoting Moens, F., "Design, implementation and evaluation of a community financing scheme for hospital care in developing countries; a prepaid health plan in the Bwamanda health zone, Zaire." *Social Science and Medicine*, (30) 1990, pp. 1319–1327.
[8] Criel, et al., 1999, quoting Criel, B. and Kegels, G., "A health insurance scheme for hospital care in Bwamanda district; Zaire: lessons and questions after 10 years of functioning." *Tropical Medicine and International Health*, 2 (1997), pp. 654–672
[9] Jutting, J. (Center for Development Research, University of Bonn). January, 2002. "Impact of Community-Based Health Insurance on the Access to Health Care; A Case Study from Senegal." Presentation to seminar on community financing at the World Bank, Washington, DC.
[10] Desmet, M.; A. Chosdheur; and K. Islan. "The potential for social mobilization in Bangladesh; the organization and functioning of two health insurance schemes." Social Science and Medicine 48 (1999), p. 928.
[11] Ibid.
[12] Schneider, P; F. Diop; and C. Leighton. "Prepayment for Health Services in Rwanda: Results and Recommendations for Policy Direction and Implementation." March 2001, p. 12. Abt Associates; Partnerships for Health Reform, Bethesda, MD.

Commercial Market Strategies Project

Commercial Market Strategies (CMS) is a five and a half year (1998-2003) USAID-funded global project to encourage the expansion of quality private-sector services in reproductive health and primary care. As part of its mandate, CMS sought innovative ways to use health financing mechanisms, including health insurance, to expand the availability of family planning and reproductive health services. CMS explored opportunities to use community health financing schemes in three African countries — Uganda, Ghana, and Senegal — as a means to make family planning and reproductive health services more widely available. For a variety of reasons reported elsewhere,[13] CMS found it difficult to expand reproductive health benefits in existing schemes, and community demand for a new family planning benefit was limited. However, in the process of exploring these opportunities, CMS supported market and evaluation research that yields interesting comparisons between those who joined a community health scheme, or say they will do so, and those who do not join such a scheme, or say they will not do so. This information adds to the knowledge gained from surveys cited above for plans in Zaire, Bangladesh, Rwanda, and Senegal. The data were collected between 2001 and 2003.

The Plans: Lacor Health Plan (Uganda) and Nkoranza Community Health Plan (Ghana)

Data is available to examine enrollment patterns for plans that worked with CMS in Uganda and Ghana. Both plans were based on a single provider, but had a strong community base. In the war-torn Gulu District of Uganda, CMS and its associate, Health Partners, worked with the sponsoring hospital, the Lacor Mission Hospital, to design a plan and then market it to employment, social, and cooperative groups in the impoverished community.

In Ghana, the Nkoranza Community Health Plan had been started in a western agricultural district of the country in the early 1990s, with St. Theresa's Hospital as the plan's original sponsor, under the Catholic Diocese of Sunyani. Just before CMS was asked to analyze the cost of adding a normal obstetric delivery benefit, the Nkoranza plan had been transformed into a true "community financing" scheme, run by an independent board. The board now sets premiums and assumes all financial risk, and St. Theresa's remains as the single provider.

Lacor Health Plan, Uganda

CMS worked with Health Partners, a Minnesota-based HMO, to develop and market prepaid community health insurance plans in a number of locations in Uganda. Plans included basic inpatient and outpatient benefits, with premiums collected quarterly. In the war-torn northern part of the country, these plans were based at the Lacor Mission Hospital (St. Mary's) in the city of Gulu (in the district of Gulu) and marketed to a variety of cooperative and employment groups. To encourage membership in this impoverished region, CMS provided partial premium subsidies for target groups with particularly low incomes. To evaluate the impact of these schemes on health care-seeking behavior and impoverishment, CMS surveyed community members before the opening of the plans, and then followed up with an evaluation survey interviewing members and non-members

[13] Feeley, F. 2003. *Commercial Market Strategies in Sub-Saharan Africa: Lessons Learned in Community Health Financing*. Washington, D.C., USAID/Commercial Market Strategies Project.

Nkoranza Community Health Plan, Ghana

Each year, about 40,000 district residents, roughly one third of Nkoranza's population, enroll in the plan, which covers user fees for inpatient benefits. Coverage includes Caesarian sections, but not normal newborn deliveries. Outpatient care, other than for dog and snake bites, is not covered. Premiums (about US$2 per person per year in 2002) are collected annually at harvest time. In 2001, the plan's original sponsor, the Catholic Diocese of Sunyani, asked CMS to undertake a study to determine the cost increment and market impact of adding a normal delivery benefit. As part of this study, market researchers interviewed 400 plan enrollees and 400 non-enrollees to determine their likelihood of remaining in, or joining, the plan if the 10 to 15 percent premium increase required to support the normal delivery benefit were implemented.[14]

[14] Amoako, N.; W. Winfrey; and R. Feeley. 2002. *Health Financing in Ghana: Willingness to Pay for Normal Delivery Benefits in a Community-Based Health Insurance Plan.* Washington, DC: USAID/Commercial Market Strategies Project.

Analytic Methodology

Both bivariate and multiple logistic regression analyses were conducted on the data available from the two sites. Because the surveys were originally designed for different purposes by different researchers, the socioeconomic data categories are not completely congruent, and therefore a combined analysis of the two data sets is not possible. Each data set was analyzed separately to identify relationships between socioeconomic characteristics and the decision to join a prepaid community health plan. Data were available from the two sites as follows:

Age	
Household head	Uganda
Woman of reproductive age (head, or spouse of head)	Ghana
Marital status of respondent	Ghana
Respondent currently pregnant?	Ghana
Urban/rural residence	Uganda, Ghana
Education of respondent	Uganda, Ghana
Formal-sector employment	Ghana
Household size	Uganda, Ghana
Standard of living index	Uganda, Ghana
Religion	Uganda
Usual site of medical care	Ghana
Health history	Uganda

Uganda — Lacor Health Plan

Data came from a household survey of members of employment and cooperative groups in the Gulu district, conducted in May 2003 as part of an evaluation of the impact of the Lacor Health Plan on access to, and financing of, health care. A quasi-experimental design with an intervention group and a comparison group was used. The intervention group comprised members of cooperative and employment groups who enrolled in the Lacor Health Plan. The comparison group was made up of members or employees who did not enroll in the plan. In 2001 to 2002, prior to the implementation of the Lacor Health Plan, the CMS project had conducted a baseline household survey as part of a feasibility study for the plan. Data from this survey provided information on health care financing and utilization before the intervention — that is, before offering the Lacor Health Plan.

In 2003, a one-stage stratified cluster sampling design was used to select community-based cooperatives to include in the study sample. Each cluster represented a group of members of a particular cooperative or employment group. After obtaining the list of cooperatives in the study area, groups were stratified by membership/non-membership in the Lacor Health Plan. Within each stratum, a sample of the groups was randomly selected for the study. The study targeted a sample of 300 households in each stratum. In order to gather this sample, 10 entities were

randomly selected from the comparison group and seven from the intervention group. Sampled entities represent about 90 percent of all groups in each stratum. A few of the cooperative or employment groups making up the intervention group had a larger number of members than the entities making up the comparison group; thus the rationale for selecting more comparison group entities in order to yield the required sample size of 300 households. All member households in a single entity were included in the sample. The response rate (completed interviews) was 94 percent.

Four questionnaire modules were designed for this study: screener, treatment-seeking, cooperative member, and woman's questionnaires. Respondents for the four different modules were identified through the screening questionnaire, which was administered to the head of household.

The analysis was confined to the treatment-seeking module. A total of 986 respondents were interviewed. All respondents who answered the treatment-seeking questionnaire were reported to have had an illness in the past month or a prolonged serious illness in the past year. Multivariate logistic regression was used to predict membership in the Lacor Health Plan. The predictor variables used were: age of the household head, rural/urban residence, education level of the household head, religion of the household head, household size, standard of living index, and whether the respondent had a prolonged serious illness in the past year.

The logistic regression model used in this analysis predicts the odds of being a member of the Lacor Health Plan, and the results are presented as odds ratios. Analysis was done assuming simple random sampling of members. Since members were selected after selecting cooperatives, there may be a design effect due to clustering. The design effects are expected to be small, however, and are unlikely to change the results of the significance test. The following logistic regression equation was estimated:

$$\ln\left(\frac{\hat{p}}{1-\hat{p}}\right) = B_0 + B_1X_1 + B_2X_2 \ldots B_7X_7$$

where p is the predicted probability of the dependent variable having a response of 1 (being a member of the Lacor Health Plan), B0 is the intercept, B1 to B7 are the regression coefficients of the predictor variables, and X1 to X7 are the set of predictor variables.

Ghana — Nkoranza Community Health Plan

Data came from the household survey conducted by the CMS project and Research International to measure the willingness to pay for a normal delivery benefit. The study was conducted among a sample of women that included members and non-members of the Nkoranza Plan.

The survey sample was drawn using a three-stage sampling procedure. The first stage involved selection of census-enumeration areas. A list of enumeration areas in the Nkoranza District was obtained from the Ghana Statistical Service; 50 enumeration areas were selected, using a set of computer-generated random numbers. The second stage involved selection of residential structures/houses. All residential structures/houses in selected enumeration areas were mapped and numbered. Residential structures/houses were also selected randomly (using computer-generated random numbers). A total of 16 residential structures/houses were selected in each enumeration area, from which one household was then randomly selected. (When only one

household resided in the selected structure, that household was automatically included in the sample.) At the household level, the female head of household was interviewed. A total of 400 women who were members of the Nkoranza Plan and 400 non-members were identified and interviewed.

The dependent variable in the regression model is membership in the Nkoranza Plan. The predictor variables used are: age of the respondent, marital status, education level of the respondent, employment in the formal sector, household size, standard of living index, a current pregnancy, and usual source of health care for the respondent and immediate family members. The logistic regression equation used was similar to that employed in the Lacor Plan analysis. The model attempts to predict the odds of enrolling in the Nkoranza Plan, and the results are similarly presented as odds ratios.

Results

Uganda — Lacor Health Plan

Bivariate Analysis

Table 1 shows statistics describing the association between the dependent variable (membership in the Lacor Plan) and the independent socio-demographic variables. Chi-square tests were done to determine the significance of the association between the dependent and the independent variables.

Overall, results show significant association between age, rural/urban residence, education, religion, household size, and standard of living and membership in the Lacor Health Plan. Lower propensity to enroll in rural areas must be considered in the context of the civil war now raging around Gulu. Abductions and raids by the Lord's Resistance Army (LRA) are frequent, and the danger increases as one moves away from the heavily defended town of Gulu. It was therefore much harder for plan organizers to reach rural areas to market the plan, and this may have had an impact on enrollment rates. Previous research (Bamwanda;[15] Nkoranza[16]) has shown that households distant from the site at which the insured care is provided are less likely to enroll in a plan.

[15] Shephard et al., *Bamwanda Evaluation.*

[16] Atim et al., *Nkoranza Evaluation.*

Table 1: Lacor Plan: Socio-demographic characteristics of households (percent)

Characteristic		Intervention group	Comparison group	Significance
Age				
Under 25		14.2	2.6	***
25–29		16.1	12.8	
30–34		17.1	15.8	
35–39		11.5	15.0	
40–44		12.8	14.0	
45–49		8.9	10.0	
50+		19.4	29.9	
Residence				
Urban		78.6	71.3	**
Rural		21.4	28.7	
Education				
None		9.1	22.2	***
Primary		37.7	54.1	
Junior		3.7	3.0	
Secondary		20.4	13.8	
Tertiary institution/university		29.1	7.0	
Religion				
Catholic		77.9	69.9	**
Protestant		18.8	23.8	
Other		3.3	6.4	
Household size				
1–3		22.9	8.0	***
4–6		35.7	33.1	
7–9		28.2	46.7	
10+		13.2	12.2	
SLI				
Lowest 25%	1	14.8	35.1	***
	2	19.8	28.5	
	3	28.9	23.0	
Highest 25%	4	36.5	13.4	
Health history				
Percent with a serious illness for a prolonged period in the past year		46.4	44.9	-
N		**(485)**	**(501)**	

* p<0.05
** p<0.01
*** p<0.001

Multivariate Logistic Regression Results

Table 2 shows results of the logistic regression model. The model predicts the log odds of enrollment in the Lacor Health Plan among members of employment groups and cooperatives in the Gulu district. The results highlight the characteristics associated with membership in the Lacor plan. While the lower propensity of rural residents to enroll in the plan is no longer significant in the multivariate analysis, age, income, and education associations are confirmed. Belonging to a household in which the household head is 25 years or older decreases the odds of membership in the Lacor plan, compared to those in which the household head is under 25. Higher levels of education are significantly associated with membership in the plan. The odds of enrolling among households in which the head of household has a junior level of education

relative to the odds of enrolling among households with no school education are nearly six times greater. The relative odds of enrolling are highest among household heads with post-secondary education (nearly 10 times greater), relative to household heads with no school education.

Religious affiliation is also associated with membership in the Lacor Health Plan. Being a Protestant or member of another non-Catholic religious group decreases the odds of enrolling in the plan — not surprising, since Lacor is a Catholic mission hospital. Having a household size of more than three people also decreases the odds of enrolling in the plan, relative to the odds of enrolling among households with one to three people. Standard of living is also significantly associated with membership in the Lacor Health Plan. Households in the third and fourth quartiles (middle to high standard of living) were four times more likely to enroll in the Lacor Health Plan, compared with households in the lowest quartile of the standard of living index.

Table 2: Lacor Health Plan: Relative odds of enrolling, by socio-demographic characteristics

Characteristic	(Odds ratio)
Age	
Under 25 (R)	1.0
25–29	0.31**
30–34	0.32**
35–39	0.22***
40–44	0.28**
45–49	0.27**
50+	0.22***
Residence	
Rural (R)	1.0
Urban	1.29
Education	
None (R)	1.0
Primary	1.52
Junior	5.69***
Secondary	2.62***
Tertiary institution/university	9.78***
Religion	
Catholic (R)	1.0
Protestant	0.60**
Other	0.47*
Household size	
1–3 (R)	1.0
4–6	0.64
7–9	0.29***
10+	0.60
SLI	
Lowest 25% 1 (R)	1.0
2	2.08**
3	3.91***
Highest 25% 4	4.29***
Health history	
Prolonged serious illness in the past year	0.945
(N)	**(986)**
-2 Log likelihood	1088.9

* p<0.05; ** p<0.01; *** p<0.001

Ghana — Nkoranza Plan

Bivariate Analysis

Descriptive statistics showing the association between membership in the Nkoranza Community Health Plan and socio-demographic variables used in the logistic regression are presented in Table 3. Significance levels are shown only for variables whose p-value was .05 or lower.

Results show that membership in the Nkoranza plan is significantly associated with age, education, standard of living, and usual sources of healthcare. There was no significant association between employment in the formal sector, household size, marital status, or pregnancy and membership in the plan.

Table 3: Nkoranza Plan: Socio-demographic characteristics of respondents (percent)

Characteristic	Intervention group	Comparison Group	Significance
Age			
18–24	26.0	24.8	*
25–29	24.0	31.8	
30–34	21.3	22.3	
35–39	28.8	21.3	
Marital status			
Single	23.5	25.5	
In union	76.5	74.5	
Education			
No education	24.3	32.8	*
Primary education	20.5	18.5	
Junior secondary school	44.3	41.5	
Senior secondary/tertiary	11.0	7.3	
Employment			
Percent employed in the formal sector	3.5	3.3	
Household size			
1-3	28	24.0	
4-6	48.5	51.8	
7-9	17.8	21.3	
10+	5.8	3.0	
SLI			
Lowest 25% 1	28.8	21.3	***
2	20.8	29.3	
3	22.3	29.3	
Highest 25% 4	28.3	20.3	
Pregnancy			
Percent of respondents currently pregnant	5.5	6.3	
Usual sources of health care			
Nkoranza Hospital	92.8	67.0	***
Public-sector source	43.8	54.8	**
Techiman Holy Family Hospital	5.3	20.3	***
Private clinic	10.0	10.8	
Drug store	12.8	18.8	*
Traditional healer	1.3	3.5	*
(N)	**(400)**	**(400)**	

* p<0.05; ** p<0.01; *** p<0.001

Multivariate Logistic Regression Results

Table 4 shows the logistic regression results for the Nkoranza analysis. Women in the older age group (35 to 39) are estimated to be 1.6 times more likely to enroll in the plan — than women in the younger age group (18 to 24). Having a primary education or a secondary/tertiary education also increases the odds of being enrolled in the Nkoranza plan compared to women with no education. Being in the second or third SLI quartile decreases the odds of being enrolled in the NCHP compared with those in the lowest quartile, indicating that the program is reaching the poor.

Women who usually obtain care at Nkoranza, or whose immediate family members usually obtain care at Nkoranza, are nearly seven times more likely to enroll compared with those who do not. If women or immediate family members usually obtain care at public-sector sources, they are significantly less likely to enroll. Likewise, those who usually obtain care at Techiman Holy Cross Hospital (another Catholic mission hospital just over the border of the Nkoranza District) are significantly less likely to enroll. There is a portion of the Nkoranza District that has better access to Techiman than St. Theresa's, so the result is not surprising, and suggests that the Nkoranza Plan enrolls an even higher percentage of its natural catchment area — that is, higher than the 30 to 35 percent market penetration observed when Nkoranza plan enrollment is compared to the population of the entire district.

Table 4: Nkoranza Plan: Relative odds of enrolling by socio-demographic characteristics

Characteristic	Odds ratio
Age	
18–24 (R)	1.0
25–29	0.77
30–34	0.98
35–39	1.64*
Marital status	
Single (R)	1.0
In union	1.40
Education	
No education (R)	1.0
Primary education	1.74*
Junior secondary school	1.38
Senior secondary/tertiary	2.12*
Household size	
1–3 (R)	1.0
4–6	0.67
7–9	0.58*
10+	1.30
SLI	
Lowest 25% 1 (R)	1.0
2	0.52**
3	0.58*
Highest 25% 4	1.19
Pregnancy status	
Not pregnant (R)	1.0
Pregnant	1.07
Usual sources of health care	
Nkoranza Hospital	6.69***
Public-sector source	0.51***
Techiman Holy Family Hospital	0.09***
Private clinic	0.59
Drug store	0.60*
Traditional healer	0.20**
Formal Employment	
Not employed in the formal sector (R)	1.0
Employed in the formal sector	0.72
(N)	**(800)**
-2 Log likelihood	884.43

* p<0.05; ** p<0.01; *** p<0.001

Discussion

Several characteristics of households that became insured compared to those that did not are consistent across the two sites. Insured households were generally smaller. This is not surprising, since both plans charged premiums on an individual basis, and larger households would have greater trouble paying the premium. To prevent adverse selection, the Nkoranza plan does not permit selective enrollment of individual household members; the whole household must join if one member wishes to join.

At both sites, higher education was also predictive of enrollment in the health insurance plan. The multivariate analyses show that this factor is independent of income (usually positively associated with higher levels of education). In the Lacor plan, this may be explained by the plan's marketing strategy: To minimize the risk of adverse selection, only groups, not individual households, were enrolled.[17] Some of the groups that joined — schools, the Uganda Revenue Authority, and several NGO's — require higher education credentials for many of their workers. In Nkoranza, however, the plan was sold to any household residing in the district. It appears that higher education enables a household head to appreciate the advantages of risk pooling and pre-payment. In health financing, as in other public health areas, better education makes it more likely that individuals will take actions that benefit the health status of household members. As education levels rise, it should become easier to educate populations on the benefits of health insurance and risk pooling.

Household location and the usual pattern of care are also consistent factors linked to health plan enrollment. Families that traditionally use a source of care will be more likely to join a health plan that offers care at the site. And of course, once households have paid for membership in a facility-based plan, household members will use the facility for care because it is less costly. Where health providers are few and travel is difficult, households will be less likely to enroll in a plan sponsored by a more distant provider, if only because they must factor the increased cost of transportation into any decision on the potential benefit to be derived from the insurance.

The most striking difference in the results comes in the correlations between income and enrollment. In the Lacor plan, the analysis shows the expected pattern — the very poor are less likely to join. At Nkoranza, however, this is not true. The multiple regression shows that those in the poorest quartile (as determined from the standard of living index) are more likely to join the plan. The middle two quartiles are less likely to join. Why should this be? Perhaps the difference lies in the benefit structure of the plans, and the resulting premiums required: Nkoranza provides inpatient benefits only (with the exception of outpatient care for dog and snake bites); the Lacor plan offers inpatient and outpatient services. Covering normal utilization of outpatient services would substantially increase the Nkoranza plan's premium. To cover inpatient benefits (excluding normal deliveries) requires an annual premium of about US$2 per person. This is collected once a year at harvest time, when farmers receive much of their annual income. Total premiums in Nkoranza are apparently a lower percentage of the household income of the poor, even though the Lacor premium — which includes outpatient care — was partially subsidized by CMS. In Nkoranza, the poor have been persuaded, by low premiums plus political support and good marketing, to purchase a policy that covers them only for the high-cost risk (but relatively low frequency) of needing inpatient care.

[17] At least 60% of the households in a group must join the plan.

Although the multivariate analysis shows convincingly that plan enrollment at Lacor increases with an increasing standard of living, this does not prove that the plan plays no role in poverty alleviation. The Gulu district, where the plan is located, is war-torn and very poor. Those who join the plan may not be "well off" on a national scale, even if they are among the more fortunate in the region. And the plan did enroll some of the poorest households: 15 percent of the Lacor plan's enrollees came from the poorest quartile. Poor peasants living at a distance from the town of Gulu could not be reached for marketing because of the uncertain security situation.

The research (data not shown) clearly showed that the Lacor plan had the effect desired of any community health insurance scheme — to prevent households from slipping further into poverty due to medical expenses. The percentage of the surveyed population forced to sell an asset to obtain health care fell from 39 percent to 15 percent after residents joined the health insurance scheme. And none of the insureds were forced to sell land or livestock to obtain medical care, even though 3.5 percent had reported such sales in the baseline period. The percentage of enrollees who borrowed money for medical care fell from 12 percent before insurance to 6 percent afterwards. Furthermore, after joining the insurance plan, enrollees reported that they were less likely to miss work or lose income due to illness.

Among the comparison group that did not join, there was essentially no change in the high rates of asset sale (44 percent of households) or borrowing (8 to 9 percent) for medical expenses.

Nevertheless, premiums set to cover a provider's costs or lost revenue may continue to exceed the financial capacity of the largest and poorest households. In such cases, health policymakers should seriously consider scheme refinements now being tested in the Lacor plan, where a three-tiered premium structure (with lower premiums for the poorest) is offered depending on the socioeconomic status of the group. Thus rockbreakers receive the lowest rate and higher subsidies; Revenue Authority and NGO employees have higher rates and lower subsidies. Governments could consider providing subsidies for these lower premiums as a potentially effective way to risk pool household funds that are available for health care, while government subsidies follow the actual facility usage patterns of the country's poorest citizens.