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# The Impact of Mutual Health Organizations on Social Inclusion, Access to Health Care, and Household Income Protection: Evidence from Ghana, Senegal, and Mali

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*September 2006*

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# Abstract

Mutual health organizations (MHOs), voluntary membership organizations providing health insurance services to their members, are rapidly increasing in number and scope in many African countries. Despite a growing interest in MHOs, the evidence base on the impact of MHOs on priority health services and on households is limited. This study uses regression analysis of household survey data from Ghana, Mali, and Senegal to investigate the effects of household and individual characteristics on enrollment in MHOs (social inclusion), the impact of MHO membership on use of priority health care services, and the impact of MHO membership on out-of-pocket (OOP) health care expenditures (household income protection).

Findings on social inclusion indicate a positive association between MHO membership and education as well as employment of the head of household. Households headed by women are more likely to enroll in MHOs than households headed by men. The evidence on the association between household economic status and MHO enrollment is inconclusive, and suggests that enrollment in a MHO may depend upon other dimensions of social inclusion, such as type of MHO ownership. Adverse selection appears to be operating primarily at the individual level: there is some evidence that those with a disability or chronic illness and the elderly may be more likely to enroll in MHOs than individuals with healthier profiles. MHO coverage has some positive effect on the use of modern health care. In Ghana and Mali, MHO coverage increases curative care seeking from a modern health care provider, and women who are beneficiaries of MHOs are more likely to have had at least four prenatal care visits compared to women who are not beneficiaries of MHOs. However, this result is not confirmed in Senegal. In Ghana, women who were beneficiaries of a MHO were more likely to deliver in a hospital. There is no conclusive evidence from Mali or Senegal on the association between delivery with a modern provider and MHO coverage. While MHO membership has no effect on OOP expenditures for curative outpatient care, it has a strong protective effect against the potentially catastrophic expenditures related to hospitalization.

Enrollment in a MHO can increase access to health care and provide protection against the financial risks associated with illness. However, these outcomes vary according to the structure of the benefits package, copayment policies and the schedule of contributions.

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# Acronyms

|                           |  |
|---------------------------|--|
| <b>DANIDA</b>             | Danish International Development Assistance        |
| <b>DHS</b>                | Demographic and Health Survey                      |
| <b>FCFA</b>               | Franc of the French colonies in Africa             |
| <b>IEC</b>                | Information, education, and communication          |
| <b>MHO</b>                | Mutual health organization                         |
| <b>NHIL</b>               | National Health Insurance Law (Act 650)            |
| <b>OOP</b>                | Out-of-pocket                                      |
| <b>PHR</b>                | Partnerships for Health Reform                     |
| <b>PHR<sub>plus</sub></b> | Partners for Health Reform <sub>plus</sub>         |
| <b>UNICEF</b>             | United Nations Children's Fund                     |
| <b>USAID</b>              | United States Agency for International Development |
| <b>WHO</b>                | World Health Organization                          |



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## **Senegal**

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# Preface

Partners for Health Reform*plus* (PHR*plus*) has assisted with the development of community-based health financing schemes in many countries in sub-Saharan Africa since the late 1990s. The schemes, known as mutual health organizations (MHOs), community-based health insurance schemes, and *mutuelles* (in Francophone countries), involve community groups organizing themselves to regularly collect contributions or premiums from voluntary members, either individuals or households, that are used to pay for a defined set of health care benefits from specified public or private providers. The MHOs sometimes require household or group membership, but not always. They usually require that those who join the scheme make some contribution payments before the date at which they are eligible to receive scheme-covered benefits. Often, but not always, the schemes have a specified contractual relationship with the provider(s) that their members may use. The contracts usually specify the reimbursement rates for the services covered. Some of the MHOs require members to make small out-of-pocket copayments at the time of use of some services.

MHOs have been growing in number and in membership at a rapid pace in many countries since the late 1990s. The number of schemes inventoried in West Africa grew from 76 in 1997 to more than 600 by 2004. However, a number of questions remain about their long-term viability, their relationship to overall health financing policy, their impact on use of services, and what groups of people they serve. To try to address some of these questions, in 2004, PHR*plus* organized household surveys in Ghana, Mali, and Senegal. Each of the surveys had a specific focus, but all three were conducted with a common core set of questions. The Ghana survey focused on setting a baseline for a change in national health financing policy, going from voluntary MHO schemes to a nationally-mandated set of district-wide schemes. The Mali survey was a follow-on to one conducted in 1999. It focused on evaluating the impact of the schemes on a specific set of indicator services, where some of the populations surveyed in 1999 had the opportunity to join MHOs and others did not. The indicator services for the 2004 Mali survey included an expanded set of child health services beyond those covered in the 1999 baseline. The Senegal survey focused on the financial viability of the MHOs. There are technical reports on each of the surveys, a synthesis report that examines the combined results, and a series of other products related to specific aspects of the surveys. All reports can be found on the PHR*plus* publications website: [http://www.phrplus.org/pubs\\_new.html](http://www.phrplus.org/pubs_new.html).



# Executive Summary

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## Background

Mutual health organizations (MHOs) are voluntary membership organizations providing health insurance services to their members. MHOs are typically owned, designed, and managed by their members. While the development of MHOs is still in the early stages in many African countries, the potential of MHOs to contribute to health system objectives is attracting attention among governments and donors alike. Despite this growing interest in MHOs, the evidence base on the impact of MHOs on priority health services and households in African countries is still limited. Debates are ongoing as to whether MHOs include the poor and socially excluded segments of rural and urban populations. Moreover, there is limited data on the impact of MHOs on access to and utilization of priority health services. Finally, the evidence on MHOs as an instrument for protecting low-income population from the impoverishing effects of out-of-pocket (OOP) health care expenditures, particularly the catastrophic expenditures associated with hospitalization or surgery, is lacking.

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## Objectives and Methods

The objective of this cross-country study is to contribute to the evidence of the impact of MHOs on priority health services in African countries. This study builds on three separate studies conducted by Partners for Health Reform *plus* in Ghana, Mali, and Senegal in 2004-2005. The study goals are (i) to investigate the effects of household and personal characteristics on enrollment in MHOs (social inclusion), (ii) to assess the impact of MHO membership on access to health care and the use of priority health care services, and (iii) to analyze the impact of MHO membership on household income protection and OOP health care expenditures.

The cross-country study seeks to explore general patterns, similarities, and differences related to these objectives emerging from the three country settings. Complementary information and more detailed analyses and results can be found in the three individual country technical reports published by PHR *plus*:

- ▲ “Evaluating the Effects of the National Health Insurance Act in Ghana: Baseline Report” (Sulzbach et al. 2005)
- ▲ “Equity Initiative in Mali: Evaluation of the Impact of Mutual Health Organizations on Utilization of High Impact Services in Bla and Sikasso Districts in Mali” (Franco et al. 2006)
- ▲ “Determinants of Financial Stability of Mutual Health Organizations in the Thies Region of Senegal: Household Survey Component” (Diop 2005)

All three studies and additional related publications can be found on the PHR *plus* publications website at: [http://www.phrplus.org/pubs\\_new.html](http://www.phrplus.org/pubs_new.html)

Each of the country studies is based on household surveys of members of MHOs as well as non-members. The household data were collected based on comparable instruments, including a household characteristics questionnaire, a curative care questionnaire, and a maternal health care questionnaire. The Ghana and Senegal surveys also included modules for capturing information about recent hospitalization events. All the analyses presented in the report use multivariate techniques in order to reach robust conclusions on the relationship between household and individual characteristics and enrollment in MHOs, between coverage by MHOs and use of modern health care services, and between MHO coverage and health-related OOP expenditures.

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## Key Findings

### **Social inclusion**

The evidence on the association between household economic status and MHO enrollment is inconclusive. The results of the cross-country study suggest that the effects of the economic status of a household on enrollment are relatively mild in Senegal and Mali. In Ghana, however, the economic status of the household has a stronger effect on individual enrollment. This finding is consistent with the suggestion that social inclusion in MHOs depends on the design and implementation features of the scheme. Whereas in Mali and Senegal, the MHOs are designed, owned and managed by their members, in Ghana, the MHO scheme began as a hospital-owned insurance program, and only recently converted to community ownership. In addition, in Mali and Senegal, the MHOs typically collect premiums at intervals throughout the year, whereas the Ghana MHO collects the entire premium once per year, which may make MHO enrollment less affordable for poorer households. Taken as a whole, the differences in design between the MHOs in Mali and Senegal and the MHO in Ghana likely contribute to the differential effects of household economic status.

Household characteristics that are consistently associated with a higher likelihood of household enrollment include the level of education and occupation of the head of household. In addition, in all three study sites, households headed by women are more likely to be enrolled in MHOs than households headed by men.

### **Adverse selection**

The results of the cross-country study provide some evidence that there might be adverse selection in MHO enrollment, operating more prominently at the individual enrollment level than at the household level. In Ghana and Mali, larger households are more likely to be enrolled in MHOs than smaller households. Findings from Senegal indicate that households with a larger number of women of reproductive age are more likely to enroll in MHOs than households with fewer women in that age group. Although the majority of MHOs in the study encourage enrollment of the entire family, the findings on individual enrollment in MHOs provide some evidence that there might be practices of selective enrollment: individuals with a physical disability or chronic illness and elderly individuals are more likely to enroll in MHOs than individuals with healthier profiles.

### **Access to health care**

MHO coverage has some positive effect on use of modern health care, but this outcome varies according to the structure of the benefits package, copayment policies and the schedule of contributions. In Ghana and Mali, MHO coverage increases the likelihood that the sick will seek care from a modern health care provider, but this result was not confirmed in Senegal. In terms of inpatient care, insured individuals in Senegal are more likely to be hospitalized, while this was not true for the

Ghana study site. A potential reason for this difference may be the differential access to inpatient care in the two countries, whereby Ghanaians have more hospitals closer by as compared to the Senegalese. The results on maternity health services are mixed: in Mali and, to some extent, in Ghana, women who are beneficiaries of MHOs are more likely to receive the recommended package of four prenatal care consultations, compared to women who are not beneficiaries of MHOs. In the Ghana study site, women who are MHO beneficiaries are more likely to deliver at a modern health facility compared to non-beneficiaries, but this result was not confirmed in Mali or Senegal.

### **Income protection**

The patterns emerging from the cross-country study on the relationship between MHO coverage and household income protection are consistent with expectations. MHO coverage may provide protection against the financial risks associated with illness, but the level of protection largely depends on the structure of the benefits package and copayment policies. In all three study sites, MHO coverage does not have a protective effect on OOP costs for outpatient curative care. This result is explained by the fact that the benefits package of the MHO in Ghana did not cover outpatient services, while the MHOs in Mali and Senegal had copayments for outpatient care ranging from 25 to 50 percent, which may have mitigated any protective effect of MHO membership on OOP expenditures. However, MHO coverage for inpatient care has a strong protective effect on OOP expenditures for hospitalization in the Ghana and Senegal study sites.



# 1. Introduction

Mutual health organizations (MHOs) are voluntary membership organizations providing health insurance services to their members.<sup>1</sup> MHOs are typically owned, designed, and managed by the community that they serve. Members pay a small premium, on a regular basis, to offset the risk of having to pay for high health care costs in the case of illness, injury, childbirth, or any other event requiring expensive medical services. Typically, MHOs develop around a geographical entity (such as a district or a village), trade or professional group (such as a trade union or agricultural cooperative), or a health care facility (provider-initiated schemes). MHOs differ from commercial insurance organizations in several ways, most importantly, in two areas: they are always not-for-profit and are based on the ethic principles of mutual aid and social solidarity (PHR*plus*, 2004).

While the development of MHOs is still in its infancy in many sub-Saharan African countries, the potential contribution of MHOs to improving health outcomes is increasingly attracting attention from governments and donors. The increased interest in MHOs as a mechanism for improving financial access to health care and for extending social protection to underserved populations is slowly evolving into a growing political will to scale-up the MHO movement in many countries of the region. While recognizing that community-based health insurance is not a panacea for financing health care for the informal sector, a recent report of the Commission of Macroeconomics and Health recommended the conversion of out-of-pocket (OOP) health expenditure into prepayment and community financing arrangements (Sachs 2001).

Despite this growing interest in MHOs, the evidence base on the impact of MHOs on priority health services in African countries is limited. Debates on whether they include the poor and socially excluded segments of the population are still ongoing. Moreover, the evidence of the impact of MHOs on access to and utilization of priority health services, including maternal and child health services, is lacking. Building such evidence is important because low use of modern health services has been identified as one of the main constraints to translating the potential of the integrated management of child illness (IMCI) strategy into child health gains. In addition, most strategies to decrease maternal mortality depend on increased access to professional assistance during pregnancy and delivery. Finally, the evidence on MHOs as a vehicle for protecting the poor from the impoverishing effects of OOP health care expenditures, particularly the catastrophic expenditures associated with hospitalization or surgery, is limited.

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## 1.1 Study Objectives

The overall objective of this cross-country study is to contribute to the evidence of the impact of MHOs on priority health services in three African countries. This study builds on separate studies

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<sup>1</sup> MHOs are also commonly known as community-based health insurance or community-based health financing schemes. Different countries may also have different names for MHOs – in West Africa, for example, they are called *mutuelles de santé*.

conducted by Partners for Health Reform*plus* (PHR*plus*) in Ghana, Mali, and Senegal in 2004-2005 and aims to:

1. Investigate the effects of household and personal characteristics on enrollment in MHOs (social inclusion)
2. Assess the impact of MHO membership on access to health care and the use of priority health care services; and
3. Analyze the impact of MHO membership on household income protection and OOP health care expenditures.

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## 1.2 Research Questions

To assess social inclusion, the study will address the following research questions. Are community-based health insurance schemes socially inclusive? Which household characteristics are associated with enrollment in community-based health insurance schemes in the three study sites of Ghana, Mali and Senegal? Do female-headed households enroll in MHOs at the same rate as male-headed households? Does the level of education of the household head contribute to the likelihood of enrollment in MHOs? Are poor households as likely to enroll in MHOs as better-off households?

Is there any evidence of adverse selection in the enrollment of MHOs in the three study sites? Are vulnerable groups more likely to enroll in MHOs? Are children under five years of age more likely to be enrolled in MHOs than teenagers? Are women in their childbearing ages more likely to enroll than men in the same age group or other women? Are men and women over 50 years of age more likely to enroll than other adults? Are individuals who report low health status more likely to enroll than individuals who report higher health status? Are individuals with reported chronic illness or physical disability more likely to enroll than their healthier counterparts?

The second objective is explored through the following research questions. Does enrollment in a community-based health insurance scheme improve access to curative care in the three study sites of Ghana, Mali, and Senegal? Does enrollment in a community-based health insurance scheme have any effect on the likelihood of using a modern health care provider when sick? Does enrollment in a community-based health insurance scheme influence the choice of provider when sick?

Does enrollment in a community-based health insurance scheme improve access to maternity health care in the three study sites? Does enrollment have any effect on the use of prenatal care services, or on the place of delivery?

Finally, the following research questions address the third specific objective of the study. Does enrollment in a community-based health insurance scheme provide protection against the financial risks associated with illness in the three study sites? What are the levels of illness-related OOP expenditures among members and non-members of community-based health insurance schemes? Does enrollment in a community-based health insurance scheme have any effect on OOP expenditures in the three study sites?

What are the levels of hospitalization or surgery-related OOP expenditures among members and non-members of community-based health insurance schemes in the two study sites of Ghana and Senegal? Does enrollment in a community-based health insurance scheme provide protection against catastrophic financial risks associated with illness?

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### 1.3 About the Study

The background and methodology sections of this report draw from the three individual country technical reports. Readers are encouraged to refer to these reports for more detailed information on country context, study sites, sample selection, and data collection instruments, as well as for additional analyses that are not replicated in this cross-country report. The three studies are the following:

- ▲ “Evaluating the Effects of the National Health Insurance Act in Ghana: Baseline Report” (Sulzbach et al. 2005)
- ▲ “Equity Initiative in Mali: Evaluation of the Impact of Mutual Health Organizations on Utilization of High Impact Services in Bla and Sikasso Districts in Mali” (Franco et al. 2006)
- ▲ “Determinants of Financial Stability of Mutual Health Organizations in the Thies Region of Senegal: Household Survey Component”(Diop 2005)

All three studies and additional publications related to the three study sites can be found on the *PHRplus* publications website at: [http://www.phrplus.org/pubs\\_new.html](http://www.phrplus.org/pubs_new.html).

The remainder of the report is organized into seven sections. Section II provides a description of the study sites. Section III describes the methodology, including an overview of data collection efforts in the three study sites and details about key variables and analytic methods. Section IV investigates the determinants of household and individual enrollment in MHOs. Section V analyses the impact of MHO membership on utilization of curative and maternal health services, while Section VI assesses the income protection effect of MHO membership for care related to illness and injury, including hospitalization and surgery. Section VII discusses the implications of the findings and Section VIII concludes the report.



## 2. Description of Study Sites

This section describes the study sites in each of the three countries, including an overview of the socio-economic background, health care provision, and community-based health insurance schemes in each site. Key characteristics, such as the economy and main sources of revenue, religion, ethnicity, level of urbanization and education, are compared with those for the rest of the country. The state of health service delivery in each site is discussed, including public and private sector providers, number of health care professionals available, and alternative sources of care, such as traditional practitioners. Finally, the section provides an overview of MHOs in each study site, including history of MHO development, organization and target population, benefits packages, and level and periodicity of premium contributions.

The total number of MHOs included in this cross-country study is 32: one in Ghana, four in Mali, and 27 in Senegal. All MHOs were community-owned and operated schemes that have been in operation for at least 2 years prior to the study. All encouraged enrollment at the family level, and most required monthly payment of contributions, except the MHO in Ghana and one in Mali, both of which required annual premium payments.

While the MHO in Ghana had contracted only with the district hospital, most of the MHOs in Mali and Senegal had contracts with facilities at lower levels of care as well. The benefits packages of MHOs vary and different patterns in the type of services included are reviewed by country. Details for each of the three study sites are presented in the sub-sections that follow.

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### 2.1 Ghana Study Site

The Ghana study was conducted in two rural districts, Nkoranza and Offinso. While Nkoranza had a fully operational MHO at the time of the survey, there was no such scheme in Offinso.

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#### 2.1.1 Socio-economic Context

Nkoranza is one of the 14 administrative districts in the Brong Ahafo region, situated in the central part of Ghana. The district is classified as deprived by the government of Ghana and is mostly rural. Nkoranza town, which serves as the district capital, has approximately 20 percent of the total district population. Agriculture is the predominant occupation in the district, with major crops including maize, yams, cassava, rice, and groundnuts. According to the Ghana 2003 Demographic and Health Survey (DHS) (Ghana Statistical Service 2004; this publication is referred to below as DHS 2003), 37 percent of women and 24 percent of men in the Brong Ahafo region have no education (which compares closely with nationwide education figures).

Offinso is one of the 18 districts of the Ashanti region in the central part of Ghana. It is classified as a less deprived district by the government of Ghana. The leading economic activity in the district is agriculture, and the major agricultural crops cultivated include cocoa, plantain, cocoyam, maize and tomato. About 28 percent of women and 16 percent of men in the Ashanti region have no education –

a much lower proportion than national rates (DHS 2003). As shown in Table 2.1, although the two districts are similar in terms of total population, Offinso is much smaller in land area and therefore much more densely populated than Nkoranza.

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### 2.1.2 Health Service Delivery

Table 2.1 provides details on health care provision in the two study districts. There are no tertiary care facilities in either district, but both have a first-level hospital. St Theresa’s Hospital, run by the Catholic Diocese of Sunyani, is the only hospital in the district of Nkoranza, while Offinso has two hospitals – a district hospital in Nkenkaasu and a mission hospital, St. Patrick’s hospital. Nurses comprise the most abundant cadre of health workers, and each district has a variety of private providers, such as pharmacists, traditional healers and, to a lesser degree, private doctors.

**Table 2.1: Health Care Provision in Study Sites, Ghana**

|                              | <b>Nkoranza</b>                   | <b>Offinso</b> |
|------------------------------|-----------------------------------|----------------|
|                              | <b>District Characteristics</b>   |                |
| District Population*         | 128,960                           | 138,676        |
| Region                       | Brong Ahafo                       | Ashanti        |
| Area (square kms)            | 2,300                             | 1,254          |
|                              | <b>Health Care Infrastructure</b> |                |
| Number of health posts       | 8                                 | 3              |
| Number of health centers     | 3                                 | 4              |
| Number of hospitals          | 1                                 | 2              |
| Number of hospital beds      | N/A                               | N/A            |
| Number of private clinics    | 1                                 | 3              |
|                              | <b>Health Care Workers</b>        |                |
| Number of physicians         | 4                                 | 6              |
| Number of midwives           | 24                                | 18             |
| Number of nurses             | 35                                | 63             |
| Number of medical assistants | N/A                               | N/A            |

\* 2000 Ghana Population and Housing Census  
N/A= Information not available

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### 2.1.3 Mutual Health Organizations

In the mid-1980s, Ghana introduced a “cash and carry” (user charge) payment system for drugs and services delivered by the public health sector. Although the system included a fee exemption policy for vulnerable groups and for priority health services, problems with the implementation of exemptions led to a decrease in health care utilization, particularly among the poor. Problems related to access and affordability prompted the development of both facility- and community-sponsored insurance schemes in the 1990s. The number of MHOs grew rapidly in Ghana, from 47 in 2001 to 168 in 2003. However, these MHOs combined covered less than one percent of the population (Atim et al. 2003).

The Nkoranza Health Insurance Scheme (Nkoranza scheme), established in 1992, was one of the first community health insurance initiatives in Ghana. After the implementation of the “cash and carry” system, many residents in Nkoranza (as elsewhere in the country) delayed seeking medical attention because of inability to pay for services. As there was no district hospital, Nkoranza residents typically sought care at St. Theresa’s mission hospital. However, many of these patients were unable to pay for services received, which resulted in the depletion of the hospital poor and sick fund, administered by the Sunyani Diocesan Catholic Church. To avoid further depletion of the fund and encourage early preventive treatment, the hospital initiated the Nkoranza scheme. The Nkoranza scheme received funds to cover income shortfalls for the first three years from MEMISA, a Dutch, faith-based organization, and later received funding and technical assistance from Danish International Development Assistance (DANIDA), PHR*plus*/United States Agency for International Development (USAID) and the World Health Organization (WHO). In 2001, the Nkoranza scheme was transformed from provider to community ownership.

The Nkoranza scheme offered membership to all, including those with pre-existing conditions, but required enrollment of all family members. Premiums were collected annually, and the new member premium was set at ₵30,000 per person for the first year, while the renewal premium was ₵25,000 per person per year.<sup>2</sup> Benefits included full coverage for admission to St. Theresa’s hospital and all inpatient expenses and drugs (refunds were available for the purchase of prescription drugs not available in the hospital). A fixed payment of ₵1,000,000 Cedis was allowed for referral to another hospital. The scheme did not cover outpatient services (with the exception of treatment for dog and snake bites), antenatal care, normal deliveries, or complications associated with self-induced or criminal abortions. Complicated deliveries requiring hospitalization, including cesarean, were, however, covered.

In 2003, the government passed the National Health Insurance Act 650 (NHIL) that mandated the establishment of district-wide community health insurance schemes in all districts of Ghana. The Nkoranza district assembly decided to set up a scheme more compatible with NHIL guidelines by establishing a district-wide MHO. With these changes, the private Nkoranza scheme ended its operations in October 2004, shortly after the survey was completed. At the time this survey was conducted, there were no MHOs in the district of Offinso.

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## 2.2 Mali Study Site

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### 2.2.1 Socio-economic Context

Two study sites were selected in Mali: the rural district of Bla and the urban commune of Sikasso (a secondary city). Both were selected for a broader project under the Equity Initiative, described in Section 2.2.3 below.

Bla central is a rural district in Ségou region in the central part of the country. Agricultural production, primarily cotton cultivation, had been the major source of monetary income. A poor rainy season (and thus poor crop production) in 2002 and a decrease in cotton prices led to lower incomes for many households in Bla, which had a negative effect on MHO premium collection, as discussed further in this section. Education indicators for the Ségou region are comparable to those for rural Mali, while health indicators are better in Ségou (Ballo et al 2002, referred to below as DHS 2001).

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<sup>2</sup> The exchange rate at the time of survey (September 2004) was US \$1 = ₵8,300 Ghanaian Cedis.

Sikasso, located in the southeastern part of the country, is on the main road from Bamako (Mali's capital) to Abidjan (the capital of Cote d'Ivoire) and is a major trading center. After the eruption of civil war in Cote d'Ivoire in 2002, the border with Mali was closed and commerce between the two countries came to a halt. Besides the drop in income resulting from the disruption of trade, the return of Malians who had worked in Cote d'Ivoire placed an additional financial burden on families. As in Bla, the effect of these events was a drop in contributions to MHOs in Sikasso. Health indicators in Sikasso are worse than those for urban areas (other than Bamako) in Mali (DHS 2001).

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### 2.2.2 Health Service Delivery

Table 2.2 provides information about health care provision in the two areas covered by the study. The district of Bla is a rural district, served by a hospital in the city of Ségou (outside of Bla district). Within the district, there is a health referral center, two clinics operated by faith-based organizations, and health centers that are managed by community health associations. Most sub-districts have a community health center. Sikasso is the regional capital as well as an urban commune. The regional hospital is located there, along with a health referral center and a number of community health centers (particularly in the villages that are within the commune's borders). There are also a large number of small private clinics in Sikasso.

**Table 2.2: Health Care Provision in Study Sites, Mali**

|                                    | Bla District                      | Sikasso Commune |
|------------------------------------|-----------------------------------|-----------------|
|                                    | <b>District Characteristics</b>   |                 |
| District Population                | 236,146                           | 110,424         |
| Region                             | Ségou                             | Sikasso         |
| Area (square kms)                  |                                   |                 |
|                                    | <b>Health Care Infrastructure</b> |                 |
| Number of community health centers | 11                                | 19              |
| Number of referral health centers  | 1                                 | 1               |
| Number of hospitals                | 0*                                | 1               |
| Number of hospital beds            | 0                                 | N/A             |
| Number of private clinics          | 2                                 | N/A             |

\* Bla district is served by a hospital in the city of Ségou (located outside of Bla district)  
N/A = Information not available

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### 2.2.3 Mutual Health Organizations

A set of reforms in Mali's health sector initiated in 1989 aimed at strengthening primary health care through the mobilization of resources from the community, government, and development partners. Democratic management of community health centers by community health committees was established as a means of providing a higher degree of ownership and involvement of communities in health care. Fee-for-service payment was instituted to pay for the staffing of community health centers, drugs, and supplies.

Mali was the first country in West Africa to establish a legislative framework for MHOs, in 1996. The government health and social development program, PRODESS, encourages implementation of MHOs as a means to improve access to and utilization of health services offered by the community health centers. However, coverage of the population by MHOs in Mali is still low, at less than one percent in 2005.

In 1999, the Ministry of Health, USAID, and the United Nations Children’s Fund (UNICEF) developed the Equity Initiative, a research-action project aimed at testing the assumption that cost recovery through user fees limits the use of care, particularly among the poorest and most vulnerable. The steering committee of the Equity Initiative chose the rural district of Bla and the urban commune of Sikasso as the two pilot intervention districts. The Equity Initiative had three phases: (1) initial situation analysis, which informed the selection of priority interventions (1999); (2) implementation of the selected interventions (2000-2004); and (3) evaluation of the impact of these interventions (2004).

Based on the situation analysis, two main interventions were selected for implementation during the second stage: the establishment of MHOs and of information, education and communication (IEC) campaigns for maternal health.<sup>3</sup> PHR<sub>plus</sub> was a key partner for the development of MHOs in two sub-districts in Bla central and two neighborhoods of Sikasso, where four MHOs were established in early 2002. Table 2.3 shows the MHOs that were included in the analysis for Mali. Each MHO covered between 3 and 11 percent of the population in its catchment area.

**Table 2.3: Mali: Coverage of Target Population by MHOs, October 2004**

| MHO           | # of Member households | # of Beneficiaries (Individual Members) | Percent of Target Population Covered |
|---------------|------------------------|---|--------------------------------------|
| Blaville      | 218                    | 875                                     | 4.1%                                 |
| Kemeni        | 126                    | 374                                     | 4.5%                                 |
| Wayerma       | 850                    | 6,508                                   | 11.4%                                |
| Bougoulaville | 276                    | 915                                     | 3.3%                                 |

Source: MHO registers and Mali General Census data (estimated 2004 population).

Table 2.4 summarizes the benefits package of each MHO. All four covered a large share of user fees for consultations, drugs, and delivery, while only one of the MHOs (Blaville) included inpatient care in its benefits package.

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<sup>3</sup> Only the MHO intervention is discussed in this report. See the individual country report for more information on the IEC component.

**Table 2.4: Mali: Comparison of MHO Benefits Packages**

|                                  | Sikasso       |         | Bla     |                             |
|----------------------------------|---------------|---------|---------|-----------------------------|
|                                  | Bougoulaville | Wayerma | Kemeni  | Blaville                    |
| Initial membership fee*          | F 500         | F 1,000 | F 1,000 | F 1,000                     |
| Monthly premium per beneficiary* | F 190         | F 135   | F 155   | F 260                       |
| Coverage of health care services |               |         |         |                             |
| Consultation                     | 75%           | 75%     | 75%     | 75%                         |
| Drugs                            | 80%           | 80%     | 75%     | 75%                         |
| Normal delivery                  | 75%           | 75%     | 75%     | 75%                         |
| Complicated delivery             | 100%          | 100%    | 100%    | 100%                        |
| Hospitalization                  | No            | No      | No      | 75% medical<br>75% surgical |

\* The exchange rate at the time of the survey (October 2004) was 527 F to US \$1.

Given the economic and other constraints described in section 2.2.1, all four MHOs have experienced difficulties with routine payments of premiums. Among households who joined the MHOs in 2002 and 2003, many had become completely inactive and never paid any dues between January and October 2004: 68 percent in Wayerma, 73 percent in Bougoulaville, and 61 percent in Blaville.<sup>4</sup>

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## 2.3 Senegal Study Site

The household survey in Senegal was conducted in the Thies region, which was selected because it has the highest number of MHOs in the country, outside of the capital city of Dakar, and because many MHO initiatives emerging in other regions of the country are building on the models and experiences of Thies.<sup>5</sup>

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### 2.3.1 Socio-economic Context

The Thies region is located in the west-central part of Senegal. In the most recent census, in 2002, the region's population was estimated at 1.29 million inhabitants spread over 6,201 square kilometers. Thies is a transition region, as it is located between the industrialized and urbanized region around the capital, Dakar, and rural regions of middle Senegal. It also finds itself between the northern and southern parts of the country's groundnut basin and between the Wolof-dominated regions of Louga and Diourbel and the Serer-dominated region of Fatick. This location has contributed to the urbanization of the region: in 2002, nearly 43 percent of the population lived in urban areas (see Table 2.5). In rural areas, there are relatively large villages of the Serer or the Wolof

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<sup>4</sup> Members of the Kemeni MHO pay yearly dues.

<sup>5</sup> In addition, around the time of the study, MHO leaders in Thies were working on proposals to strengthen the financial sustainability of MHOs, debating the feasibility of a social reinsurance scheme, and called for PHRplus technical assistance.

ethnic groups, as well as Fulani (Poular) and Mandingo villages. All the major religions of the country reside in harmony in the region and most of the population is Muslim or Catholic.

Improvement in living standards has been uneven over the past decades. The regional economy has been dominated traditionally by rain-fed agriculture, based on millet, sorghum, and peanuts (the main cash crop), and mining industries in the northern part of the region. Over the past two decades, however, the economy has witnessed structural changes with the development of tourism and fishing industries along the western borders. These new industries have resulted in widening disparities in living standards between the two northern departments (provinces) of Tivaouane and Thies, and the southern department of Mbour.

Thies has one of Senegal's lowest regional infant and child mortality rates after the Dakar region: the under-5 mortality rate was estimated at 98 deaths per 1,000 live births at the end of the 1990s, compared to a national average of 145 per thousand. Its epidemiological profile is still dominated, however, by communicable diseases – in particular, a combination of malaria, diarrhoeal diseases, and respiratory infections.

### 2.3.2 Health Service Delivery

The Thies region has among the best basic health infrastructure in the country, after the Dakar region. Basic health infrastructure, the health service delivery component of the health district, is typically organized into three tiers (see Table 2.4). The lowest tier consists of health huts, which are staffed by community health workers. Health huts are under the supervision of health posts and staffed by nurses; only a few health posts have certified midwives. At the highest tier are health centers, staffed by medical doctors, dentists, certified midwives, and nurses. Most health posts and centers are public, but there are a number of mission health posts as well. As a consequence of urbanization and changing economic conditions, the region has witnessed an important growth in private providers, both clinics and pharmacies.

**Table 2.5: Senegal: Profile of Health Infrastructure in the Thies Region, by Department (circa 2002)**

|  | Mbour   | Thiès   | Tivaouane |
|--|---------|---------|-----------|
| <b>Population</b>  |         |         |           |
| Population   | 461,000 | 496,000 | 336,000   |
| Proportion (%) urban                                     | 46.3    | 56.9    | 19.5      |
| Density (inhabitants per square kilometer)               | 242     | 329     | 127       |
| <b>Basic Infrastructure at the Health District Level</b> |         |         |           |
| Number of health huts                                    | 76      | 79      | 89        |
| Number of health posts                                   | 40      | 57      | 28        |
| Number of health centers                                 | 4       | 2       | 3         |
| Number of inpatient beds in health districts             | 272     | 96      | 105       |
| <b>Hospital Infrastructure</b>                           |         |         |           |
| Number of hospitals                                      |         | 2       |           |
| Number of hospital beds                                  |         |         |           |
| Regional Hospital of Thies                               |         | 257     |           |
| St. Jean de Dieu   |         | N/A     |           |

| Health Personnel at the Health District Level |     |     |    |
|---|-----|-----|----|
| Number of nurses                              | 125 | 114 | 56 |
| Number of midwives                            | 22  | 22  | 7  |
| Number of medical doctors                     | 10  | 4   | 3  |

N/A= Information not available

There are only two hospitals in the Thies region; both are located in the city of Thies. The public regional hospital is newly renovated and among the most modern hospitals in the country. The mission hospital of St. Jean de Dieu has also earned a good reputation since its founding in the mid-1980s, as have other mission health facilities in the region. St. Jean de Dieu hospital's promotion of MHOs has been instrumental in the emergence and sustainability of the MHO movement in the Thies region.

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### 2.3.3 Mutual Health Organizations

MHOs have a recent history in Senegal: the number of functioning MHOs in the country increased from 19 in 1997 to 79 in 2003. The Thies region is the birthplace of rural MHOs in Senegal – the first MHO was founded in the village of Fandene in 1990, and during the following decade, MHOs spread to surrounding villages in the Thies department. By the end of the decade, MHOs were started in Tivaouane and Mbour, two other departments of the Thies region. In 2003, 27 MHOs were functional in the region, while 10 new ones were being founded.

The founding of many of these MHOs was carried out with the interaction of the St. Jean de Dieu mission hospital, the Catholic diocese, CARITAS (a Catholic nongovernmental organization), and Catholic communities of the departments of Thies and Tivaouane. The mission hospital offers a 50 percent price discount to MHOs and their members – a policy that aims to improve access to hospital services for the poor.

The support of the first generation of MHOs by the mission hospital resulted in the typical pattern of MHO benefits packages. Most MHOs founded before 1999 provided primarily inpatient care, under contract with the St. Jean de Dieu hospital. In response to demands from members, MHOs in the region started to restructure their benefits packages after 1999 to include primary health care at health posts, and most MHOs founded subsequently started with benefits packages that put greater emphasis on primary health care provided at health posts and health centers.

Table 2.6 shows the services and products included in the benefits packages of the 27 MHOs in the Thies region. Most often, coverage is provided for inpatient care (22 schemes), essential drugs (23 schemes), curative care consultation (23 schemes), and normal delivery (16 schemes). Only three of the six MHOs in the department of Mbour include inpatient care in their benefits packages, as the part of the district covered by the Mbour MHOs is located relatively far away from the two regional hospitals (in the city of Thies).

**Table 2.6: Senegal: Number of MHOs in the Thies Region with Specific Services in Their Benefits Packages**

| Service or Product               | Current Benefits Package by Department (Province) |           |           |           |
|----------------------------------|---|-----------|-----------|-----------|
|                                  | Mbour   | Thies     | Tivaouane | Total     |
| Curative care consultation       | 5   | 12        | 6         | 23        |
| Essential drugs                  | 6   | 10        | 7         | 23        |
| Brandname drugs                  |   | 2         |           | 2         |
| Laboratory exams                 | 1   | 9         | 3         | 13        |
| Inpatient care (hospitalization) | 3   | 13        | 6         | 22        |
| Surgery                          |   | 4         | 3         | 7         |
| Prenatal care consultation       | 4   | 5         | 4         | 13        |
| Normal delivery                  | 6   | 6         | 4         | 16        |
| Cesarean                         |   | 6         | 1         | 7         |
| Postnatal consultation           | 4   | 3         | 2         | 9         |
| Family planning                  | 2   | 3         |           | 5         |
| Immunization                     | 5   | 4         | 1         | 10        |
| Number of MHOs                   | <b>6</b>  | <b>14</b> | <b>7</b>  | <b>27</b> |

MHOs appear to have behaved cautiously in the extension of their benefits packages. Among those founded before 1999, inpatient care was covered at 100 percent and, in 2004, remained unchanged in eight of 10 MHOs. Among the MHOs that added curative care consultations, normal delivery, and essential drugs to their benefits packages, coverage was provided at a rate varying from 50 to 75 percent; only three provided 100 percent coverage for curative consultations and essential drugs. A similarly prudent design of benefits packages is observed among MHOs created after 1999: most have large copayments for curative care consultations, normal delivery, and essential drugs. It should be noted that, typically, MHOs pay the entire fee directly to the facility and then seek reimbursement for the copayment from the member.

The restructuring of the benefits packages resulted in the expansion of MHOs' contractual relationships with providers. Before 1999, contractual relations of MHOs were primarily with St. Jean de Dieu hospital. Starting in 1999, however, most of the contracts established by MHOs were with public and mission health posts, and, to a lesser degree, with health centers: among the nearly 100 contracts established between the 27 MHOs and providers of the study in 2004, 77 were with health posts, 16 with a hospital, and only seven with a health center.

Most of the MHOs in the study area have enrollment policies based on family membership, meaning that all members of the nuclear family are supposed to join the MHO. As we will observe in the results, however, not all members of households who are members of MHOs are covered by the MHO. Most of the MHOs require contributions on a monthly basis, at rates from 100 to 200 FCFA (US \$0.20-0.40) per beneficiary, per month.



## 3. Methodology

This section summarizes the methods used for data collection in the three study sites. The sampling methodology, data collection instruments, timing of field data collection, and resulting sample sizes are discussed. The focus here is on sources for the data used in the comparative analysis presented in this cross-country study; readers should refer to the individual country studies for information on other data collection instruments that may not be mentioned here.

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### 3.1 Data Collection

As the primary focus of the individual country studies was to assess social inclusion in MHOs and the effects of MHO membership on access to and utilization of priority health services, the data collection methods on which this comparative analysis is based are similar in the three study sites. These methods include selecting a sample of households who are members of MHOs as *cases* and households who are not members of such schemes as the *comparison group*.

A number of questionnaires were then administered in the selected households. All three studies included a head of household questionnaire. The studies in Ghana and Senegal included curative care questionnaires for family members who reported a recent illness, injury, or hospitalization, while in Mali, the curative care questionnaire focused only on recent fever (presumed malaria) and episodes of diarrhea, excluding injuries and non-fever or diarrhea-related hospitalization. In all three countries, a maternal health care questionnaire was administered to pregnant women and women who have had a delivery in the year preceding the survey.

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#### 3.1.1 Ghana

The Ghana household survey was conducted in two districts: Nkoranza and Offinso. A multistage stratified approach was used to select the households. All urban towns in each district were selected into the sample,<sup>6</sup> whereas a sample of rural villages was selected based on population size and geographic location, in order to adequately represent the district. Accessibility to the sample sites was also a consideration, as the fieldwork was conducted in the rainy season.

Households to be included in the sample were selected proportionately to the total number of households in a given municipality. Different methods were utilized in the two districts, since equal sample sizes of insured and uninsured households were desired and Nkoranza had an existing MHO (whereas Offinso had no MHO at the time of the survey). Data on the total number of member households by municipality was obtained from the Nkoranza scheme manager and informed the sample selection. Initially, households from each of the selected municipalities in Nkoranza were sampled systematically without regard to MHO enrollment. Once the desired number of member

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<sup>6</sup> Ghana classifies municipalities with more than 5,000 residents as urban (towns), and those with fewer residents as rural (villages).

households was obtained, a filter question was added that instructed enumerators to skip member households (and proceed until a non-member household is selected) until the desired number of non-member households was reached.

The survey resulted in a total sample of 1,806 households: 1,307 from Nkoranza and 499 from Offinso. Table 3.1 presents a summary of the survey sample.

**Table 3.1: Ghana: Sample Characteristics**

|  | Nkoranza    |             | Offinso     | Total |
|--|-------------|-------------|-------------|-------|
|  | MHO members | Non-members | Non-members |       |
| Number of households   | 620         | 687         | 499         | 1,806 |
| Number of individuals  | 3,126       | 3,586       | 2,841       | 9,553 |
| Number of individuals reporting illness or injury in 2 weeks prior to survey     | 146         | 141         | 128         | 415   |
| Number of individuals reporting hospitalization in the 12 months prior to survey | 73          | 46          | 84          | 203   |
| Number of women 15-49 years who had given birth in the 12 months prior to survey | 99          | 110         | 91          | 300   |

Two questionnaires were administered at selected households:

1. A head of household questionnaire, including a family roster, housing characteristics (type of floor, water source, fuel source, etc.), assets and durable goods owned by the family, and education and occupation information about the household head; and
2. A treatment-seeking questionnaire (curative module) for eligible family members. Eligibility for the curative module was restricted to household members who (1) had been ill or injured in the past 15 days, (2) had been hospitalized in the past year, or (3) were women aged 15-49 who had given birth in the past year. If the injured/ill or hospitalized household member was under the age of 15, the child's caretaker was asked to respond on behalf of the child.

Data collection took place between September and October 2004. This time period coincided with the rainy season in the region, which might have impacted the pattern of utilization of health care services (due to higher rates of malaria and diarrhoeal disease, or to washed out roads).

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### 3.1.2 Mali

The Mali household survey was conducted in two sites: the rural district of Bla and the urban center of Sikasso. Within each of these sites, portions of the population had access to MHOs (the Blaville and Kemeni MHOs in Bla, and the Wayerma and Bouganville MHOs in Sikasso) and the rest did not have access to MHOs.

In the areas with access to MHOs, sample size was guided by the need to have enough MHO member and non-member households to permit comparison between these two groups. As the

numbers of MHO member households in three of the four MHOs, Blaville, Kemeni, and Bougoulaville, were not very large, all member households were included in the sample. For the Wayerma MHO, 350 out of 850 member households were sampled to represent three groups: (1) members who joined before April 2004, (2) members joining after April 2004 who were up-to-date with their contributions at the time of the survey (September 2004), and (3) members joining after April 2004 who were not up-to-date with their contributions at the time of the survey.<sup>7</sup>

Sampling of non-member households was conducted in two stages. First, a random selection of census enumeration sections in each area was chosen. Then, a systematic random sampling of households in each of the chosen sections was taken.<sup>8</sup> Table 3.2 shows the resulting sample size and distribution.

**Table 3.2: Mali: Sample Characteristics**

|  | Bla         |              | Sikasso     |             | Total       |             |
|--|-------------|--------------|-------------|-------------|-------------|-------------|
|  | MHO Members | Non-members* | MHO Members | Non-members | MHO Members | Non-members |
| Number of households   | 268         | 1,017        | 549         | 825         | 817         | 1,842       |
| Number of individuals  | 2,113       | 6,630        | 3,663       | 2,604       | 5,786       | 9,234       |
| Number of individuals reporting fever in the 2 weeks prior to survey | 251         | 879          | 299         | 272         | 550         | 1,151       |
| Number of women 15-49 years  | 405         | 1,212        | 125         | 163         | 530         | 1,375       |
| Number of women who had given birth in the 12 months prior to survey | 102         | 364          | 76          | 101         | 178         | 465         |

\* Includes a control group from areas with no access to MHOs.

Collection of data in the Mali study site was based on three questionnaires:<sup>9</sup>

1. A household questionnaire, administered to all heads of household and including questions on socio-demographic characteristics of each household member (age, education, religion, etc.), housing characteristics, household consumption and assets owned, and knowledge of the head of household about maternal health.
2. A fever care questionnaire, administered to all household members who reported having fever in the 15 days preceding the survey, and including questions on care-seeking behavior, satisfaction with care, and related expenditures.

<sup>7</sup> The April 2004 date is important as the MHOs launched a campaign to increase awareness, and subsequently, enrollment, in the schemes during the months of February and March of 2004.

<sup>8</sup> The overall number of non-member households selected was based on estimation of the minimum number of households needed in the sample to ensure a sufficient number of women who had delivered in the 12 months preceding the survey, for purposes of comparison with a baseline survey (conducted by Partnerships for Health Reform [PHR] in 1999) and with MHO members.

<sup>9</sup> Two additional questionnaires were used in the Mali study: a reproductive health and a child health questionnaire. Those data are not analyzed for this report.

3. A maternal care questionnaire, administered to all women who were pregnant or had delivered in the previous 12 months. This questionnaire collected information on utilization of prenatal, delivery, and postnatal care and expenditures, including the use of mosquito nets during pregnancy.

Data collection took place between September and November 2004. Although not officially the rainy season, rain does occur during these months, potentially affecting the incidence of malaria and diarrhea.

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### 3.1.3 Senegal

In Senegal, the study area was the target population of the MHOs in the Thies region. All MHOs that had been operational in the two years preceding the survey were included in the study: six in the department of Mbour, 14 in Thies, and seven in Tivaouane. The sampling frame was built from the list of member households in the MHO registers. A paired-sampling methodology was used to select member and non-member households. From each MHO, 20 member households were randomly selected, and for each of these households, a household which was not a MHO member was randomly selected from the same neighborhood.<sup>10</sup> Table 3.3 presents a summary of the resulting sample.

**Table 3.3: Senegal: Sample Characteristics**

|  | Members | Non-members | Total |
|--|---------|-------------|-------|
| Number of households   | 540     | 540         | 1,080 |
| Number of heads of nuclear family  | 556     | 647         | 1,203 |
| Number of individuals  | 4,095   | 5,131       | 9,226 |
| Number of individuals reporting illness in the 2 weeks prior to survey               | 195     | 217         | 412   |
| Number of women 15-49 years  | 785     | 929         | 1,714 |
| Number of women who had given birth in the 12 months prior to survey                 | 47      | 83          | 130   |
| Number of individuals who had hospitalization/surgery in the 2 years prior to survey | 65      | 54          | 119   |

There were four main data collection instruments:

1. A household questionnaire, administered to all heads of household and including a household roster and individual characteristics of households members (age, sex, education, etc.), housing characteristics (type of floor, water source, fuel source, etc.), assets and durable goods owned, and monthly expenditures of the household during the month preceding the survey;

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<sup>10</sup> Neighborhood was defined as the same village in rural areas and city neighborhood in urban areas. For Faggu MHO, which covers retirees, the control households were selected from the list of retirees in the social security organization office of the Thies region, *Institution de Prévoyance Retraite au Sénégal*.

2. A head of nuclear family questionnaire,<sup>11</sup> administered to each head of a nuclear family within a household and including information on MHO membership, contributions, debt, and other relations with the scheme, as well as information on the occurrence, during the two years preceding the survey, of hospitalization or surgery and related expenditures for any family members;
3. A curative care questionnaire, administered to all household members who were reported to have been ill or injured in the two weeks preceding the survey, including details about care-seeking behavior and related expenditures; and
4. A reproductive health questionnaire, administered to women of childbearing age (15-49 years) and including information on the woman's characteristics (age, education, etc.) and family planning knowledge and use; this questionnaire also has a module for women who were pregnant or had delivered in the 12 months preceding the survey, with questions on prenatal care and, for those who had delivered, services used at delivery and postnatal care.

Field data collection took place between August and October 2004, during a period when the rainy season is ending in central Senegal, which corresponds to a morbidity profile dominated by malaria.

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## 3.2 Analysis

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### 3.2.1 Overview

The following three chapters present the analysis of MHO membership in the three study areas. Regression analyses are used to address the three main research questions outlined in the introduction of this report. Accordingly, the cross-country study investigation is based on three key dependent variables:

1. Social inclusion in MHOs,
2. Access to health care, and
3. Household income protection in the health sector.

First, social inclusion in MHOs is measured by the enrollment of households and individuals in MHOs. Given the sampling methodology used in the three study sites, the interest here is not on measuring the rate of penetration of MHOs of their target population, but rather on the identification of household and personal characteristics associated with enrollment in MHOs. The MHO membership of a household is determined by whether or not the head of household is a MHO member.

Second, access to health care is measured by the reported actual use of health care services in the case of need. The use of curative care serves as a basis for assessing access to health care in the case of illness or injury. The use of prenatal care services, place of delivery and provider assistance at

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<sup>11</sup> The head of nuclear family questionnaire was included in addition to the head of household questionnaire because MHO membership in Thies is typically based on the nuclear family.

delivery are used to assess access to maternal health care. The type of health care provider chosen for curative or delivery care is also analysed.

Finally, household income protection for outpatient health care is assessed by the levels of OOP expenditures associated with the use of modern care in the case of illness or injury, and coverage of medical costs by health insurance. Similarly, OOP expenditures and coverage by health insurance in the case of hospitalisation or surgery are used to assess household income protection in the case of catastrophic care. OOP expenditures and coverage by health insurance for prenatal care and delivery are used to assess the protection of household income in the area of maternal health.

The key independent variables of the analysis include household and personal characteristics. The analysis of enrollment in MHOs investigates the effects of socio-economic status on enrollment to assess the likelihood of coverage of the poor by MHOs. Analysis of the effects of various social characteristics of households (such as age, education, and employment of the head of household) on enrollment extends the analysis of social inclusion in MHOs. The effects of individual demographic characteristics, such as age and sex, and other risk-related factors (such as chronic illness and self-perception of health status) on the likelihood of enrollment in MHOs support the discussion on adverse selection in MHOs.

The analysis of access to health care and household income protection compares the experiences of MHO members to non-members. Stratified analyses of the use of health care and health-related OOP expenditures where members and non-members are compared provide a summary of differences between members and non-members. These differences are analysed further by controlling for other factors using multivariate methods.

Data analyses for Ghana and Mali are weighted to reflect the sample selection methods used in each of the study sites. Each household in the dataset was assigned a weight that was based on the probability of selection into the sample.<sup>12</sup> All household members were then assigned the same weight as the household to which they belong. Data for Senegal were not weighted, due to the sampling methodology utilized in the study (paired-household sample).

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### 3.2.2 Description of Variables

Independent (predictor) variables used in the regression analyses include:

- ▲ Household characteristics, such as household size, number of household members in certain age and sex groups (e.g. children under 5, women of childbearing age 15-49 years), and comparative socio-economic status of the household (described below);
- ▲ Head of household characteristics, such as age, sex, education, and occupation;
- ▲ Individual characteristics, such as age, sex, presence of chronic illness or disability, and self-perception of health status;

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<sup>12</sup> Weights are equal to the inverse of the probability of selection into the sample.

- ▲ Community characteristics – whether the household residence is located in an urban or rural area, and whether it is within close proximity to a health facility;<sup>13</sup> and
- ▲ Individual MHO membership status – whether the individual is a beneficiary of a MHO.

Dependent (outcome) variables used in the regression models include:

- ▲ Household enrollment. Since most MHOs in the three countries encouraged enrollment of the entire family, enrollment status of the head of household was used as a proxy for household enrollment.
- ▲ Individual enrollment. Data from all three countries included membership status of all individuals in a selected household, making it possible to analyze predictors of enrollment at the individual level.
- ▲ Curative care, measured by the use of modern facilities and choice of provider for outpatient care among respondents who reported being ill or injured in the 15 days preceding the survey.
- ▲ Hospitalization in the past year (Ghana) or past two years (Senegal).
- ▲ Maternal care, measured by utilization of routine prenatal care (at least four consultations), and delivery at a health facility among women who gave birth in the past year.
- ▲ OOP expenditures, or payments for outpatient and inpatient care.

The construction of a measure of comparative economic status of each household differed across study sites, due to differences in the type of data collected. In each study, however, the entire sample of households was divided into five economic status groups: poorest, middle-poor, middle, middle-rich and richest.

In Ghana, economic status of the household is measured by an asset-based wealth index, created by using key housing characteristics (such as type of flooring, cooking fuel, or potable water source) and household assets (such as ownership of telephone, radio, TV, or car). Principal components analysis was used to assign households aggregate scores based on household characteristics and assets. The ranked scores of households were then divided into five equal-sized quintiles reflecting relative wealth.

In Mali, the economic status of the household is measured by the value of adjusted consumption per household member.<sup>14</sup> The value of consumption of food, transportation, lodging, utilities, school fees, health, and clothing was estimated. The estimated value of self-produced foods was also included, as these are typically a large share of total food consumption. Recall periods were adjusted

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<sup>13</sup> In Senegal, proximity to health facility was measured by whether or not there was a health facility in the village or urban neighbourhood of residence; in Mali, this variable was measured by whether or not there was a health facility within one kilometer of a household's residence; no variable on proximity of health facility was included in the Ghana survey.

<sup>14</sup> When adjusting total household consumption for household size, children under 14 years were counted at 0.75 (whereas adults were counted as one).

for each question: for example, lodging costs were estimated for the preceding month, school expenses for the preceding year, and food for the previous week.<sup>15</sup>

In Senegal, economic status quintiles were constructed based on the distribution of household monthly expenditures per capita.

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<sup>15</sup> The analysis of the Mali data attempted to use an asset index similar to that used for the Ghana data, but found insufficient variation in the asset data to allow for clear differentiation of economic status.

## 4. Determinants of Enrollment in MHOs

In this section, the analysis of the effects of household characteristics on the probability of household enrollment in MHOs serves as a basis for the assessment of social inclusion in the three sites. In addition, the analysis of the effects of individuals' demographic characteristics and self-assessment of health status on the probability of individual enrollment in MHOs serves as a basis for the assessment of adverse selection in enrollment.

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### 4.1 Household Enrollment

This sub-section provides evidence on the following social inclusion related questions. Are community-based health insurance schemes socially inclusive? What are the characteristics of households that are associated with enrollment in schemes? Are female-headed households as likely to enroll in MHOs as male headed households? Does the level of education of the head of household contribute to the likelihood of enrollment in MHOs? Are poor households as likely to enroll in MHOs as better off households of the community?

Table 4.1 provides a summary of logistic regression results related to the contribution of specific household characteristics to the likelihood of enrollment in MHOs. Demographic characteristics of households contribute significantly to the likelihood of enrollment in MHOs. In the Ghana study site, households with more than three members are more likely to enroll in MHOs than households with fewer members; a similar pattern is found with the Mali data, although starting with households with six members. The size of the household, however, does not significantly contribute to enrollment in the Senegal study site. In Senegal, households with at least two women of childbearing age are more likely to enroll in MHOs than households with fewer women of childbearing age. Households with at least two members aged 50 and older in Senegal are more likely to enroll than households with fewer elderly members. There is a mild finding that households with two or more children under 5 are less likely to enroll in a MHO. There are no significant results for Mali related to household composition.

Gender of the household head is a key factor in MHO enrollment. Across the three study sites, households headed by women are more likely to enroll in MHOs than male-headed households. Households headed by women are two to six times more likely to enroll in MHOs than are male-headed households. In contrast, it is only in the Ghana study site that the age of the head of household contributes significantly to the likelihood of enrollment in a MHO: household heads over the age of 50 are significantly more likely to be enrolled.

**Table 4.1: Regression Results: Household Enrollment in MHO in Ghana, Senegal, and Mali Study Sites (All Households)**

| <b>Model: <math>\ln[\text{Prob}(\text{Household is enrolled}) / \text{Prob}(\text{Household is not enrolled})] = \alpha + \beta X</math></b> |              |                |             |
|--|--------------|----------------|-------------|
|  | <b>Ghana</b> | <b>Senegal</b> | <b>Mali</b> |
| Household size (base: less than 3)   |              |                |             |
| 3-5 members  | 2.06***      | 0.64           | 1.02        |
| 6-8 members  | 1.73**       | 0.71           | 1.70*       |
| 9 members +  | 2.14**       | 1.01           | 2.13**      |
| Household has at least (base: less than 2):  |              |                |             |
| 2 children under 5 years of age  | 0.64*        | 1.03           | 0.80        |
| 2 women aged between 15-49 years   | 1.20         | 1.74***        | 1.19        |
| 2 adults aged 50 years +   | 1.21         | 1.38*          | 1.32        |
| Female headed household (base: male)   | 2.16***      | 2.60***        | 6.39***     |
| Household headed by individual aged (base: less than 40)   |              |                |             |
| 40-49 years  | 1.36         | 1.18           | 1.07        |
| 50-59 years  | 2.43***      | 1.04           | 1.31        |
| 60 years +   | 2.44**       | 1.43           | 1.32        |
| Level of education of head of household (base: none)   |              |                |             |
| Primary  | 1.18         | 1.38*          | 1.87***     |
| Secondary +  | 1.66***      | 1.53**         | 4.92***     |
| Occupation of head of household (base: none)   |              |                |             |
| Agriculture  | 1.62         | 1.62**         | 1.88***     |
| Commerce/Trade/Artisan   | 2.01***      | 2.13***        | 0.74        |
| Administration   | 1.78***      | 1.69**         | 1.01        |
| Household economic status (base: poorest 20%)  |              |                |             |
| Middle-poor 20%  | 1.18         | 1.27           | 0.89        |
| Middle 20%   | 1.20         | 1.14           | 0.87        |
| Middle-rich 20%  | 2.30         | 0.93           | 1.31        |
| Richest 20%  | 2.82         | 1.52*          | 1.73**      |
| Urban  | 0.76         | 0.79           | 1.67***     |
| Availability of health facility in the community (base: no)  |              | 1.05           | 1.78***     |
| Number of cases (households)   | 1,307        | 1,080          | 1,604       |

\* $p < 0.10$ ;  
 \*\* $p < 0.05$ ;  
 \*\*\* $p < 0.01$ .

Education also appears to predict enrollment. In all three study sites, the higher the level of education of the head of household, the higher the likelihood that the household will enroll in a MHO. Households headed by an individual with at least a secondary education are nearly two to five times more likely to be enrolled in a MHO than households headed by an individual who has never attended school. Overall, heads of household who belong to any occupational category appear more likely to enroll, compared to those who have no occupation: for each of the occupational categories considered

(agriculture, commerce/trade/artisan, and administration) the association between occupation and MHO enrollment is significant in at least two of the three countries in the study.

The effects of the economic status of the household on enrollment are relatively mild. In both the Senegal and Mali study sites, there is no clear economic gradient in the patterns of household enrollment in MHOs: only the wealthiest 20 percent of households seem to have a higher propensity to enroll in MHOs compared to the poorest 20 percent. In Mali, households located in urban areas and those in close proximity to a health care facility are more likely to be enrolled in a MHO, but this result is not confirmed for Senegal.

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## 4.2 Individual Enrollment

This sub-section seeks to answer questions related to adverse selection: Is there any evidence of adverse selection in enrollment in MHOs in the three study sites? Are vulnerable groups (children under five, women of reproductive age, elderly) more likely to enroll? Are individuals who report low health status or chronic illness more likely to enroll than their healthier counterparts?

Table 4.2 presents a summary of logistic regression results of the contribution of specific individual characteristics on the likelihood of enrollment in MHOs. Data from the Senegal and Mali surveys, which collected information on individual health status, suggest that actual or perceived health status influences enrollment. In Senegal, individuals with chronic illness are significantly more likely to enroll, whereas in Mali, individuals with disabilities are significantly more likely to enroll than their healthier counterparts. This finding is confirmed in Senegal, where individuals who perceive their health status as very good are less likely to enroll than individuals who perceive their health status as less than good.

Among demographic characteristics, elderly individuals are more likely to enroll than younger males (15-49 years) across all three study sites; this pattern is more pronounced for women aged 50 years and over. There is some evidence that children under 5 are less likely to be enrolled. The individual-level data confirm the patterns of relationships between household characteristics and enrollment in MHOs discussed in the preceding sub-section. A notable exception is that for the Ghana study site, the economic gradient becomes even more pronounced, with individuals from the two wealthiest quintiles three to four times more likely to be enrolled in a MHO as those from the poorest quintile. In addition, close proximity to a health facility significantly predicts enrollment in both Senegal and Mali (a question not asked in the Ghana survey). In an interesting contrast, whereas rural residents are significantly more likely to be enrolled in Senegal, in Mali it is urban residents who are significantly more likely to be enrolled in a MHO.

**Table 4.2: Regression Results: Individual Enrollment in MHO in Ghana, Senegal, and Mali Study Sites (All Individuals)**

| <b>Model : <math>\ln[\text{Prob}(\text{Individual is enrolled}) / \text{Prob}(\text{Individual is not enrolled})] = \alpha + \beta X</math></b> |                           |                |             |
|---|---------------------------|----------------|-------------|
| <b>Independent Variables (X)</b>  | <b>Odds Ratio: Exp(b)</b> |                |             |
|   | <b>Ghana</b>              | <b>Senegal</b> | <b>Mali</b> |
| <b>Individual Characteristics</b>   |                           |                |             |
| Disability (base: no)   |                           | 1.21           | 1.70***     |
| Chronic illness (base: no)  |                           | 1.42***        | 1.21        |
| <b>Self-perception of health status (base: less than good)</b>  |                           |                |             |
| Very good   |                           | 0.85*          | 0.97        |
| Good  |                           | 0.90           | 1.11        |
| <b>Individual demographics (base: male 15-49 years)</b>   |                           |                |             |
| Male – 0-4 years  | 0.78**                    | 0.88           | 0.90        |
| Male – 5-14 years   | 0.95                      | 1.09           | 0.97        |
| Male - 50 years and over  | 1.25*                     | 1.21*          | 1.18*       |
| Female - 0-4 years  | 0.97                      | 0.71***        | 0.85        |
| Female - 5-14 years   | 1.07                      | 0.99           | 0.92        |
| Female - 15-49 years  | 1.12                      | 1.20***        | 1.03        |
| Female - 50 years and over  | 1.80***                   | 1.32***        | 1.21        |
| <b>Household characteristics</b>  |                           |                |             |
| <b>Household size (base: less than 3)</b>   |                           |                |             |
| 3-5 members   | 1.83**                    | 0.95           | 0.88        |
| 6-8 members   | 1.46                      | 1.02           | 1.53        |
| 9 members +   | 1.38                      | 1.66           | 1.71*       |
| Female headed household (base: male)  | 1.65***                   | 1.60***        | 6.15***     |
| <b>Household headed by individual aged (base: less than 40)</b>   |                           |                |             |
| 40-49 years   | 1.31*                     | 1.22***        | 1.02        |
| 50-59 years   | 1.93***                   | 1.12           | 1.20        |
| 60 years +  | 1.94**                    | 1.21**         | 1.23        |
| <b>Level of education of head of household (base: none)</b>   |                           |                |             |
| Primary   | 0.99                      | 1.12**         | 1.80***     |
| Secondary +   | 1.51**                    | 1.20***        | 5.04***     |
| <b>Occupation of head of household (base: none)</b>   |                           |                |             |
| Agriculture   | 2.14***                   | 1.60***        | 1.93***     |
| Commerce/Trade/Artisan  | 2.25***                   | 1.74***        | 0.66*       |
| Administration  | 2.34***                   | 1.76***        | 0.91        |
| <b>Household economic status (base: poorest 20%)</b>  |                           |                |             |
| Middle-poor 20%   | 1.39                      | 1.05           | 1.09        |
| Middle 20%  | 1.43                      | 1.08           | 0.94        |
| Middle-rich 20%   | 2.88**                    | 1.00           | 1.46        |

|   |        |         |         |
|---|--------|---------|---------|
| Richest 20%   | 4.09** | 1.42*** | 2.17*** |
| Community characteristics                                   |        |         |         |
| Urban   | 0.85   | 0.84*** | 2.29*** |
| Availability of health facility in the community (base: no) |        | 1.24*** | 1.78*** |
| Number of cases   | 6,712  | 9,226   | 10,526  |

\* $p < 0.10$ ;  
\*\* $p < 0.05$ ;  
\*\*\* $p < 0.01$ .

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### 4.3 Summary

In summary, are community-based health insurance schemes socially inclusive? What are the characteristics of households that are enrolled in community-based health insurance schemes? Based on household data from the three study sites of Ghana, Mali and Senegal, demographic characteristics of households contribute significantly to the likelihood of enrollment in MHOs. Across the three study sites, the gender of the head of household contributes significantly to enrollment in MHOs: indeed, in all three countries, households headed by women are two to six times more likely to enroll in MHOs than are male-headed households. In all three study sites, the higher the level of education of the head of household, the higher the likelihood that the household will enroll in a MHO. In Senegal, households with larger numbers of women of childbearing age are more likely to enroll in MHOs than households with fewer women of childbearing age. Occupation also appears to have an effect on enrollment; for Ghana and Senegal, this result is particularly true of government workers as well as traders and artisans. In Mali, it is farmers that are the group more likely to be enrolled in a MHO, compared to those without occupation. The effect of the economic status of the household on household enrollment is positive and significant in Mali and Senegal.

Is there evidence of adverse selection in MHO enrollment in the three study sites? The information presented in section 4.2 offers scant evidence of adverse selection for household enrollment. However, the higher likelihood of households with two or more women of childbearing age to be enrolled in Senegal is notable. At the individual enrollment level, the Senegal and Mali study sites (where such information was collected) suggest that individuals with physical disabilities or chronic illness are significantly more likely to enroll in MHOs than healthier individuals. Furthermore, in Senegal, individuals who perceive their health status as very good might be less likely to enroll than individuals who perceive their health status as less than optimal. Those aged 50 years and over are more likely to enroll than adult males (15-49 years), and this pattern is particularly pronounced for elderly women.



## 5. Access to and Use of Health Services

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### 5.1 Curative Care

This sub-section provides summary information on the effects of enrollment in a community-based health insurance scheme on access to and use of curative care, attempting to answer the following questions. Does enrollment in a community-based health insurance scheme improve access to curative care in the three study sites of Ghana, Mali, and Senegal? Does enrollment in a community-based health insurance scheme have any effect on the likelihood of using a modern health care provider when sick? Does enrollment in a community-based health insurance scheme have any effect on the choice of provider in the modern health care delivery system when sick? Regression results based on outpatient care among individuals who reported an illness during the two weeks preceding the survey in the three study sites are presented first; next, regression results reflecting recent inpatient care are presented, based on information from the Ghana and Senegal study sites.

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#### 5.1.1 Outpatient Care

Among individuals who reported an illness during the two weeks preceding the survey in the Ghana study site, nearly half (46 percent) sought care at a modern health care provider to remedy their illness; in the Senegal study site, the corresponding figure is 80 percent, while in the Mali study site, 30 percent sought formal health care. Table 5.1a provides a summary of regression results on the use of curative care services, measured as seeking care at a modern health care provider, among individuals who reported an illness in the two weeks preceding the survey. As expected, the perception of the severity of the illness contributes significantly to the likelihood that the individual will seek care from a modern health provider. Compared to individuals who perceived their illness as not serious, individuals who perceived their illness as serious were twice as likely to seek treatment from a modern health care provider in both the Ghana and Mali sites. In addition, individuals who perceived their illness as very serious were three to four times more likely to seek care at a modern health care provider in both the Ghana and Mali sites. The effects of the perception of illness are not statistically significant in the Senegal study site.

**Table 5.1a: Regression Results: Curative Health Care - Entry in the Modern Health Care System in Ghana, Senegal and Mali Study Sites (Individuals who reported an illness in the past two weeks)**

| Model: $\ln[\text{Prob}(Y = 1) / \text{Prob}(Y = 0)] = \alpha + \beta X$      |                    |         |         |
|---|--------------------|---------|---------|
| Y = 1, if care with modern provider<br>Y = 0, if no care with modern provider |                    |         |         |
| Independent Variables (X)   | Odds Ratio: Exp(b) |         |         |
|   | Ghana              | Senegal | Mali    |
| <b>Individual Characteristics</b>   |                    |         |         |
| Self-perception of illness (base: not serious)                                |                    |         |         |
| Very serious  | 4.28***            | 1.89    | 3.00*** |
| Serious   | 2.57***            | 1.38    | 2.21*** |
| Under 5 years of age (base: 5 years +)  | 1.14               | 1.57    | 1.32*   |
| Female (base: male)   | 1.34               | 0.90    | 0.89    |
| Household Characteristics   |                    |         |         |
| Female headed household (base: male)  | 0.98               | 1.27    | 0.89    |
| Level of education of head of household (base: none)                          |                    |         |         |
| Primary   | 0.70               | 1.18    | 1.10    |
| Secondary +   | 0.74               | 0.90    | 1.04    |
| Occupation of head of household (base: none)                                  |                    |         |         |
| Agriculture   | 0.63               | 1.16    | 0.87    |
| Other (Commerce/Trade/Artisan/Administration) <sup>a</sup>                    | 0.61               | 1.37    | 0.91    |
| Household economic status (base: poorest 20%)                                 |                    |         |         |
| Middle-poor 20%   | 0.87               | 1.99*   | 1.26    |
| Middle 20%  | 0.81               | 3.09*** | 1.44    |
| Middle-rich 20%   | 1.73               | 1.94    | 1.79**  |
| Richest 20%   | 1.53               | 4.33*** | 2.28*** |
| Community Characteristics   |                    |         |         |
| Urban   | 1.23               | 0.55*   | 1.98*** |
| Availability of health facility in the community (base: no)                   |                    | 1.21    | 1.74*** |
| MHO Enrollment  |                    |         |         |
| Enrolled in MHO (base: no)  | 1.81**             | 0.90    | 1.48**  |
| Number of cases   | 415                | 363     | 1,701   |

\* $p < 0.10$ ;

\*\* $p < 0.05$ ;

\*\*\* $p < 0.01$ .

<sup>a</sup> Note: Due to small sample sizes, occupational categories have been combined in this and subsequent regression models.

Other individual characteristics, such as young age (children under five) and gender, do not appear to be significantly associated with the probability of seeking modern care.

Household economic status contributes significantly to the likelihood that a sick household member will seek care at a modern health care facility to remedy an illness in Senegal and Mali.

However, while the pattern of the relationship between household economic status and seeking care at a modern health care provider is consistent with what one might expect in the Mali study site, the pattern for Senegal is not quite as sequential. In Mali, members of households who reside in a community where a health facility is available are more likely to seek care from the modern health care sector than members of households who reside in a community where a health facility is not as accessible. Urban residents in Mali are significantly more likely to seek curative care.

MHO membership has a strong significant effect for care-seeking at a modern provider in Ghana and Mali. While all four MHOs in the Mali study offered significant coverage for curative consultations and drugs, the result is particularly interesting for Ghana, where the MHO included in the study did not offer coverage for outpatient curative care (with the exception of snake and dog bites). In Senegal, MHO membership does not appear to increase the probability of seeking curative outpatient care.<sup>16</sup>

The study data offer the opportunity to not only determine which factors influence health-seeking behavior, but also to examine the factors that influence the type of provider sought. Table 5.1b provides a summary of the relationships between key individual and household characteristics and the choice of providers in the modern health care sector. The seriousness of the illness predicts treatment, evidenced by a pattern to seek treatment from a health facility or hospital for ailments perceived as being serious, particularly in Ghana and Mali.

Although the effects of household economic status on seeking care in the modern health care sector are not significant in Ghana (see table 5.1a), household economic status contributes significantly to the *choice* of provider for the treatment of illness. Wealthier households are significantly more likely to seek treatment from a hospital in Ghana, as well as in Senegal, compared to households from the poorest group. Data for Senegal and Mali validate the effects of household economic status presented in table 5.1a, in that wealthier households are more likely to seek care from each of the facility types, as compared to poorer households.

In both the Ghana and Mali study sites, MHO coverage significantly affects the choice of provider. In the Ghana study site in particular, the fact that the benefits package of the MHO primarily covers inpatient care is reflected in a tendency towards using the hospital to treat illness among MHO beneficiaries. In the Mali study site, where all MHO benefits packages include outpatient care, results show a significantly higher likelihood of seeking care at health centers. In the Senegal study site, MHO coverage does not seem to contribute significantly to provider choice among those seeking treatment from the modern health sector.

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<sup>16</sup> This finding is confirmed by the results from a regression where the MHO enrollment variable is replaced with a variable indicating “enrollment in MHO with high outpatient care coverage.”

**Table 5.1b: Regression Results: Curative Health Care – Provider Choice in the Modern Health Care System in Ghana, Senegal, and Mali Study Sites (Individuals who reported an illness in the past two weeks)**

| Model : $\ln[\text{Prob}(Y_i = j) / \text{Prob}(Y_i = 0)] = \alpha_j + \beta_j X_i$<br>$j = \text{health centre}, j = \text{private doctor}, j = \text{hospital} = 0, \text{ if no care with modern provider}$ |                    |                |          |               |                |          |               |                |          |
|--|--------------------|----------------|----------|---------------|----------------|----------|---------------|----------------|----------|
| Independent variables (X)  | Odds Ratio: Exp(b) |                |          |               |                |          |               |                |          |
|  | Ghana              |                |          | Senegal       |                |          | Mali          |                |          |
|  | Health Centre      | Private Doctor | Hospital | Health Centre | Private doctor | Hospital | Health Centre | Private doctor | Hospital |
| Individual Characteristics   |                    |                |          |               |                |          |               |                |          |
| Self-perception of illness (base: not serious)   |                    |                |          |               |                |          |               |                |          |
| Very serious   | 3.76***            | 3.60           | 4.98***  | 1.45          | 0.57           | 2.65*    | 3.74***       | 2.06           | 2.83*    |
| Serious  | 2.45**             | 2.36           | 2.12**   | 1.25          | 1.06           | 1.20     | 2.71***       | 1.63           | 1.62     |
| Under 5 years of age (base: 5 years +)   | 1.41               | 2.08           | 0.34***  | 1.93*         | 1.40           | 0.63     | 1.27          | 1.60           | 1.20     |
| Female (base: male)  | 1.69**             | 1.56           | 0.94     | 0.94          | 1.67           | 0.77     | 0.79          | 0.81           | 1.98*    |
| Household Characteristics  |                    |                |          |               |                |          |               |                |          |
| Female headed household (base: male)   | 1.11               | 0.77           | 1.48     | 1.02          | 1.31           | 1.18     | 0.59          | 1.83           | 1.50     |
| Household economic status (base: poorest 20%)  |                    |                |          |               |                |          |               |                |          |
| Middle-poor 20%  | 0.86               | 1.17           | 0.83     | 1.91*         | 1.56           | 2.92*    | 1.24          | 1.79           | 1.49     |
| Middle 20%   | 0.72               | 1.00           | 3.91*    | 3.37***       | 1.90           | 2.59     | 1.52          | 2.26           | 1.27     |
| Middle-rich 20%  | 0.68               | 1.80           | 9.13***  | 2.12*         | 0.80           | 3.28**   | 1.91**        | 1.89           | 2.08     |
| Richest 20%  | 1.22               | 1.94           | 5.80***  | 4.62***       | 6.64**         | 6.19***  | 1.98**        | 5.11***        | 3.23*    |
| Community Characteristics  |                    |                |          |               |                |          |               |                |          |
| Urban  | 0.97               | 0.54           | 2.38*    | 0.31***       | 1.93           | 1.12     | 1.46*         | 3.31***        | 5.96***  |
| Availability of health facility in the community (base: no)  |                    |                |          | 2.09**        | 2.35           | 1.36     | 2.04***       | 1.29           | 2.00     |
| MHO Enrollment   |                    |                |          |               |                |          |               |                |          |
| Enrolled in MHO (base: no)   | 1.80*              | 0.72           | 3.13***  | 0.77          | 1.51           | 0.58     | 1.58**        | 0.93           | 1.66     |

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

## 5.1.2 Inpatient Care

Table 5.2 provides a summary of regression results on recent hospitalization among all individuals in the two study sites of Ghana and Senegal.<sup>17</sup> In Senegal, where health status characteristics of individuals are reported, individuals with a disability and those who reported a chronic illness are both three times more likely to be hospitalized compared to their healthier counterparts.

Demographic characteristics of individuals contribute significantly to the likelihood of hospitalization in the Ghana study site: children under five, women of childbearing age, and the elderly (50 years or over) are more likely to be hospitalized compared to men 15-49 years of age. In Senegal, only elderly men are more likely to be hospitalized, compared to men 15-49 years.

Household and community characteristics do not seem to contribute significantly to hospitalization in either the Ghana or Senegal study sites. However, in the Senegal study site, the likelihood of hospitalization is positively associated with enrollment in an MHO with high inpatient care coverage: individuals who benefit from high inpatient MHO coverage are more than twice as likely to be hospitalized as individuals with no MHO coverage.

In Ghana, the fact that there appears to be no significant association between enrollment in the MHO (which covers all hospitalization expenses), may be attributed to better access to hospitals in the MHO study site, as compared to Senegal: the hospital in Ghana's Nkoranza district served a population of 129,000 spread over 2,300 square kilometers, while the two hospitals in Senegal's Thies district served a population of 1.3 million spread over 6,200 square kilometers.

**Table 5.2: Regression Results: Hospitalization in the Past Year in Ghana and Senegal Study Sites (All Individuals)**

| <b>Model : <math>\ln[\text{Prob}(Y = 1) / \text{Prob}(Y = 0)] = \alpha + \beta X</math></b>    |                           |                |
|--|---------------------------|----------------|
| <b>Y = 1, if hospitalized at a modern health provider during the past year = 0, otherwise.</b> |                           |                |
| <b>Independent Variables (X)</b>   | <b>Odds Ratio: Exp(b)</b> |                |
|  | <b>Ghana</b>              | <b>Senegal</b> |
| <b>Individual Characteristics</b>  |                           |                |
| Disability (base: no)  |                           | 3.07***        |
| Chronic illness (base: no)   |                           | 3.08***        |
| <b>Individual demographics (base: male 15-49 years)</b>  |                           |                |
| Male – 0-4 years   | 4.84***                   | 0.99           |
| Male – 5-14 years  | 1.69                      | 0.73           |
| Male - 50 years and over   | 8.22***                   | 2.21**         |
| Female - 0-4 years   | 5.20***                   | 0.91           |
| Female - 5-14 years  | 0.92                      | 0.85           |
| Female – 15-49 years   | 6.73***                   | 2.01*          |
| Female – 50 years and over   | 9.19***                   | 1.20           |

<sup>17</sup> In the Senegal study site, a retrospective period of two years was used; in Ghana the recall period was one year. The Mali survey did not collect data on hospitalizations.

| Household Characteristics                                   |         |         |
|---|---------|---------|
| Female headed household (base: male)                        | 1.17    | 1.00    |
| Level of education of head of household (base: none)        |         |         |
| Primary   | 0.99    | 1.28    |
| Secondary +   | 0.85    | 0.96    |
| Occupation of head of household (base: none)                |         |         |
| Agriculture   | 0.60*** | 0.85    |
| Commerce/Trade/Artisan                                      | 0.86    | 1.24    |
| Administration  | 0.45    | 1.17    |
| Household economic status (base: poorest 20%)               |         |         |
| Middle-poor 20%   | 0.69    | 0.97    |
| Middle 20%  | 0.86    | 0.84    |
| Middle-rich 20%   | 0.83    | 0.97    |
| Richest 20%   | 1.39    | 0.88    |
| Community Characteristics                                   |         |         |
| Urban   | 0.86    | 1.28    |
| Availability of health facility in the community (base: no) |         | 1.43    |
| MHO Benefits Package Characteristics                        |         |         |
| MHO high outpatient care coverage                           |         | 1.18    |
| MHO high inpatient care coverage                            | 1.09    | 2.28*** |
| Number of cases   | 9,554   | 9,226   |

\* $p < 0.10$ ;  
\*\* $p < 0.05$ ;  
\*\*\* $p < 0.01$ .

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## 5.2 Maternity Health Care

This sub-section provides information on the effects of enrollment in a MHO on access to and use of maternity health care through the following questions: Does enrollment in a MHO affect the use of prenatal care services? Does enrollment affect place of delivery?

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### 5.2.1 Prenatal Care

The international standard for maternity care is at least four prenatal visits during pregnancy. In the Ghana study site, 83 percent of women who delivered in the twelve months before the survey reported having at least four prenatal visits; in the Senegal study site, this figure is 57 percent, and drops to 34 percent in the Mali study site. Table 5.3 provides a summary of regression results on factors associated with the use of prenatal health care among women who delivered in the twelve months preceding the survey.

**Table 5.3: Regression Results: Use of Prenatal Health Care in Ghana, Senegal and Mali Study Sites (Women who delivered in the past twelve months)**

| Model : $\ln[\text{Prob}(Y = 1) / \text{Prob}(Y = 0)] = \alpha + \beta X$<br>Y = 1, if woman has had at least four (4) prenatal visits = 0, otherwise |                    |         |         |
|---|--------------------|---------|---------|
| Independent Variables (X)   | Odds Ratio: Exp(B) |         |         |
|   | Ghana              | Senegal | Mali    |
| Household Characteristics   |                    |         |         |
| Female headed household (base: male)  | 2.72               | 0.54    | 0.98    |
| Level of education of head of household (base: none)  |                    |         |         |
| Primary   | 1.59               | 1.81    | 1.37    |
| Secondary +   | 1.77               | 1.48    | 1.33    |
| Occupation of head of household (base: none)  |                    |         |         |
| Agriculture   | 0.55               | 0.64    | 0.76    |
| Other (Commerce/Trade/Artisan/Administration)   | 0.94               | 1.62    | 0.69    |
| Household economic status (base: poorest 20%)   |                    |         |         |
| Middle-poor 20%   | 0.46               | 0.58    | 1.01    |
| Middle 20%  | 1.67               | 1.14    | 1.22    |
| Middle-rich 20%   | 1.04               | 1.36    | 0.92    |
| Richest 20%   | 1.46               | 0.54    | 0.83    |
| Community Characteristics   |                    |         |         |
| Urban   | 1.72               | 0.75    | 1.73    |
| Availability of health facility in the community (base: no)   |                    | 1.29    | 1.79**  |
| MHO Enrollment  |                    |         |         |
| Enrolled in MHO (base: no)  | 2.41*              | 0.80    | 2.09*** |
| Number of Cases   | 300                | 119     | 593     |

\* $p < 0.10$ ;

\*\* $p < 0.05$ ;

\*\*\* $p < 0.01$ .

No clear patterns regarding individual and household characteristics emerge from the prenatal care data to answer the question of what factors contribute to the likelihood of completing four or more prenatal care consultations. In Mali, close proximity to a health facility positively predicts receiving standard prenatal care. MHO enrollment also predicts standard prenatal care: women who were beneficiaries of MHOs were twice as likely to have had at least four prenatal care visits, compared to women who were not MHO beneficiaries. In Ghana, there is only weak evidence that MHO enrollment contributes to the likelihood of receiving this level of prenatal care, a result which can be explained by the fact that prenatal care was not a covered benefit in the Ghana MHO. In Senegal, where less than half of the MHOs in the study region included prenatal care in their benefits packages, regression results do not reveal a significant contribution of MHO enrollment towards the likelihood of receiving four or more prenatal care visits.

## 5.2.2 Delivery Care

Efforts to improve birth outcomes for both the mother and infant center on delivering in a modern health facility with a skilled birth attendant. In the Ghana study site, 70 percent of women who gave birth in the past twelve months delivered at a modern health facility. In the Senegal study site, the comparable figure is 52 percent, and 46 percent of women in the Mali study site delivered at a health facility. Table 5.4 provides a summary of regression results on delivery with a modern health care provider for women who delivered in the twelve months preceding the survey. There is no strong evidence on association between a particular household characteristic and the likelihood that women will deliver at a modern health facility, with the exception of some evidence that women from wealthier households in Mali might be more likely to deliver in a modern health facility, compared to women from the poorest households.

Women who reside in urban areas in the Senegal study site are more likely to deliver at a modern health care provider than women who reside in rural areas, but this result is not confirmed in Ghana or Mali. However, the Mali data confirm the importance of distance from health facilities on birth practices – the closer a woman lives to health facility, the more likely she is to deliver at a modern health facility.

MHO coverage is associated with a greater likelihood of delivery at a modern health facility only in the Ghana study site (where the MHO covered hospitalization). This result is not confirmed for the Mali study site (where all four MHOs included in the study covered normal and complicated delivery) or in the Senegal study site (where 16 out of the 27 MHOs covered normal delivery, and only seven covered cesarean section).

**Table 5.4: Regression Results: Delivery at a Modern Health Facility in Ghana, Senegal and Mali Study Sites (Women who delivered in the past twelve months)**

| <b>Model : <math>\ln[\text{Prob}(Y = 1) / \text{Prob}(Y = 0)] = \alpha + \beta X</math></b>              |                           |                 |                 |
|--|---------------------------|-----------------|-----------------|
| <b><math>Y = 1</math>, if woman has delivered at a modern health facility<sup>a</sup> = 0, otherwise</b> |                           |                 |                 |
| <b>Independent Variables (X)</b>   | <b>Odds Ratio: Exp(b)</b> |                 |                 |
|  | <b>Ghana</b>              | <b>Senegal</b>  | <b>Mali</b>     |
| <b>Household Characteristics</b>   |                           |                 |                 |
| Female headed household (base: male)   | 1.34                      | 1.14            | -- <sup>b</sup> |
| <b>Level of education of head of household (base: none)</b>  |                           |                 |                 |
| Primary  | 0.49**                    | 0.49            | 1.40            |
| Secondary +  | 0.68                      | -- <sup>b</sup> | 1.50            |
| <b>Occupation of head of household (base: none)</b>  |                           |                 |                 |
| Agriculture  | 0.77                      | 0.82            | 1.13            |
| Other (Commerce/Trade/Artisan/Administration)  | 1.05                      | 2.09            | 0.96            |
| <b>Household economic status (base: poorest 20%)</b>   |                           |                 |                 |
| Middle-poor 20%  | 1.24                      | 1.57            | 1.56            |
| Middle 20%   | 0.84                      | 1.05            | 1.77            |
| Middle-rich 20%  | 1.22                      | 6.91*           | 2.45**          |
| Richest 20%  | 1.70                      | 2.89            | 2.47*           |

| Community Characteristics                                   |         |        |         |
|---|---------|--------|---------|
| Urban   | 1.23    | 5.42** | 1.83    |
| Availability of health facility in the community (base: no) |         | 1.81   | 4.74*** |
| MHO Enrollment  |         |        |         |
| Enrolled in MHO (base: no)                                  | 1.98*** | 1.86   | 0.57    |
| Number of Cases   | 300     | 101    | 444     |

\* $p < 0.10$ ;

\*\* $p < 0.05$ ;

\*\*\* $p < 0.01$ .

Notes: <sup>a</sup> Given the focus of this report on the effects of MHO enrollment, the outcome variable for Ghana is specifically a hospital birth, as this represents the only facility for which an insured woman could potentially benefit from enrollment in a MHO.

<sup>b</sup> Variable dropped from the regression because it predicted success perfectly.

### 5.3 Summary

In Ghana and Mali, MHO coverage has a positive effect on the likelihood that the sick will seek care at a modern health care provider. In addition, in both the Ghana and Mali study sites, MHO coverage significantly affects the choice of provider: in the Ghana study site in particular, the fact that the benefits package of the MHO includes mainly inpatient care is reflected in a significant bias towards using hospital services to treat illness among MHO beneficiaries. By contrast, in the Senegal study site, MHO coverage does not seem to contribute significantly to seeking treatment in the modern health sector or to provider choice. Finally, the likelihood of hospitalization is positively associated with MHO coverage in the Senegal study site: individuals who benefit from the MHO inpatient care coverage are twice as likely to be hospitalized as individuals with no MHO coverage.

Regarding maternity health services, women who are beneficiaries of MHOs are twice as likely to have had at least four prenatal care visits compared to women who are not beneficiaries of MHOs in both the Ghana and Mali study sites. In the Senegal study site, MHO coverage does not seem to contribute to the use of the recommended package of prenatal care consultations. MHO coverage is associated with a greater likelihood of delivery at a modern health facility only in the Ghana study site, but this result is not confirmed for the Mali or Senegal study sites.



## 6. Out-of-Pocket Illness-related Expenditures

This section addresses household income protection, seeking to answer the following questions: Does enrollment in a MHO protect against the financial risks associated with illness in the three study sites of Ghana, Mali, and Senegal? The first sub-section builds on information on expenditures associated with outpatient curative care among beneficiaries and non-beneficiaries of MHOs in all three study sites. The second sub-section is based on expenditure information associated with inpatient care among beneficiaries and non-beneficiaries of MHOs in the Ghana and Senegal study sites only.

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### 6.1 Outpatient Curative Care

This sub-section elaborates further the household income protection question as follows: What are the levels of illness-related OOP expenditures for outpatient care among members and non-members of MHOs? Does enrollment have any effect on the level of illness-related OOP expenditures?

Table 6.1 provides a summary of the levels and structures of illness-related OOP expenditures for outpatient care among members and non-members of MHOs who sought care at a modern health care provider in the two weeks preceding the survey. Note that for Senegal and Ghana, the expenditures are for all reported illnesses or injuries treated on an outpatient basis; for Mali the expenditures are only for reported fever (presumed malaria), treated in an outpatient setting.

Overall, individuals who sought outpatient care from modern health care providers in Ghana spent between US \$6-7 to remedy their illness; these OOP expenditures averaged around US \$10-11 in the Mali study site and ranged between US \$12-17 in the Senegal study site. In all three study sites, drugs comprise a large proportion of OOP expenditures.

As expected, the levels of illness-related OOP expenditures for outpatient care between members of MHOs and non-members are nearly the same in the Ghana study site, as the Ghana MHO covered primarily inpatient services (see Section 2). By contrast, most MHOs in the Senegal study site provide varying degrees of outpatient coverage. Accordingly, MHO members in Senegal paid much less than non-members for curative care. In the Mali study site, where all the MHOs provide high curative care coverage for outpatient services, the difference in average OOP between MHO members and non-members for treatment of fever is not substantial.

**Table 6.1: Outpatient Curative Care: Out-Of-Pocket Expenditures (US Dollars) among Members and Non-Members of MHOs in the Ghana, Mali, and Senegal Study Sites (Individuals Who Sought Care at a Modern Health Care Provider in the Past 2 weeks)**

| Out-Of-Pocket Expenditures in US dollars | Ghana <sup>1</sup> |         | Senegal <sup>2</sup> |         | Mali <sup>2</sup> |         |
|--|--------------------|---------|----------------------|---------|-------------------|---------|
|  | Non-members        | Members | Non-members          | Members | Non-members       | Members |
| Home care/self-medication drugs          | 0.59               | 0.39    | 3.51                 | 3.50    | 2.91              | 2.48    |
| Transportation                           | 0.51               | 0.50    | 0.26                 | 0.52    | 0.31              | 0.93    |
| Payments at a modern provider:           |                    |         |                      |         |                   |         |
| Consultation                             | 0.38               | 0.61    | 2.72                 | 0.98    | 1.19              | 1.46    |
| Drugs                                    | 2.94               | 3.23    | 2.37                 | 3.24    | 6.14              | 5.30    |
| Laboratory exams                         | 0.56               | 0.35    | 7.40                 | 3.41    | -                 | -       |
| Other <sup>3</sup>                       | 1.75               | 1.28    | 0.57                 | 0.44    | -                 | -       |
| Total modern provider payment            | 5.63               | 5.47    | 13.07                | 8.08    | 7.33              | 6.76    |
| Total illness-related expenditures       | 6.73               | 6.35    | 16.84                | 12.10   | 10.55             | 10.18   |
| Number of individuals                    | 98                 | 79      | 157                  | 137     | 442               | 192     |

Notes:

1. Reported expenditures in Ghanaian Cedi converted based on an exchange rate of US \$1=¢8,300
2. Reported expenditures in FCFA converted based on an exchange rate of US \$1=527 FCFA
3. Include x-rays and other treatment-related expenses.

In order to control for factors other than MHO enrollment that could influence the level of OOP for outpatient care, Table 6.2 provides a summary of the relationships between individual and household characteristics and the level of illness-related OOP expenditures in the three study sites. As could be expected, the level of illness-related OOP expenditures is positively associated with the perceived severity of the illness in the Ghana and Senegal study sites; the effects of the severity of illness in the Mali study site are not significant.

The relationships between the level of illness-related OOP expenditures and individual demographic characteristics do not reveal a consistent pattern in the three study sites. For Mali, illness-related OOP expenditures are lower among children under five years of age compared to older individuals. Illness-related OOP expenditures are significantly lower among females as compared to males in the Ghana and Mali study sites. The evidence on the association between OOP for care and economic status is mixed: while in Senegal and Mali, illness-related OOP expenditures appear to be higher for the richest quintile compared to the poorest quintile of economic status, there is some weak evidence that the opposite may be true in the Ghana study site.

In the Ghana study site, where MHO coverage does not include outpatient services, the regression results do not suggest that there are any significant differences in illness-related OOP expenditures between members and non-members of MHOs. However, contrary to expectations, the same result is true for Senegal and Mali, even though most of the MHOs included in the Senegal study and all MHOs included in the Mali study cover outpatient care to a large extent. A possible explanation for this result is that even though outpatient care and related drugs were a covered benefit by MHOs in Mali and Senegal, there were copayments ranging from 25 to 50 percent.

**Table 6.2: Regression Results: Outpatient Curative Care - Out-Of-Pocket Expenditures (T)  
(Individuals who sought care at a modern health care Provider in the past two weeks)**

| <b>Model : <math>\ln[T + 1] = \alpha + \beta X</math></b>   |                                  |                |             |
|---|----------------------------------|----------------|-------------|
| <b>Where T is total out-of-pocket expenditures</b>          |                                  |                |             |
| <b>Independent variables (X)</b>                            | <b>Coefficient estimates (b)</b> |                |             |
|   | <b>Ghana</b>                     | <b>Senegal</b> | <b>Mali</b> |
| <b>Individual Characteristics</b>                           |                                  |                |             |
| Self-perception of illness (base: not serious)              |                                  |                |             |
| Very serious  | 1.92**                           | 0.80*          | 0.08        |
| Serious   | 0.39                             | 0.75**         | 0.22        |
| Under 5 years of age (base: 5 years +)                      | -0.22                            | -0.58          | -0.88**     |
| Female (base: male)   | -1.37***                         | 0.27           | -0.69**     |
| <b>Household Characteristics</b>                            |                                  |                |             |
| Female headed household (base: male)                        | 0.13                             | -0.23          | -1.07       |
| Level of education of head of household (base: none)        |                                  |                |             |
| Primary   | 0.43                             | -0.21          | -0.05       |
| Secondary +   | 0.14                             | -0.68          | -0.58       |
| Occupation of head of household (base: none)                |                                  |                |             |
| Agriculture   | -0.40                            | -0.05          | -1.04**     |
| Other (Commerce/Trade/Artisan/ Administration)              | 0.93                             | -0.36          | -0.58       |
| Household economic status (base: poorest 20%)               |                                  |                |             |
| Middle-poor 20%   | -0.90                            | 0.18           | 0.61        |
| Middle 20%  | 0.35                             | 0.92*          | 0.49        |
| Middle-rich 20%   | -0.21                            | 0.06           | 0.71        |
| Richest 20%   | -1.42*                           | 1.30**         | 1.21*       |
| <b>Community Characteristics</b>                            |                                  |                |             |
| Urban   | 1.04*                            | 0.53           | -0.31       |
| Availability of health facility in the community (base: no) |                                  | 0.04           | -0.72*      |
| <b>MHO Enrollment</b>                                       |                                  |                |             |
| Enrolled in MHO (base: no)                                  | 0.49                             | -0.48          | 0.09        |
| Constant  | 8.81*                            | 6.82***        | 8.60***     |
| Number of cases   | 177                              | 283            | 574         |

\* $p < 0.10$ ;  
\*\* $p < 0.05$ ;  
\*\*\* $p < 0.01$ .

## 6.2 Catastrophic Care

In this sub-section, the household income protection question is elaborated further as follows: What are the levels of hospitalization- or surgery-related OOP expenditures among members and non-members of MHOs in the study sites of Ghana and Senegal? Does enrollment in a MHO offer protection against catastrophic financial risks associated with illness? Based on data from the Ghana and Senegal study sites, this section summarizes the incidence of catastrophic events, such as hospitalization and surgery, among members and non-members of MHOs. In addition, regression results provide further evidence on factors that influence OOP expenditures related to hospitalization.

As observed in sub-section 5.1.2, regression results controlling for a number of factors that can be associated with hospitalization suggest that the likelihood of hospitalization is positively associated with MHO coverage in the Senegal study site, while no such conclusion could be drawn for the Ghana site. Members of MHOs may not be covered for hospitalization care because the scheme benefits package does not include hospitalization (as is the case in five out of the 27 schemes in the Senegal study site) or because the member is not up-to-date with his or her premium contributions to the MHO. OOP expenditures for recent hospitalization are summarized by members versus non-members and covered versus not-covered hospitalization events in table 6.3.

**Table 6.3: Catastrophic Health Expenditures - Hospitalization and Surgery among Members and Non-Members of MHOs in the Ghana and Senegal Study Sites**

|   | Ghana <sup>1</sup> |        | Senegal <sup>2</sup> |        |
|---|--------------------|--------|----------------------|--------|
|   | Non-member         | Member | Non-member           | Member |
| Proportion (per 1,000) of individuals who experienced a hospitalization event in past year    | 23.4               | 28.2   |                      |        |
| Proportion (per 1,000) of individuals who experienced a hospitalization event in past 2 years |                    |        | 5.8                  | 13.9   |
| Average out-of-pocket expenditures (US Dollars) for recent hospitalization event              |                    |        |                      |        |
| Event covered by MHO  |                    | 1.77   |                      | 60.52  |
| Event not covered by MHO  | 43.88              | 16.29  | 234.30               | 243.27 |
| All events  | 43.88              | 4.25   | 234.30               | 145.66 |
| Number of individuals who experienced a hospitalization event in past year                    | 146                | 86     |                      |        |
| Number of individuals who experienced a hospitalization event in past 2 years                 |                    |        | 54                   | 65     |

Notes:

1. Reported expenditures in Ghanaian Cedi converted based on an exchange rate of US \$1=¢8,300
2. Reported expenditures in FCFA converted based on an exchange rate of US \$1=527 FCFA

The propensity to be hospitalized is much higher in Ghana than in Senegal, and the same is true for hospitalization-related expenditures. The large differences between the Ghana and Senegal study sites may be due to two reasons. First, different recall periods were used to capture data on hospitalization: 12 months for the Ghana study and 24 months in Senegal. Second, there appears to be better access to hospitals in the Ghana MHO study site, as compared to Senegal. For example, the hospital in Nkoranza district (Ghana MHO site) serves a population of 129,000 spread over 2,300 square kilometers, and the 2 hospitals in Offinso district (Ghana site with no MHO) serve a

population of 139,000 spread over 1,254 square kilometers. By contrast, the two hospitals in Thies district (Senegal study site) are both located in the city of Thies and serve a population of 1.3 million spread over 6,200 square kilometers.

As table 6.3 suggests, in both the Ghana and Senegal study sites, there are large differences in hospitalization-related OOP expenditures between MHO members who are hospitalized for a MHO-covered event, and non-members who are hospitalized for the same event. For members who benefited from the coverage of the MHO in Ghana, hospital OOP expenditures average US \$2, compared to US \$44 for non-beneficiaries. Similarly, inpatient OOP expenditures average US \$61 for MHO members in Senegal, whereas non-members pay US \$235 on average. Again, hospital expenditures among MHO members in Senegal reflect variable copayment policies and quantitative limits on benefits.

Regression results summarized in Table 6.4 suggest that the level of education of the household head affects OOP payments: in Senegal, patients from households with a secondary educated household head pay less, compared to households where the head has no education; in Ghana, this finding is true for heads of household with primary education, compared to heads of household with no education. Wealthier households in Ghana pay more than households from the poorest quintile. In Ghana, it appears that hospitalized patients from urban households pay less than hospitalized patients from rural households.

The regression results indicate that in both the Ghana and Senegal study sites, membership in a MHO with high inpatient care coverage is associated with lower levels of inpatient expenditures. In other words, the large differences between MHO members and non-members in OOP expenditures for inpatient care observed in Table 6.3 reflect the importance of MHO coverage in reducing OOP expenditures. This finding is particularly pronounced for the Ghana study site.

**Table 6.4: Regression Results: Catastrophic Health Expenditures - Hospitalization Out-Of-Pocket Expenditures (T) in the Ghana and Senegal Study Sites (Individuals who reported a recent hospitalization event)**

| Model : $\ln[T + 1] = \alpha + \beta X$<br>Where T is total out-of-pocket expenditures |                           |          |
|--|---------------------------|----------|
| Independent variables (X)  | Coefficient estimates (b) |          |
|  | Ghana                     | Senegal  |
| Individual Characteristics   |                           |          |
| Individual demographics (base: male 15-49 years)                                       |                           |          |
| Male – 0-4 years   | 0.05                      | 0.95     |
| Male – 5-14 years  | 0.25                      | -3.73*** |
| Male - 50 years and over   | -1.03                     | -0.41    |
| Female - 0-4 years   | 1.03                      | -0.97    |
| Female - 5-14 years  | -1.42                     | -0.70    |
| Female - 15-49 years   | -0.44                     | -0.91    |
| Female - 50 years and over   | 0.74                      | 0.35     |
| Household Characteristics  |                           |          |
| Female headed household (base: male)   | -1.23**                   | -0.13    |

|   |          |          |
|---|----------|----------|
| Level of education of head of household (base: none)        |          |          |
| Primary   | -0.74*   | -0.61    |
| Secondary +   | 0.05     | -2.33*** |
| Occupation of head of household (base: none)                |          |          |
| Agriculture   | 0.74     | 0.22     |
| Other (Commerce/Trade/Artisan/ Administration)              | 0.12     | 0.70     |
| Household economic status (base: poorest 20%)               |          |          |
| Middle-poor 20%   | 0.77     | -0.05    |
| Middle 20%  | -0.06    | 1.02     |
| Middle-rich 20%   | 1.41**   | 1.65*    |
| Richest 20%   | 1.23**   | 1.29     |
| Community Characteristics                                   |          |          |
| Urban   | -1.76*** | -0.82    |
| Availability of health facility in the community (base: no) |          | -1.01    |
| <b>MHO Benefits Package Characteristics</b>                 |          |          |
| MHO high outpatient care coverage                           |          | 0.58     |
| MHO high inpatient care coverage                            | -9.44*** | -1.81*** |
| Constant  | 11.91*** | 12.30*** |
| Number of cases   | 232      | 101      |

\*p<0.10;  
\*\*p<0.05;  
\*\*\*p<0.01.

### 6.3 Summary

In summary, the regression results show no differences in OOP expenditures for outpatient care between MHO members and non-members in Ghana; this finding is not surprising, as MHO outpatient coverage is restricted to treatment for animal bites. Surprisingly, the same pattern holds true for Senegal and Mali, despite the fact that most MHOs in these study sites offer comprehensive outpatient benefits. The fact that MHOs in the Senegal and Mali study sites include copayments for outpatient care ranging from 25 to 50 percent may weaken the effects of MHO coverage on OOP expenditures for outpatient care.<sup>18</sup>

In terms of inpatient health care, both the Ghana and Senegal study sites demonstrate that membership in a MHO with high inpatient care coverage has a strong protective effect on the levels of OOP expenditures.

<sup>18</sup> The four MHOs in the Mali study site covered 75 percent of the cost of outpatient consultation and 80 percent of the cost of drugs; in Senegal, three MHOs covered outpatient care at 100 percent, while the rest provided between 50 and 75 percent coverage.

## 7. Discussion

This section begins with a discussion of the limitations of this study, both in terms of available data and analyses performed, and the challenges of comparing results across three countries with different MHO contexts. This discussion is followed by a more careful exploration of the findings as they relate to social inclusion, access to health care, and household income protection.

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### 7.1 Study Limitations

**Data limitations.** There are some features in the type and structure of data that were available for this cross-country study that constrained the depth and methods of analyses that were performed as well as the implications that could be drawn from the results. These limitations are identified relative to dependent variables and independent variables, respectively.

First, the Mali analysis of curative outpatient care is based only on a homogeneous sample of individuals who reported a fever, or a presumed case of malaria, during the last two weeks. In contrast, the Ghana and Senegal data are based on a heterogeneous sample of individuals who reported an illness including fever, diarrhea, respiratory infections, trauma, or other illness. While patterns of utilization of modern health care may vary as a consequence of the type of illness of the individual, it is not clear how such differences may affect the comparability of our results in the three sites on the impact of MHOs on health care service use. In addition, information on hospitalization in this study was limited to the study sites of Ghana and Senegal; information on hospitalization from Mali would have enriched the analysis, as much variability emerged between the Ghana and Senegal study sites.

Second, while religious affiliation and ethnicity are of great interest in the analysis of social inclusion in MHOs, the Ghana study site did not include information on these variables, so they were omitted from the cross-country analysis. The discussion in this section, however, will draw from results based on individual country reports of Senegal and Mali on the relationships of these variables to enrollment in MHOs.

Third, the measures of household economic status are different in the three studies: the wealth quintiles are defined by an asset-based index in Ghana, a consumption-based index in Mali, and a household expenditures-based index in Senegal.

Fourth, in the Senegal and Mali study sites, contribution policies are based on monthly contributions, with temporary exclusion from MHO benefit coverage for households who do not regularly pay their dues. The sample of MHO members in our analysis does not distinguish whether members are up-to-date with their contribution or not. Accordingly, results related to the impact of MHO coverage on access to and use of health care and household income protection are lower-bound estimates.

Finally, with respect to the Mali data, although a control area (in terms of MHO access) had been devised for Sikasso, it became clear that the population in the control area was substantially rural, and

different in many respects from the urban population. Thus, the intended control group for Sikasso was excluded from the analysis.

**Diversity of study sites.** The three study sites of Ghana, Senegal and Mali, which serve as a basis for this cross-country analysis of the impact of MHOs, are diverse in many respects. First, a large share of the Ghana study site sample comes from Nkoranza, a mostly rural district deemed deprived by the government of Ghana. In sharp contrast, more than 40 percent of the population in the Senegal study site lives in urban areas, including the three secondary cities of Thies, Mbour and Tivaouane. In terms of economic standing, the Thies region lies between Dakar and the more impoverished interior regions of the country. The Mali study site is mainly a rural setting, with the exception of the secondary city of Sikasso. The MHOs and the household survey were implemented at a time when prices for cotton (the main cash crop and source of income of rural households in the study sites) were low, while trade and service activities were disturbed by the political instability in neighboring Cote d'Ivoire – factors that affected MHO contributions and possibly spending on health.

The health care service delivery systems are also different among the three study sites. For instance, the population to hospital ratio is seven times higher in the Senegal study site compared to the Ghana study site. Similarly, the population to physician ratio is three times higher in Senegal compared to Ghana. Finally, the population to midwife ratio is four times higher in the Senegal study site compared to the Ghana study site. Indeed, the health care service delivery system in the Senegal study site has a very wide base with community health structures (health huts and health posts) and a very narrow top level with geographically-concentrated referral facilities. In contrast, in the Ghana study site, the health care service delivery system has a narrow base and more referral facilities.

The variability of the health care service delivery systems across the three study sites is somewhat reflected in the diversity of the organizational patterns of the MHOs covered under this cross-country analysis. It is significant that the MHO in the Ghana study site, the Nkoranza scheme, started as a scheme owned by a mission hospital in 1992, and transferred ownership to the community in 2001. However, the change in ownership did not translate into changes in the benefits package of the scheme; the scheme covers mainly inpatient care for its members.

In sharp contrast, the MHOs in the Senegal and Mali study sites have been under community ownership since their inception. While the first MHOs in the Thies region started with benefits packages covering inpatient care only, most of these original schemes and newly-founded schemes have extended their benefits packages to include outpatient care at health posts and health centers. The structure of the Mali MHOs is similar to the situation prevailing in the Senegal study sites; the main difference between the Mali and Senegal MHOs is that the Mali MHOs were established more recently compared to the Senegal schemes.

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## 7.2 Social Inclusion of MHOs

The approach used to assess social inclusion in MHOs in this study is to investigate the effects of household and personal characteristics on MHO enrollment. This approach is consistent with the emerging literature on the impact of community-based health insurance (Jakab et al. 2001, Ekman, 2004). The results on social inclusion from the cross-country study in Ghana, Mali, and Senegal are discussed below.

First, the results suggest that there is no consistent evidence of association between economic status of the household and the likelihood of MHO enrollment of the household. In Mali, households from the highest economic status quintile are more likely to enroll in a MHO, compared to

households from the lowest quintile, and though there is some evidence that the same story may hold true in Senegal, this result is not confirmed by the Ghana data. The results for Mali and Senegal are consistent with what Schneider and Diop (2001) found in a study of Rwanda, as well as with the results reported by Gumber (2001), based on the SEWA health insurance scheme in India.

In a review of the literature on the impact of community health insurance published in the 1990s, Jakab and Krishnan (2001) note that the evidence on whether the poorest are included in such schemes is mixed: five out of the 13 studies they review present evidence that the poorest are not covered, and six studies find that the main reason for not being enrolled in a scheme is the inability to pay the premium. Based on the PHR*plus* Senegal data, Diop (2005) finds that the ratio of premium contributions to household expenditures declines steadily from 3.8 percent among the poorest 10 percent of households to 0.4 percent among the richest 10 percent of households, with an average ratio of 1.2 percent. However, the main reason for non-enrollment reported in the Senegal study is lack of information (31 percent of households); only 17 percent of households not enrolled reported expensive contributions as the reason for not enrolling in MHOs. There were similar results in Mali: 71 percent of non-member households said that they had not enrolled because they did not know about the schemes, and 13 percent said that the premiums were too expensive (Franco et al. 2006). However, in Ghana, expensive premiums constituted the main reason for not enrolling (60 percent) or for ending membership (79 percent) in a MHO (Sulzbach et al. 2005).

Jakab et al. (2001) find that inclusion of the poorest varies across MHOs and is dependant on design and implementation features of the scheme. The Ghana, Mali and Senegal data are consistent with that conclusion. The key features of the Malian and Senegalese MHOs in this study are that they have been community-owned schemes since inception, and their benefits packages include outpatient care serviced through primary health facilities at the lowest levels of the health care delivery system. In contrast, the MHO in the Ghana study site started as a provider-owned scheme, converting to community ownership in 2001, and provides primarily inpatient benefits.

Therefore, the results emerging from our cross-country study support findings that suggest that enrollment of the poor in community-based health insurance may depend upon other dimensions of social inclusion, such as participation and community ownership. It is also likely that the structure of MHO benefits packages and their contractual relations with health care providers may influence a variety of costs of accessing health services covered by the MHO and, therefore, the decision of the poor to enroll in the MHO. For example, MHOs that cover health services provided at primary health facilities that are located in close proximity to the poor reduce access costs (such as transportation) to the services covered by MHO benefits. These issues, however, require additional research for a better understanding of social inclusion of the poor in MHOs.

Second, household characteristics contribute to the likelihood of enrollment in MHOs in the three study sites. Higher levels of education of the head of household are consistently associated with a higher likelihood of enrollment in the three study sites. Similarly, households headed by women are consistently more likely to be enrolled than households headed by men in all three study sites. The individual country reports of Mali and Senegal also suggest that ethnicity has an influence on the likelihood of enrollment in Mali, while it does not have a significant influence in Senegal (Diop 2005, Franco et al. 2006). However, religion seems to have an effect in Senegal: Christians are more likely to enroll compared to Muslims.

The finding that households headed by women are consistently more likely to be enrolled in MHOs compared to households headed by men may reflect traditional roles of women. As the main health caregivers in the family, women may be more likely to internalize the costs and consequences associated with health care than men. In addition, this finding may reflect the higher propensity of

women to be involved in community-based associations – including informal micro-finance schemes such as *tontines*, which are prevalent across West Africa – compared to men. In other words, women may be culturally more attuned than men to the institutional features of MHOs in the West Africa setting. This finding has strategic implications for the development of MHOs in the region, not only relative to the initiation and establishment of MHOs, but also for the empowerment of women in the health sector.

The significance of religion for MHO enrollment in Senegal, where Muslims constitute 95 percent of the population, however, reflects the history of development of MHOs in the Senegal study site (Diop 2005). The first schemes emerged in Catholic rural communities, spreading over surrounding Catholic parishes before extending to Muslim communities. While the membership of some village-based MHOs is still dominated by a religious group, the majority of MHOs in the Thies region are very diverse in terms of religion and ethnicity.

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### 7.3 Adverse Selection in MHO Enrollment

The assessment of adverse selection in MHO enrollment in the three study sites is based on two levels of analysis: the household and individual levels. At the household level, there is limited evidence of adverse selection. In Senegal, households with a larger number of women of childbearing age are more likely to enroll in MHOs than households with less than two women aged 15-49 years. These findings were not replicated in Mali or Ghana, however.

At the individual level, although most MHOs in the three study sites promote the enrollment of all household members, the Senegal and Mali study sites suggest that individuals with a physical disability or chronic illness are significantly more likely to enroll in MHOs than their healthier counterparts.<sup>19</sup> Additionally, in all three study sites, individuals aged 50 years and over appear more likely to enroll than younger males. Hence, the findings suggest that adverse selection processes in MHO enrollment are more evident at the individual level than at the household level of enrollment.

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### 7.4 Impact of MHOs on Access to Health Care

In Ghana and Mali, MHO coverage has a positive effect on the likelihood that the sick will seek care from a modern health care provider. This finding is consistent with results reported by Jakab et al. (2001), Schneider and Diop (2001), Jutting (2001), and Jakab and Krishnan (2001). In both the Ghana and Mali study sites, MHO coverage significantly affects the choice of provider. In the Ghana study site in particular, the fact that the MHO benefits package includes mainly inpatient care is reflected in a significant bias towards using hospital services to treat illness among MHO beneficiaries. In the Senegal study site, however, MHO coverage does not seem to contribute significantly to seeking outpatient care from the modern health sector, nor to provider choice. With respect to inpatient care, supporting the previous findings of Jutting (2001), the likelihood of hospitalization is positively associated with MHO coverage in the Senegal study site. Indeed, individuals who benefit from high inpatient care coverage are more than twice as likely to be hospitalized as individuals with no MHO coverage. The fact that MHO inpatient coverage is not associated with increased hospitalization in the Ghana study site may be attributed to greater overall hospital access in Ghana as compared to Senegal.

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<sup>19</sup> Information on health status was not collected in the Ghana survey.

Regarding maternity health services, in both the Ghana and Mali study sites, women who are beneficiaries of MHOs are more likely to have had at least four prenatal care visits compared to women who are not beneficiaries of MHOs. In the Senegal study site, however, MHO coverage does not seem to contribute to the use of this recommended package of prenatal consultations. MHO coverage is associated with a greater likelihood of delivery at a modern health facility only in the Ghana study site; this result is not confirmed for the Mali or Senegal study sites.

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## 7.5 Impact of MHOs on Household Income Protection

The results from this cross-country study on the positive impact of MHO coverage on household income protection are consistent with evidence emerging from the literature, including Jakab et al. (2001), Schneider and Diop (2001), Jutting (2001), Jakab and Krishnan (2001), Jowett et al. (2003), and Ekman (2004). In the Ghana study site, the results suggest no significant difference between levels of outpatient OOP expenditures for members and non-members of MHOs. This finding is perhaps not surprising, as the MHO included in the study primarily covered inpatient services. In the Senegal and Mali study sites, however, where outpatient care was a covered benefit, outpatient expenditures are lower among members of MHOs compared to non-members. Finally, in both the Ghana and Senegal study sites, membership in MHOs that cover inpatient care has a strong protective effect on the level of OOP expenditures for hospitalization;<sup>20</sup> this finding is particularly pronounced for Ghana.

Hence, the patterns found in the cross-country study on the relationships between MHO coverage and household income protection are quite consistent with what is expected: the structure of MHO benefits packages and copayment policies appear to play key roles in the relationship between MHO coverage and household income protection. In the Ghana study site, where MHO coverage does not include outpatient services, MHO membership does not contribute to household income protection against outpatient care expenses. However, the household income protection effect of MHO coverage is very strong in the Ghana study site for inpatient care expenses, as a result of the emphasis on inpatient services in the benefits package. In addition, as MHOs in the Senegal and Mali study sites include copayments for outpatient care, ranging from 25 to 50 percent, the effects of MHO coverage on levels of illness-related OOP expenditures for outpatient care are somewhat diluted.

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<sup>20</sup> Data on hospitalization was not collected in Mali.



## 8. Conclusion

This study contributes to the evidence on social inclusion and impact of MHOs in African countries. The findings that emerge from the three study sites in Ghana, Mali, and Senegal support several policy conclusions. First, community ownership and management of a MHO may promote social inclusion, particularly of the poorest households. Second, MHOs should emphasize and enforce membership of entire households in order to avoid adverse selection among members (as those that are more likely to need health care services might also be more likely to enroll in a MHO). Third, we find evidence that MHOs are an effective tool for increasing utilization of modern health care services and that MHO membership can protect households from the potentially catastrophic expenditures associated with hospitalization.

This study adds to the growing body of literature on the impact of community-based health insurance on access to health care, social inclusion, and household income protection. It is hoped that future studies will learn from and build upon this work to create a better understanding of the role and impact of MHOs in improving health in developing countries.



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