Leaving No One Behind: The Role of Primary Care Provider Networks in Advancing Equitable Universal Health Coverage in Four Districts of Ghana

Implementation Research (Phase 2)

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The Health Systems Strengthening Accelerator, funded by the United States Agency for International Development and the Bill & Melinda Gates Foundation, helps countries:

- Apply a whole-of-systems lens to health systems challenges.
- Connect local innovation with global knowledge.
- Strengthen local ownership and processes.
- Build institutional architecture needed to ensure lasting change.

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List of Abbreviations

CHAG	Christian Health Association of Ghana
CHO	Community Health Officer
CHN	Community Health Nurse
CHPS	Community-Based Health Planning and Services
CSO	Civil Society Organization
EA	Enumeration Area
EN	Enrolled Nurse
GHS	Ghana Health Service
GIS	Geographic Information Systems
GoG	Government of Ghana
HSSA	Health Systems Strengthening Accelerator
HSDF	Health Strategy and Delivery Foundation
IR	Implementation Research
MOH	Ministry of Health
MW	Midwife
NHIA	National Health Insurance Authority
NHIS	National Health Insurance Scheme
NoP	Networks of Practice
OOPE	Out-of-Pocket Expenditure
OPD	Outpatient Department
PA	Physician Assistant
PCA	Principal Components Analysis
PCPN	Primary Care Provider Network
PHC	Primary Health Care
R4D	Results for Development
SDGs	Sustainable Development Goals
UHC	Universal Health Coverage
USAID	United States Agency for International Development
WHO	World Health Organization

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Executive Summary

Background and Introduction

This Phase 2 implementation research recognizes the role of primary health care (PHC) in achieving universal health coverage (UHC) equity in Ghana. As in Phase 1, the design of the Primary Care Provider Network (PCPN)—now called the Network of Practice (NoP)—aims to address systemic challenges hindering equitable delivery of healthcare services and to build a long-term PHC model for UHC in Ghana.

NoP approaches service delivery through a network of health facilities that consists of an anchor establishment (hub) and secondary establishments (spokes). The hub offers a full array of services, while the spokes provide a limited range of services. A referral system directs patients in need of more intensive care from the spokes to the hub. Together, the hub and spokes maximize efficient use of resources.

In 2020, a study (Phase 1) of PCPN implementation occurred in two Volta Region districts: South Dayi and South Tongu. The lessons learned included seeing that hubs could be the focal service delivery access point for poor and rural communities (Figure 1). This current research (Phase 2) was initiated in 2022 to generate actionable evidence on how to further enhance NoPs to improve access to quality essential health services.

Figure 1. Phase 1 lessons learned regarding network effects on equitable provision of healthcare services, based on a logic model
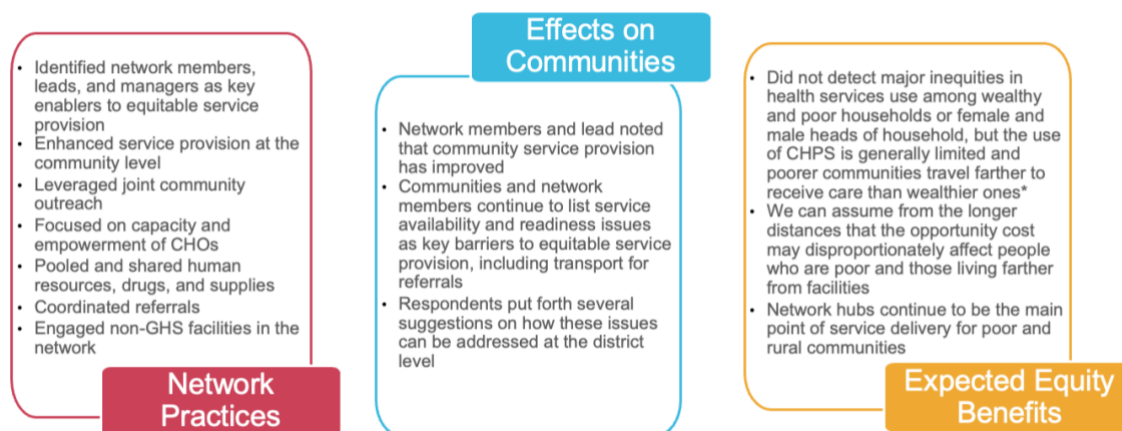
Note: See "List of Abbreviations" section for acronym details.

* Further research is necessary to better understand how the network approach may influence access to and utilization of services, as one of the main drivers of PCPNs' enabling environment for equity.

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Methodology

The current study answers one primary question: How can the network model be enhanced to promote and sustain equitable access to quality essential health services among vulnerable, underserved, and priority populations in Ghana? This study in similar districts prior to network roll-out, therefore, allows comparison to better understand the effect networks may have on equity and to inform focus areas for PCPNs' future equity-enhancing initiatives. This will also be beneficial as the national scale-up of NoPs is prepared, and policymakers in Ghana are considering design updates to the model.

With the aim of scaling up the network model across the country, the study pursued two objectives:

1. Collect baseline utilization information on preventive and curative healthcare services in two study districts that had not yet implemented NoPs, as a basis for assessing NOP performance over time.

2. Conduct a comparative assessment of the two current districts (Akatsi South and North Tongu) and the two pilot districts to identify equity patterns in health services utilization in the current districts and to better interpret Phase 1 findings in the pilot districts.

The design was mainly quantitative, supplemented by a desk review of study districts. A total of 250 households were systematically sampled from each district, giving a total of 500 households in Phase 1 districts and the same for Phase 2 districts. As in the pilot study, households were divided into wealth quintiles (poorest, second, third, fourth, and wealthiest) using the Equity Tool (see: https://www.equitytool.org/the-equity-tool-2/). For this current study, equity groups were limited to women and people who are poor or in rural and hard-to-reach areas.

STATA analytical software version 14 (StataCorp LLC, College Station, TX, USA) was used for the statistical analysis. The baseline analysis of the current study followed the Phase 1 procedure. Regression analysis was performed to assess and compare the factors influencing health services utilization in both the current and pilot districts.

Study Findings

Objective 1: Collect baseline information on utilization of preventive and curative healthcare services in two study districts, as a basis for assessing NoP performance over time

Health services use and preference patterns were evaluated for all equity groups. Findings included:

→ A total of 47.0% (n=235) of the 500 households selected for Phase 2 reported that at least one household member sought health care in the last four weeks before the survey.

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→ Of those who sought care, 69.4% (n=163) did so for illness/injury, while the remaining 30.6% (n=72) did so for preventive/promotive care, such as regular check-ups and medical screening. The difference in care-seeking between wealth quintiles was not statistically significant.

→ Approximately 25.0% of female-headed households sought care at Community-Based Health Planning and Services (CHPS) compounds, and 21.8% visited a subdistrict facility, compared to 28.8% and 16.8% of male-headed households, respectively.

→ All households that accessed CHPS compounds were in rural areas, while 44.9% of urban households sought care in private healthcare facilities and drugstores.

→ In descending order of magnitude, major reasons for facility choice when seeking care included proximity (51.9%), only facility available (14.5%), and good reputation (12.3%), among others.

→ More than half of the households in the bottom two wealth quintiles would have preferred to use a different facility. The main reasons for preferring a different facility were the availability of modern facilities (20.0%) and good quality of care (18.4%). There were no notable inequities between wealth quintiles and preferences for other facilities.

→ About 9.0% of the poorest wealth quintile traveled more than 10km to a health facility compared to about 5.0% of those in the wealthiest. There were no notable inequities between distance to health facilities and the gender of household heads.

→ The regression analysis of factors influencing health services use showed that female-headed households, possession of valid health insurance, married household heads, and those belonging to the fourth wealth quintile (i.e., the second wealthiest) were more likely to use health services compared to their reference group.

Objective 2: Conduct a comparative assessment of the two current districts (Akatsi South and North Tongu) and the two pilot districts (South Dayi and South Tongu) to identify equity patterns in health services utilization and to better interpret Phase 1 findings.

Highlights of Objective 2 results included:

→ Only 30.0% (n=152) of households in the pilot districts (South Tongu and South Dayi) sought care for illness/injury, compared to 47.0% in the current districts (Akatsi South and North Tongu). The difference may be due to the fact that COVID-19 affected health services utilization during the pilot study, but the current study did not explore this relationship.

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→ No household in the wealthiest quintile received care at a CHPS compound in the pilot or current districts.

→ Across all households, there were noticeable differences in the healthcare facility types that pilot and current districts used. For instance, more than 24.0% of households used community health facilities in the current districts compared to less than 6.0% in the pilot districts. However, about the same proportion of those that sought care in both studies would have preferred another healthcare facility.

→ Among rural households, 46.0% in the current districts used CHPS, compared to only 6.6% in the pilot districts. Conversely, only 16.8% of rural households in the current districts used subdistrict facilities, compared to 49.5% of their counterparts in the pilot districts. These differences were statistically significant.

→ Compared to the pilot districts, the proportion of households that waited less than a day before seeking health care at the onset of illness declined by 15.9 percentage points, but the difference was not statistically significant.

→ Between the two studies, the factors that influenced health service utilization differ slightly in terms of participant background characteristics (explanatory variables), except the possession of valid health insurance, which consistently influenced use of health services in both pilot and current districts.

Conclusions and Recommendations

This implementation research was commissioned to understand how the NoP model promotes equitable access to quality essential health services among vulnerable, underserved, and priority populations in Ghana. The observed health services usage patterns suggest that poorer households and those living in rural areas are the main clientele for community and subdistrict facilities. These facilities for the networks (spokes and hubs) create opportunities to improve equitable service coverage for these groups. Therefore, well-resourced network hubs could provide equitable coverage and improved access to quality and essential primary healthcare services.

The results also indicate that ensuring National Health Insurance Scheme (NHIS) credentialing of facilities and encouraging household enrollment in and renewal of health insurance membership cards will improve access to and utilization of network services.

Below are some specific recommendations co-created by regional, district, and subdistrict stakeholders during a dissemination workshop organized to share findings with key stakeholders in the study districts. The recommendations target different levels of health services delivery.

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At the community and district levels:

- Strengthen community participation in healthcare delivery. Create awareness about NoPs among communities and leverage community scorecards to engage chiefs and community members in addressing their health problems and needs, including their responsibilities in services use.

- Work closely with the Community Health Management Committee (CHMC) and Department of Social Welfare to identify and enroll vulnerable groups and priority households for NHIS coverage and targeted services.

- Have networks liaise with CHMCs to establish transport systems within communities for emergencies and referral purposes.

- Have regional and district health managers identify equipment and infrastructure gaps within networks (especially network hubs) and lobby for support from stakeholders to fill gaps.

- Have regional and district health managers engage Civil Society Organizations (CSOs) to advocate for full implementation of Ghana's new Essential Health Service Package for UHC.

At the national level:

- Encourage NHIS headquarters and Ghana Health Service (GHS) to collaborate on key policy and operational issues impeding efficient services delivery:

  o Align GHS outreach policies and NHIS credentialing and reimbursement regulations to encourage physician assistants and midwives to provide greater outreach services within networks, bringing quality services nearer to communities.

  o Formulate policy to credential networks as entities for services delivery and NHIS reimbursement. Networks should be credentialed at the level of the highest cadre within the network.

- Develop a model for upgrading network hubs into model health centers (a maturity model) as a reference in further policy revisions on limits to services and medication types provided at facilities.

- Adopt teleconsultation and telemedicine, as well as a social network-assisted (e.g., WhatsApp) referrals and feedback, in NoP implementation, while ensuring client privacy.

The full list of recommendations is included in the "Conclusion and Recommendations" section of the main report.

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Background and Introduction

Universal Health Coverage and Equity

Universal health coverage (UHC) encompasses a concept of broad access to essential health care, including safe, effective, quality, and affordable medicines and vaccines, along with protection from catastrophic financial risk (USAID, 2019). "All people" implies that UHC policies and programs leave no one behind and that everyone, regardless of their social, economic, or ethnic status, can equally access quality health services.

This, unfortunately, is not always the case, and UHC efforts can, at times, exacerbate socioeconomic inequities unless equity-promoting features are explicit and inherent in the design (USAID and Word Bank, 2018). To further reinforce the need for equity-focused interventions, the Sustainable Development Goals (SDGs) elevate socioeconomic fairness as a key priority and acknowledge targets as achieved when they impact all segments of society (United Nations, 2015).

Equity in health means the ability for everyone to reach their maximum level of health and no longer be prevented from doing so because of external social factors (CDC, 2021). An equitable healthcare delivery system provides equal access to quality services for equal needs (Umeh, 2017).

Primary health care (PHC) has long been recognized as the single most effective approach to advancing UHC objectives, especially regarding equitable coverage of essential services. PHC promotes a user-centered, holistic approach to health that not only ensures access to low-cost, high-impact health services but also addresses the social determinants of health. Since the Alma-Ata Declaration of 1978 (Declaration of Alma-Ata, 1978), and with the renowned pledge to the cause in Astana in 2018 (Declaration of Astana, 2018), policymakers around the world have committed to prioritizing PHC as a foundation to UHC and an instrument to reach all communities, especially underserved ones.

The recent Coronavirus Disease (COVID-19) outbreak once again highlighted the importance of strong PHC systems that can prevent community spread of disease through user-centered awareness raising, early detection, and other protective interventions.

Primary Health Care in Ghana

In Ghana, Community-Based Health Planning and Services (CHPS) compounds and health centers (the next level facility at the subdistrict level) are the foundation of PHC service delivery. By 2016, CHPS had reached about 18 million Ghanaians (GHS, 2017). By 2021, the number of CHPS zones had increased to 5,580 from 5,547 in 2020 (MOH, 2022). Yet, many CHPS and some health centers struggle with supply

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challenges that can hinder providing equitable PHC to the communities they serve (MOH, 2015).

Studies have revealed policy gaps due to several essential policy design principles seeming to be ignored, even though CHPS compounds have high coverage in most areas. The CHPS initiatives themselves rarely incorporate community involvement, community-based resource mobilization, or community volunteerism. The gaps in the community are gradually transforming CHPS compounds into treatment facilities run mostly by an insufficient number of community health officers (CHOs), and in damaged buildings with limited basic medical supplies. Through PHC, UHC was to be achieved via community-specific disease handling and mobilizing community support for health delivery. These gaps, however, are slowing UHC achievement (Ahoto, et al., 2021).

Primary Care Provider Networks in Ghana

The Primary Care Provider Network (PCPN) pilot (previously known as Preferred Primary Care Provider [PPP] Networks) was commissioned in the South Dayi and South Tongu districts of Ghana's Volta Region in 2017 in response to the challenges described above. In networks, providers unite around a common goal and deliver coordinated care to the communities they serve. Network models have demonstrated the ability to significantly expand care coverage, especially in rural and underserved areas, as well as improve overall efficiency and responsiveness of the PHC system and promote the integration of public health into PHC delivery for improved population health outcomes (Booth, et al., 2016).

The vision behind this new and innovative model was to establish a long-term PHC model and financing system that can sustain delivery of equitable, affordable, and high-quality PHC services. The goal of the pilot was to make policy and operational recommendations about the role the network model could play in advancing UHC in Ghana. The pilot's implementation was monitored through a series of quarterly supportive supervision visits to the networks.

The design of the networks in South Dayi and South Tongu followed the hub-and-spoke model, and a total of 42 facilities were organized into 10 networks across two districts. This model was a logical fit with the existing structure of subdistrict service delivery in Ghana, and the networks seamlessly fit into the existing systems (Systems for Health, 2017).

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Figure 2. Illustrative network configurations
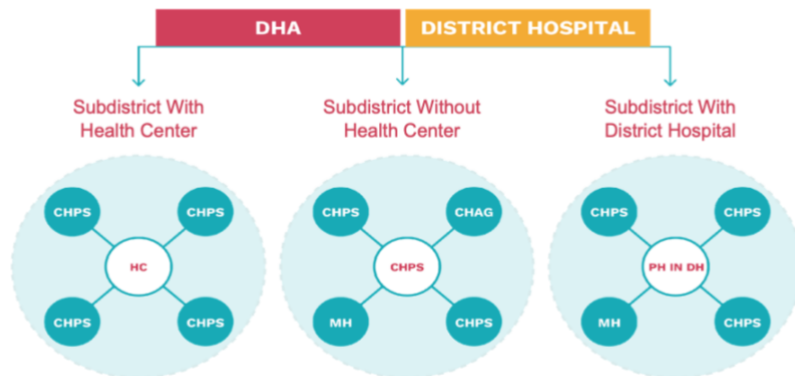
The configuration of networks followed a common structure, with slight variance in composition. The majority of networks are comprised of two to six spokes, which are most frequently represented by CHPS compounds, and then connected to a hub—the nearest health center, a bigger and better-resourced CHPS compound, or a public health unit of a district hospital. In certain networks, spokes included maternity homes, clinics, or other nonprofit or private sector facilities.

As networks, the facilities joined forces to conduct community outreach and service delivery. They shared infrastructure, equipment, drugs, and human resources, as necessary; exchanged knowledge and information; and coordinated patient care through referrals and referral feedback. Some networks gathered monthly to develop activity plans and track their performance against them. They reviewed claims for National Health Insurance Scheme (NHIS) submission and refined them as necessary to reduce claim rejection rates and increase received revenue. They also encouraged community members to enroll in NHIS to reduce out-of-pocket expenditures (OOPEs) at health facilities.

The governance of networks was also embedded in existing leadership and supervision models. At the national level, Ghana Health Service (GHS) oversees the implementation of network services, with support from the Ministry of Health (MOH), NHIS, Christian Health Association of Ghana (CHAG), and development partners. At subnational levels, the Regional Health Directorate and District Health Management team provide stewardship and support to the networks, especially the network lead. A network lead is an existing physician assistant (PA) or midwife (MW) in the hub facility who provides mentorship to members from "spokes" on day-to-day implementation of network activities. The district hospital provides technical and clinical support and supervision.

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The Role of PCPNs in Advancing Equity in Ghana

Figure 3 below shows the logic model for PCPNs' effect on equitable provision and use of healthcare services at the community level. Evidence from other settings has shown that PCPN practices have the potential to promote equity. These practices include (Chopra, 2012):

- MW/PA visits to CHPS compounds to deliver basic services.
- MW/PA continuous engagement with CHOs to train and empower them.
- Select task-shifting practices.
- Joint community outreach to bring services from facilities to community settings.
- Resource pooling and exchange.
- Referral coordination.
- Engagement with the private sector.

At the community level, these practices can improve availability and readiness of services at CHPS compounds, enhance service delivery, and facilitate client referrals. The expected equity benefits assume promotion of CHPS as the first point of care among communities. They include minimization of referral costs and alleviation of access barriers and opportunity cost for everyone, especially people in poorer households, those living in remote or hard-to-reach areas, and those in other vulnerable groups.

Figure 3. Logic model of PCPNs' effects on equitable provision and use of health services at the community level

Note: See "List of Abbreviations" section for acronym details.

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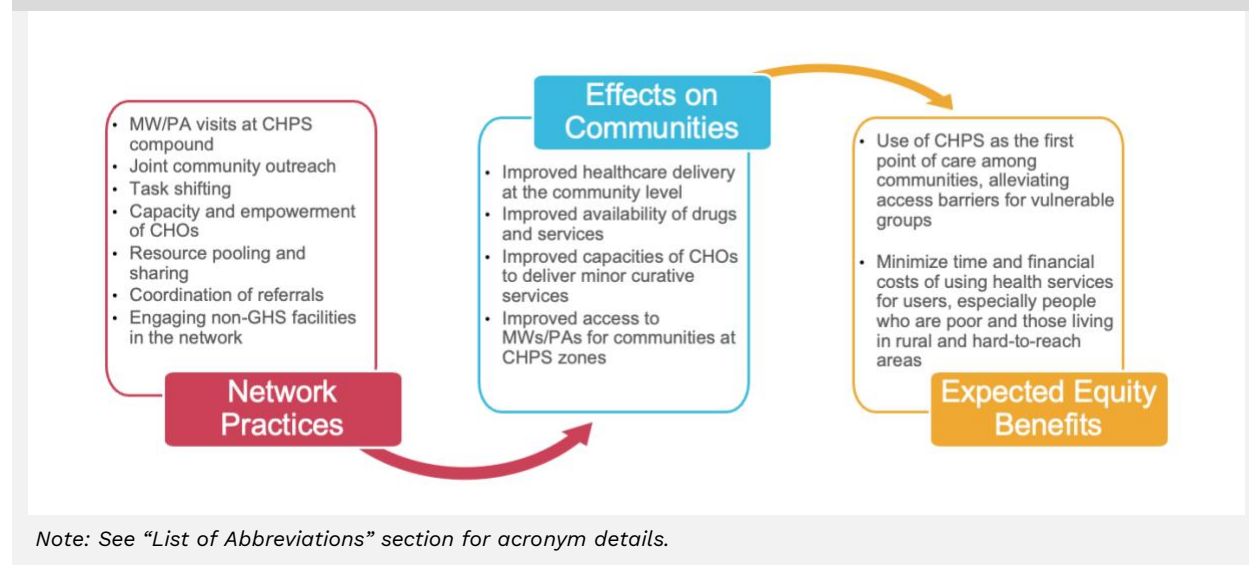
The PCPN pilot ended in late 2019 and generated positive evidence on the role that provider networking can play in advancing UHC objectives in Ghana (Systems for Health, 2019). For example, the networks demonstrated value in nurturing collaboration among facilities, which led to better coordinated care for the communities. The network members willingly shared resources and provided support to one another. Referral feedback rates went from 12.5% to 55.6% in South Dayi and 17.8% to 45.8% in South Tongu. Additionally, NHIS claim rejection rates fell by 69.0% in South Tongu.

The networks also encouraged stewardship support from multi-agency district teams, and empowered healthcare workers in clinical and administrative skills. The pilot also generated numerous policy-level recommendations, including the need to better (Systems for Health, 2019):

- Implement task-shifting policies in Ghana.

- Explore opportunities for enhanced private sector engagement.

- Enable financial efficiency by setting up joint network accounts and other transparent financial management mechanisms.

Since the supportive supervision visits that generated these learnings were mainly observational and anecdotal in nature, further research was recommended to better understand the role networks can play in enhancing equity, quality, and efficiency of PHC service delivery in Ghana.

Equity Implementation Research: Phase 1

Despite available evidence on the importance of PHC, there has been little investigation on how to best organize or reorganize PHC within a country's health system to ensure equitable care access. Many investments in improving PHC focus on enhancing physical access, human resource availability, infrastructure, and quality. However, strategies that ensure only physical access to facilities are not enough. An efficient PHC must also have the capacity to deliver equitable and high-quality services by ensuring a high-quality workforce; excellence across all healthcare facilities; use of medicines, devices, and other technologies in a safe and effective manner; and effective health information systems and financial mechanisms to improve quality (WHO, OECD, & WB, 2018).

In 2020, implementation research (IR) was conducted in the two pilot districts to generate evidence on the role provider networks can play in equitable PHC services. The findings provided information on the equity situation in the pilot districts and the effect of context (stakeholders and other factors) on networks' abilities to promote equity in health service use. The results showed a wider range of PCPN services, which were more available to community members. Additionally, through the PCPNs, communities have had access to higher-level providers at CHPS zones through trained health staff (MWs/PAs) who offer CHOs support.

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However, the results of the equity analysis were mixed. The multivariate regression analysis showed that the wealthiest households were 1.38 times more likely to visit a facility when seeking care compared to the poorest households. Additionally, those who lived closest to a facility (within a 1–5km distance) were more likely to visit the facility than those living more than 10km away. Results also showed that poorer and rural households traveled farther to receive care than richer and urban ones. The latter two also tended to patronize higher-level facilities (e.g., district hospitals), which are perceived to have better availability of drugs and services.

At the same time, the quantitative survey did not detect any major inequities in general health service use among female- and male-headed households or rural and urban households. This absence of inequities could not be attributed directly to PCPNs because there had been no baseline and comparable data from the pre-network period in the study districts.

The qualitative component of the Phase 1 IR revealed that PCPNs have addressed some of the equity issues through improved service provision at the community level. PCPN managers, district health directors, and community leaders cited several key enablers of equitable service provision, including:

- Routine visits to CHPS compounds.
- Empowerment of CHOs by MWs and PAs from the network hub (a health center or larger CHPS facility at the subdistrict level).
- Resource pooling and sharing.
- Improved referral system and communication.
- Joint outreach services in communities.

The networks have been considered for a national-level scale-up (referred to as "Networks of Practice"), given empirical evidence of its potential to expand the reach of primary health services to community members. There is now a need to collect and analyze additional data regarding the networks' effects on equity and to provide supplementary information on the role of PCPNs through this comparative study.

This supplemental study in similar districts prior to network rollout allows for comparison to better understand the effects networks may have on equity and to inform focus areas for PCPNs' future equity-enhancing initiatives. This will also be beneficial as the national scale-up of Networks of Practice (NoP) is being prepared and policymakers in Ghana are considering design updates to the model. To do this, they will need scientific and robust evidence on what the network implementation process is and how different contextual factors affect these. This includes information on networks' performance on equity, quality, and efficiency objectives.

Moreover, collecting empirical data on the new districts provides a baseline dataset for further analysis as NoP is implemented. This would enable further in-depth analysis when an endline dataset is collected in the future. These studies will enable

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us to answer the broader question about the role networks can play in achieving Ghana's UHC objectives.

Furthermore, there is a need to better understand the service utilization trends and experiences of the users of PHC network services, especially those who constitute vulnerable groups. Implementation research can help investigate these missing pieces and equip network managers with information on how different factors affect network implementation, and how this initiative could be implemented in different contexts nationwide.

Expanding PCPN to NoP

PCPN is a GHS initiative to create networks between subdistrict health facilities and to upgrade health centers to model health centers. The results of the PCPN proved to be successful; network facilities worked more cooperatively and provided one another with technical and operational support, extended the spectrum of service delivery activities, produced better referral and feedback systems, and enhanced NHIS claims administration.

The positive features of PCPN have therefore been modified under the new name, Networks of Practice (NoP) to refocus attention on increasing health centers' capabilities to serve as efficient network hubs. NoP is the government's plan to strengthen the PHC system and reform it to close access, quality, and equity gaps.

In tandem with Ghana's UHC goals, the overall goal of NoP is to increase access to quality essential health care and population-based services for all by 2030. Key objectives are to:

- Facilitate universal access to better, efficiently managed, quality healthcare services.
- Reduce unnecessary maternal, adolescent, and child deaths and disabilities.
- Increase access to responsive clinical and public health emergency systems.

Ghana has therefore chosen to develop NoPs using the same hub-and-spokes model from the pilot. This model sets up the resources for service delivery into a network of health facilities that consists of an anchor establishment (hub) and secondary establishments (spokes). Although the spokes provide a limited range of services compared to the hub, they nonetheless function as an essential component of the hub through a referral system that directs patients in need of more intensive care to the hub.

Services that support care delivery and lend themselves to centralization, such as human resource administration, marketing, and related operations, are centralized at the hub, as are complex medical services, particularly those that are technology- and skill-intensive. Basic healthcare services are widely dispersed throughout the network, allowing most of the population's healthcare needs to be met locally.

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The hub is a health center, or hospital in some cases, and assists spokes with their technical and administrative needs. The NoP hub will be a "model health center" that meets standard requirements for supporting the network's operation effectively. The spokes, on the other hand, will be a collection of health delivery sites, mostly CHPS but also other public and private facilities, including workplaces, market- or school-based clients, maternity homes, neighborhood pharmacies, and chemical vendors. These will be linked to a central hub from which they will share data and receive technical and operational support.

When implemented, NoP will offer extensive, patient-centered networks that deliver equitably distributed, high-quality, continuous care for prevalent primary care conditions, including non-communicable diseases and reproductive, maternal, neonatal, child, adolescent health, and nutrition. Network management will take place within the District Health System, under general direction from the District Health Management team and with technical clinical support from district hospitals. Administration, financial management and reporting, technical supervision, and monitoring and reporting will all adhere to standard health system procedures.

Some of the criteria used to determine whether a health center qualifies as a model health center include:

- National Health Insurance Authority (NHIA) credentialing.
- HeFRA accreditation.
- Capacity to provide EmONC services and identified core areas of public health and clinical interventions at the primary healthcare level.

NoP performs eight defined activities:

1. Participatory planning to involve relevant stakeholders at the local level.
2. Network meetings for coordination, relationship, and capacity building.
3. Service delivery, referrals, and tracking of patients.
4. Monthly monitoring and reporting.
5. Monthly evaluation review of NHIS claims report.
6. Community mobilization, sensitization, and educational campaigns.
7. Management of network resources.
8. Budget implementation.

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Study Objectives and Research Question

This IR study evaluates the effect of PCPNs on equitable access to high-quality essential services for the populations they serve. This research answers the following primary question: How can the PCPN model promote equitable access to quality essential health services among vulnerable, underserved, and priority populations in Ghana?

The overall objective is to generate actionable evidence and recommendations on the role the model can play in equitable provision and utilization of PHC services—which has implications for equity in health and is frequently linked to equity in financing. In this regard, the study will pursue the following specific objectives:

- Collect baseline information on utilization of preventive and curative health services in two study districts, as a basis for evaluating provider networks' performance over time.

- Conduct a comparative evaluation of the two current study districts and the two pilot districts to identify equity patterns in utilization of health services.

Study Design

Methods and Study Area

The study was mainly quantitative, supplemented by a desk review of study districts and qualitative results from Phase 1. The quantitative survey and analysis explored health utilization patterns in the study districts to identify any inequities and undertake a comparative analysis of the pilot and current study districts to inform NoP. The desk review explored key features of the study districts and documented similarities and differences between the pilot and current study districts. Some of the documents reviewed included district annual reports, performance records, grey literature, and other relevant reports.

Sampling Respondents for Household Survey

The settings of the study were the Akatsi South and North Tongu districts of Ghana's Volta Region in Ghana. The two districts are part of those that will initiate the NoP rollout. In each district, five enumeration areas (EAs) were randomly selected based on the 2021 Ghana Population and Housing Census for the selected districts. The EAs consider the distribution of communities in urban and rural areas to ensure adequate representation of both. A total of 50 households were systematically sampled from a household listing in each EA to obtain a sample size of 250 households in each district, a total of 500 households in both districts.

The household questionnaire was administered to heads of households through face-to-face interviews. For each household, data were collected on:

- Individual and household characteristics (age, gender, education, health insurance status, treatment-seeking behavior in the last four weeks, quality of care dimensions, provider choice, reasons for provider choice).
- Household assets.
- Community characteristics (whether there was a healthcare facility in the community and distance to nearest health facility).

Insured members are described as those who had valid health insurance membership cards at the time of the study.

Sample Size Determination

The sample size determination is informed by the proportion of the population with valid NHIS membership cards. This is on the premise that having a valid NHIS card means you use the service or have intentions to use the service. At the district level, over 80.0% of the population has registered at some point with NHIS (81.0% for North Tongu; 83.0% for Akatsi South) (GHS DHIMS2). A minimum required sample size was estimated using Cochran's formula:

$$n = \frac{t^2 p\,(1-p)}{e^2}$$

n = required sample size
t = confidence level at 95.0% (standard value of 1.96)
p = estimated proportion of active NHIS membership in the districts (80.0%)
e = margin of error at 5.0% (standard value of 0.05)

For North Tongu, the required sample size of 237 households was estimated using the NHIS membership of 81.0%. For Akatsi South, the sample size of 217 required using the NHIS membership of 83.0%. These have been rounded up to 250 per district to account for any missing responses and to be comparable to the sample size of the pilot districts.

Study Tool

This study employed the same quantitative tool used in the Phase 1 study. The EquityTool is a simple and easy-to-use tool to measure relative wealth. Using a short survey, the tool helps to generate the wealth quintile for household respondents in the same way as the national or urban population in over 60 countries (see: https://www.equitytool.org/the-equity-tool-2/).

The EquityTool was incorporated into the study instrument to collect specific data on household assets. The tool information collected is needed to help construct the wealth indices for the equity analysis, making it an appropriate IR option. The

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standard questionnaire of the tool can be adapted, if needed, to better meet the requirements of the research question and study objectives. For this study, the question on utilization was revised to include the use of health prevention and promotion services.

Data Collection

Eight data collectors and two supervisors were recruited (most of them participated in the Phase 1 study) and trained on study approaches, the concept of equity as used in this study, and the use of survey tools, questionnaires, and approaches to minimize biases. The training used both theoretical and practice approaches through presentations, discussions, demonstrations, and roleplays. Field data collection was undertaken over a two-week period from July 18–29, 2022.

Statistical Analysis

For this study, household wealth index, gender, and distance are the three main variables used to measure equity.

For gender, the study looks at differences between men and women (boys and girls). All key indicators were disaggregated by sex; for example, indicators on access to health insurance conditioned on sex.

For the equity analysis, households were divided into wealth quintiles (Q1–Q5) to assess socioeconomic status. Chi-squared tests were used to investigate significant differences of health access variables relative to household wealth status.

For the analysis on the perceptions of patients who seek care from health facilities, the quality-of-care dimensions were analyzed using Kruskal-Wallis's rank test and Chi-squared tests to assess whether significant differences exist between the wealth quintiles and patient satisfaction levels. Patient satisfaction was ranked using a four-point Likert scale (not satisfied, somewhat satisfied, satisfied, and very satisfied).

Multivariate regression analysis was used to explore how different factors affect health service utilization. For the comparative analysis, the results from the pilot study were compared with the results of this new study to draw possible conclusions on how the features of the network affect the equity objectives.

Ethical Approval

The Ghana Health Service Ethics Review Committee granted ethics approval for the study on June 14, 2022. All respondents signed the informed consent form and participated voluntarily. The confidentiality of respondents was guaranteed and observed. Anonymized data were kept secure on GHS and Results for Development (R4D) servers.

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Profile of Current and Pilot Study Districts

Background

The primary study areas for this study are the Akatsi South and North Tongu districts of Ghana's Volta Region. These two districts are part of those that will initiate the NoP rollout. The districts (subsequently referred to in this report as "current districts") were selected because they have a comparable rural–urban mix to the previous pilot districts (Table 1).

The two pilot districts where PCPNs were first introduced in 2017, South Dayi and South Tongu, were chosen for Phase 1 IR due to the abundance of experience in implementing PCPNs. They served as secondary study areas for this study.

Table 1. Study district profile

	District	Population	% Female	Rural (N) Urban (N) [Distribution]	Dominant Economic Activity
Phase 1 (Pilot)	**South Tongu**	113,114	54.0%	R: 77,887 U: 35,227 [69.0% / 31.0%]	Farming, fishing, and petty trading
	South Dayi	57,526	50.1%	R: 39,292 U: 18,234 [68.0% / 32.0%]	Fishing, processing fish and gari, retail, palm oil extraction, boat building, and artifacts
Phase 2 (Current)	**North Tongu**	110,891	52.0%	R: 62,388 U: 48,503 [56.0% / 44.0%]	Farming and fishing
	Akatsi South	92,494	54.0%	R: 57,212 U: 35,282 [62.0% / 38.0%]	Farming and processing gari

*2021 census data, Ghana Statistical Service, 2021

Socioeconomic Profile of Study Area

The North Tongu district has a population of 110,891, of which 48.0% are men and 52.0% are women (Ghana Statistical Service, 2021). The district has 310 communities, of which 18 are considered hard to reach, with six using canoes as the main means of

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transportation. The dominant economic activity is crop farming, such as cassava, sweet potato, carrot, pepper, maize, and pineapple cultivation. Other labor markets include fishing, since many communities are on the shores of the Volta River. A few people are engaged in commercial agriculture. Some commercial agricultural investments in North Tongu include Prairie Volta Limited, Musahamat Farms, and Vegpro.

The Akatsi South district has a total population of 92,494, comprising 46.0% men and 54.0% women (Ghana Statistical Service, 2021) living in 460 communities. The dominant economic activity is farming and processing of gari. Main farm produce includes cassava, maize, groundnuts, beans, sugar cane, and blackberries. The district has shown great potential in mining and quarrying, with a vast stretch of clay deposits estimated at 6.8 million tonnes by the Geological Survey Department.

Although lack of funds is a major threat to food productivity, the "Planting for Food and Jobs" program is ongoing in both districts to promote food production growth and create jobs, especially for youth.

The South Tongu district has a total population of 113,114 people, approximately 46.0% of which are male and 54.0% female. South Tongu has a total of 375 communities, 13 of which are considered to be in hard-to-reach areas. Eighty-seven percent of South Tongu's population is rural, and the main economic activities include farming, fishing, and petty trading (South Tongu District Health Directorate, 2019).

The South Dayi district has a population of 57,526, of which 49.9% are men and 50.1% are women (Ghana Statistical Service, 2021). Overall, 68.0% of the population lives in rural areas. The dominant economic activity is farming. Other labor markets include fishing, processing fish and gari, retail, palm oil extraction, boat building, and artifacts (Ghana Statistical Service, 2014).

Health Facilities and Services in the Study Areas

The North Tongu district has 112 outreach sites, as well as 29 health facilities, which include:

- 1 district hospital
- 6 health centers
- 20 CHPS compounds
- 1 polyclinic
- 1 private clinic

The Battor Catholic Hospital (mission hospital) serves the entire district's health needs, as cases from other districts are referred to the hospital for treatment. Antenatal Care coverage and skilled delivery coverage is 60.9% and 69.1%, respectively. In North Tongu, there was a significant increase in outpatient

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department (OPD) attendance, from 135,662 in 2018 to 145,006 in 2019. This was due to educational programs from the District Health Directorate to sensitize the citizenry on the importance of hospital care rather than self-medication, as well as the construction of new health facilities.

One major activity in the district is community sensitization and engagement on how to participate in the CHPS initiative to strengthen and improve CHPS activities in the country. The Health Directorate has implemented various health programs to reduce maternal mortality, increase disease control, and improve nutrition deficiency, among others. The district also engages in advocacy to reduce HIV/AIDS infection among targeted populations.

The Akatsi South district is divided into five subdistricts for health services delivery. The district has two hospitals, four health centers, two private clinics, one CHAG clinic and 29 CHPS zones. The health centers provide preventive, curative, and maternity services, while CHPS compounds provide curative and preventive services. Antenatal Care coverage and skilled delivery coverage is 51.4% and 42.9%, respectively. OPD per capita was 0.89% in 2019.[1]

South Tongu has two district hospitals, four health centers, 19 CHPS zones, and four maternity homes. Antenatal Care coverage and skilled delivery coverage is 75.4% and 64.8%, respectively. Average OPD visits per capita is 1.2. These numbers have been constant (with minor fluctuations) since the introduction of PCPNs in 2017. The maternal mortality ratio is at 69.4 and malaria case fatality is 0.07. Of health service users, 80.7% were insured by NHIS in 2019.1

South Dayi has 21 CHPS zones, eight CHPS compounds, seven health centers, and one district hospital. Antenatal Care coverage and skilled delivery coverage are 81.0% and 67.0%, respectively. The latter increased from 55.0% in 2017 when the networks were introduced. OPD per capita is 1.1. The maternal mortality ratio and institutional malaria mortality for children under five are both at zero. Of health service users, 85.2% were insured by NHIS in 2019 (South Dayi District Health Directorate, 2019).

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[1] District Health Information Management Systems. 2020. Data was accessed and provided by the District Health Directorate of South Tongu on May 15th, 2020.

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Study Findings

Objective 1: Collect baseline information on utilization of preventive and curative health services in two study districts to evaluate provider networks' performance over time

This objective aims to examine patterns in health services use and preference and to identify the barriers households faced in accessing health services in the communities. It uses quantitative data from the household survey.

Patterns in Health Services Use and Preference

Forty-seven percent of the 500 surveyed households reported that at least one household member sought health care in the four weeks prior to the survey (Table 2). Of these, 163 households, representing 69.4%, did so for illness/injury. The remaining 72 households (30.6%) did so for medical screening (n=2), routine regular check-up (n=54), and other reasons, such as screening (n=5), post-natal/weighing (n=7), blood donation (n=1), and counseling (n=3) (Table 3).

Table 2. Reported health service utilization and treatment seeking by equity group

	Household Wealth Quintile Classification						Gender of Household Head		Household Location	
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	Female	Male	Rural	Urban
Sought Care at Health Facility										
Yes	235 47.0%	55 45.1%	53 42.1%	55 45.4%	51 59.3%	21 46.7%	110 50.7%	125 44.2%	137 45.7%	98 49.0%
No	265 53.0%	67 54.9%	73 57.9%	66 54.6%	35 40.7%	24 53.3%	107 49.3%	158 55.8%	163 54.3%	102 51.0%
Total	**500 100%**	**122 100%**	**126 100%**	**121 100%**	**86 100%**	**45 100%**	**217 100%**	**283 100%**	**300 100%**	200 100%

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Table 3. Reported reasons for accessing health care in the last four weeks by equity group

	Household Wealth Quintile Classification						Gender of Household Head		Household Location	
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	Female	Male	Rural	Urban
Reasons for Accessing Health Care										
Screening	2 0.9%	-	1 1.9%	-	-	1 4.8%	1 0.9%	1 0.8%	-	2 2.0%
Check-Up	54 23.0%	9 16.4%	7 13.2%	12 21.8%	16 31.4%	10 47.6%	27 24.6%	27 21.6%	24 17.5%	30 30.6%
Illness	163 69.4%	43 78.2%	41 77.4%	39 70.9%	31 60.8%	9 42.9%	76 69.1%	87 69.6%	110 80.3%	53 54.1%
Other	16 6.8%	3 5.4%	4 7.6%	4 7.3%	4 7.8%	1 4.8%	6 5.4%	10 8.0%	3 2.2%	13 13.3%
Total	**235 100%**	**55 100%**	**53 100%**	**55 100%**	**51 100%**	**21 100%**	**110 100%**	**125 100%**	**137 100%**	**98 100%**

Type of Health Facility Used by Equity Groups (Curative Care)

Of the 163 households that sought curative care due to illness/injury, 32.5% visited CHPS compounds, 23.3% sought care in district health facilities, 19.6% in subdistrict health facilities, 22.7% in other facilities (e.g., private clinic/hospital, drug store), and 1.8% in regional health facilities (Figure 4). Data disaggregated by wealth quintile indicated differences in the type of healthcare facilities visited by household members for curative care (p=0.003).

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Figure 4. Health facility type used for curative care (illness/injury) by equity group (N=163)

	Overall	Poorest	Second	Middle	Fourth	Wealthiest
Other health facility	22.7	9.3	24.4	30.8	22.6	44.4
Regional health facility	1.8	2.3	0	5.1	0	0
District health facility	23.3	14.0	9.8	30.8	38.7	44.4
Subdistrict health facility	19.6	20.9	24.4	18.0	16.1	11.1
Community health facility	32.5	53.5	41.5	15.4	22.6	0

Notes:
- *Other health facility = private clinic, private hospital, and drugstores*
- *Regional health facility = regional hospital*
- *District health facility = municipal hospitals*
- *Subdistrict facility = public health centers and mission/non-governmental organization clinics*
- *Community health facility = CHPS compound*

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Health Service Use by Equity Group (Preventive Care)

Of the 72 households that sought preventive care (i.e., care for reasons other than illness/injury), 16.7% did so in a CHPS compound, 18.1% in subdistrict facilities, 36.1% in district facilities, and 29.2% in other health facilities (Figure 5). The disaggregated data by wealth quintile showed no significant differences in facility type used for preventive care (p=0.175).

Figure 5. Health facility type used for preventive care by equity group (N=72)

	Overall	Poorest	Second	Middle	Fourth	Wealthiest
Other health facilities	29.2	16.7	50.0	31.3	20.0	33.3
District health facility	36.1	50.0	8.3	25.0	45.0	50.0
Subdistrict health facility	18.1	8.3	33.3	12.5	20.0	16.7
Community health facility	16.7	25.0	8.3	31.3	15.0	0

Care-seeking by female- and male-headed households was similar. Approximately 25.0% of female-headed households sought care at a CHPS compound and 21.8% visited a subdistrict facility, compared to 28.8% and 16.8% for male-headed households, respectively (Figure 6).

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Figure 6. Health facility type used by gender of household head
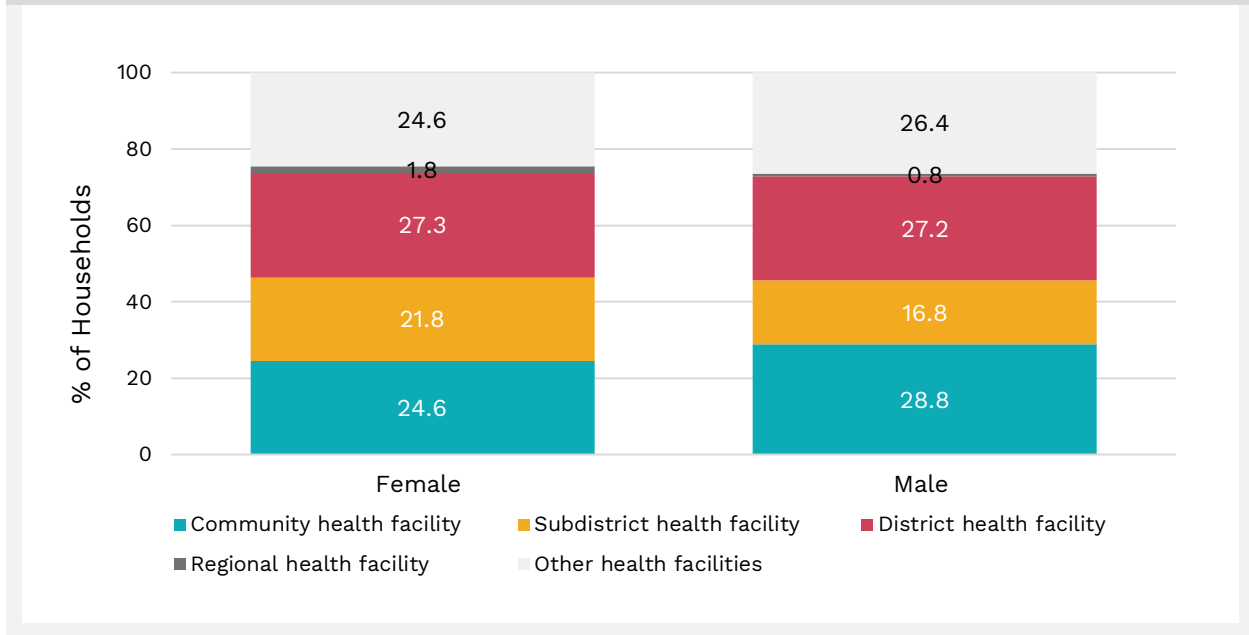
About the same proportion of rural and urban households reported seeking care. However, all households that accessed CHPS compounds were in rural areas. Most urban households (44.9%) sought care in other facilities, including private hospitals, private clinics, and drugstores (Figure 7).

Figure 7. Health facility type used by household location

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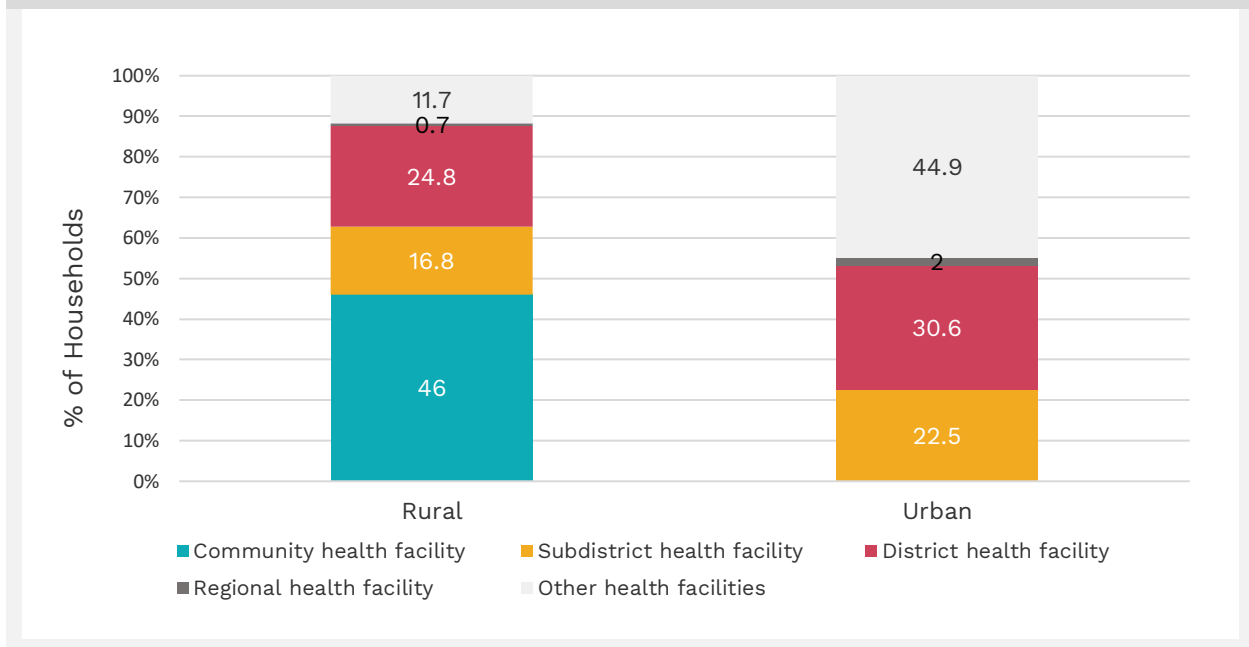
Preference for Facilities by Equity Variables

Proximity (51.9%), only facility available (14.5%), and good reputation (12.3%) were households' most-cited reasons for accessing healthcare facilities. Among the poorest quintiles, proximity was a determining factor for about 70.0% of households, compared to 33.3% among the wealthiest quintiles. The disaggregated data shows a significant difference in the reasons for accessing a healthcare facility by quintile (p=0.003) (see Appendix B).

There was no statistically significant gender difference for the reported reasons for service utilization (p=0.316) (see Appendix B).

About 63.0% of rural households, compared to 36.7% of urban households, indicated proximity as the most common reason for service utilization. Significant differences exist between household location and the reported reasons for accessing healthcare facilities (p<0.001). Of those that sought care, 53.2% indicated they would have preferred another healthcare facility. Approximately 58.0% of them would have preferred a district health facility. There was no significant difference between the preferred healthcare facility and household wealth quintile. Several reasons were reported for the preferred healthcare facility. The main reasons include the availability of modern facilities (20.0%), good quality of care (18.4%), and proximity (18.4%) (see Appendix B).

Perceived Quality of Care

The study examined household perception of the quality of received healthcare using a four-scale measure: very satisfied, satisfied, somewhat satisfied, and not satisfied. The assessed dimensions of service quality included waiting time at a health facility, friendliness of health staff, attentiveness of health staff, availability of staff and drugs, and the overall healthcare service. Households reported that they were generally satisfied with the quality of care they received. The attentiveness of health staff received the highest satisfaction rating (92.3%). Nonetheless, only about 31.0% of those who sought care were very satisfied with the overall service they received, which indicated an opportunity for NOP to improve the quality of healthcare service provision within its catchment areas (see Appendix B).

Distance to Health Facility Visited

One equity-promoting NoP consideration is enabling health services use closer to communities. The quantitative survey examined the distance households traveled to facilities to seek curative and preventive care. For 235 participants whose travel distance to a healthcare facility was determined, most households journeyed 1–5km (67.7%) or above 10km (11.5%) to use a health service. No inequities emerged when

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the results were disaggregated by wealth quintile and gender of household heads. Over 60.0% of households in all wealth quintiles journeyed 1–5km to a health facility. However, 20.0% of the poorest households traveled more than 10km, compared to 4.7% of the households in the wealthiest quintile (Figure 8).

Figure 8. Household distance to visited facility
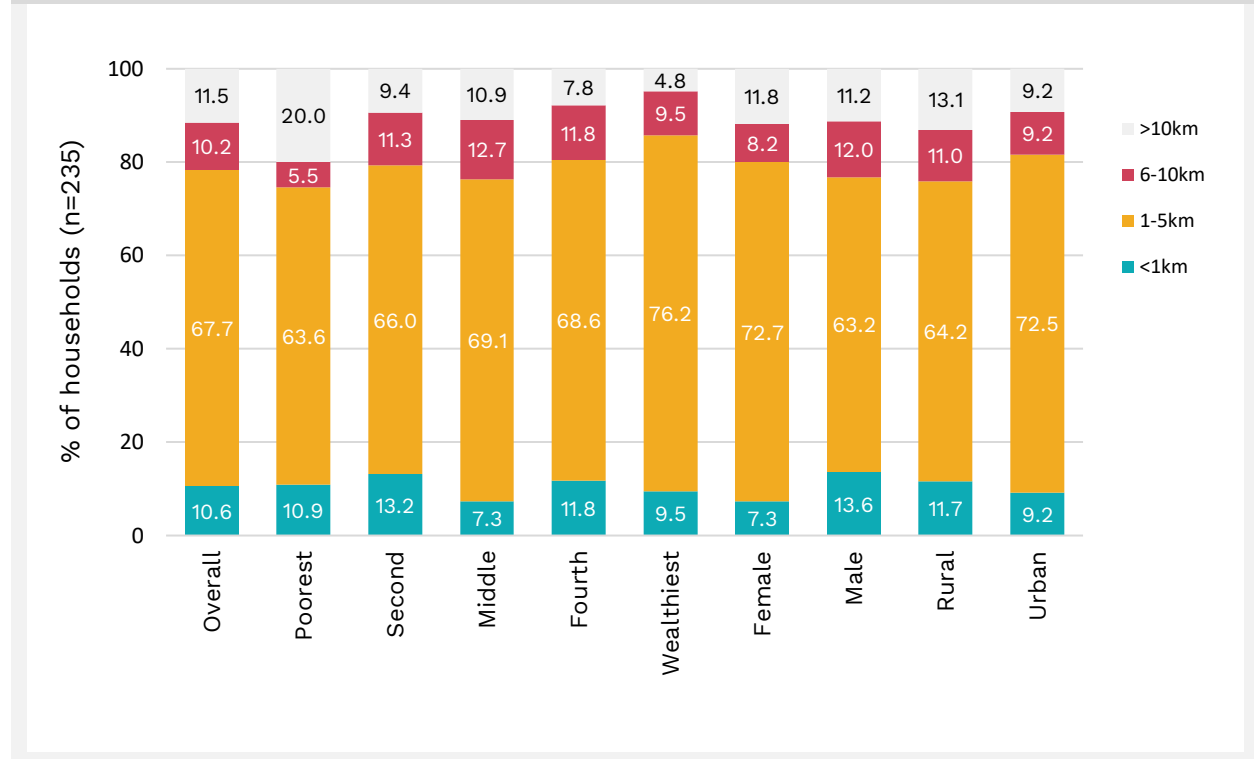
Factors That Determine Health Service Use

A pooled analysis of factors that influenced health service utilization within network of practice catchment areas was performed. From the estimated odds ratio (OR), female-headed households were about twice as likely to use a health facility than the male-headed households (OR=1.66). Likewise, those with valid health insurance were about twice as likely to use health services than those without valid health insurance (OR=1.67). Married household heads were about twice as likely to use health services than those not married (OR=1.93). Furthermore, those in the fourth quintile were 2.3 times more likely to use health services than those in the poorest quintile (Table 4).

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Table 4. Pooled regression analysis of the determinants of health service use

Variables	Overall OR [95% CI]	P-Values
Gender of Household Head (male=ref)		
Female	1.66 [1.02–2.67]	0.038*
Age of Household Head (years) (<30=ref)		
30–40	1.42 [0.63–3.19]	0.398
41–50	1.65 [0.72–3.75]	0.195
>50	1.63 [0.77–3.44]	0.196
Marital Status (single=ref)		
Married	1.93 [1.21–3.09]	0.006*
Highest School Grade Completed (none=ref)		
Basic School	0.77 [0.45–1.32]	0.346
Secondary/Vocational	1.23 [0.56–2.72]	0.598
Tertiary	0.59 [0.23–1.49]	0.266
Household Location (urban=ref)		
Rural	0.92 [0.63–1.49]	0.714
Has Valid Health Insurance (yes =1)	1.67 [1.10–2.53]	0.016*
Wealth Status (quintile 1=ref)		
Quintile 2	1.03 [0.58–1.86]	0.909
Quintile 3	1.05 [0.57–1.92]	0.865
Quintile 4	2.25 [1.14–4.43]	0.019*
Quintile 5	1.08 [0.46–2.53]	0.862
Distance to Health Facility Accessed (>10km=ref)		
<1km	1.89 [0.29–1.86]	0.523
1–5km	1.47 [0.19–1.71]	0.917
6–10km	0.31 [0.59–1.39]	0.691

Notes:
- *CI=confidence interval; OR=odds ratio*
- *A relatively moderate sample of households (N=235) led to considerable endpoint CIs in the regression analysis.*
- *p<0.05*

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Objective 2: Compare outcomes of the two current districts and the two pilot districts to identify equity patterns in health services utilization

Patterns in Health Services Use: Pilot Versus Current Districts

A comparison of health services used in the pilot and current districts showed that 47.0% of the 500 households in the current districts sought care compared to 30.4% of the 500 households in the pilot districts. Of the households that sought care, 26.8% in the current districts visited CHPS compounds compared to 4.0% of those in the pilot districts. However, the proportion of households that used subdistrict and district facilities in the current districts was lower compared to those in the pilot districts (Table 5).

Table 5. Comparison of health services use in pilot and current districts.

	Overall	Pilot Districts	Current Districts	P-Value
Sought Health Care in the Last Four Weeks				
Yes	387 38.7%	152 30.4%	235 47.0%	
No	613 61.3%	348 69.6%	265 53.0%	0.000
Total	**1,000 100%**	**500 100%**	**500 100%**	
If Yes, From Which Facility				
Community Health Facility	69 17.8%	6 3.9%	63 26.8%	
Subdistrict Health Facility	106 27.4%	61 40.1%	45 19.1%	
District Health Facility	122 31.5%	58 38.2%	64 27.2%	0.000
Regional Health Facility	13 3.4%	10 6.6%	3 1.3%	
Other Health Facilities	77 19.9%	17 11.2%	60 25.5%	

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Table 5. Comparison of health services use in pilot and current districts.

	Overall	Pilot Districts	Current Districts	P-Value
Total	**387** **100%**	**152** **100%**	**235** **100%**	

Notes: Possible explanations for the variations in health services utilization between the pilot and current districts may include the following:

- *Phase 1 data was collected in 2020 at the time COVID-19 infections were increasing across the country, posing a major public health threat, and hindering access to health facilities. This required that the study collect data on how the pandemic affected health services utilization. Phase 2 data was collected in 2022 when the spread of COVID-19 infections was no longer a major public health threat in Ghana and people were not afraid to visit a health facility for care.*
- *A wider scope of health facility usage in Phase 2 may occur because the study question was widened to collect data for preventive/promotive care, while Phase 1 data was limited to curative care. This may indicate a lower rate of reported healthcare facilities used.*

In the current districts, 53.5% of households in the poorest wealth quintile and 41.4% of those in the second wealth quintile received care at CHPS compounds, compared to 5.1% and 13.8% of their counterparts in the pilot districts. Consistently, no household in the wealthiest quintile received care at CHPS compounds in both the pilot and current districts. There were significant differences in the distribution of healthcare facility type used by quintile between the pilot and current districts (p<0.001).

Figure 9. Comparison of health facility type used between pilot and current districts

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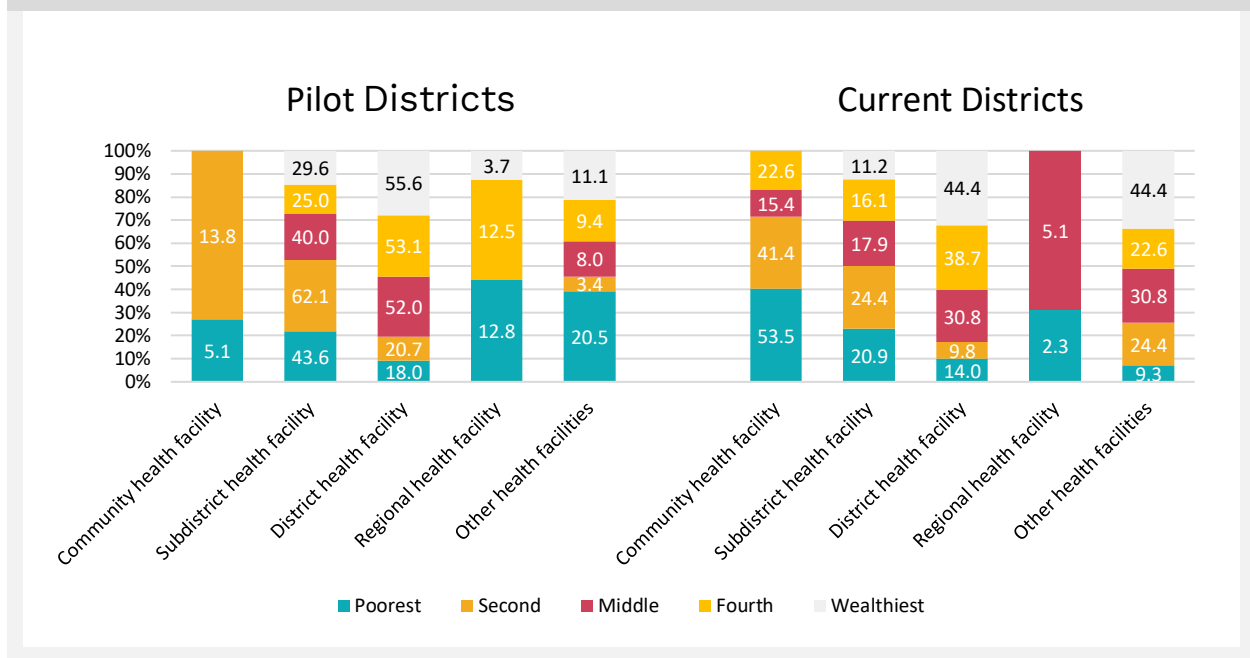
More female- and male-headed households used CHPS compounds in the current districts than those in the pilot districts. Between male- and female-headed households, there were statistically significant differences in health facility type used between pilot and current districts (p=0.001) (Figure 10). The proportion of households that used CHPS compounds and subdistrict health facilities was higher in the current districts compared to the pilot districts. In the pilot and current districts, there were significant differences in health facility type used between rural and urban households (p=0.001) (Figure 11).

Figure 10. Health facility use of pilot and current districts by gender of household head

Pilot Districts

Facility	Male	Female
Other health facilities	14.6	5.4
Regional health facility	3.1	12.5
District health facility	35.4	42.9
Subdistrict health facility	43.8	33.9
Community health facility	3.1	5.4

Current Districts

Facility	Male	Female
Other health facilities	26.4	24.6
Regional health facility	0.8	1.8
District health facility	27.2	27.3
Subdistrict health facility	16.8	21.8
Community health facility	28.8	24.6

Legend: Male, Female

Figure 11. Health facility use of pilot and current districts by location of household
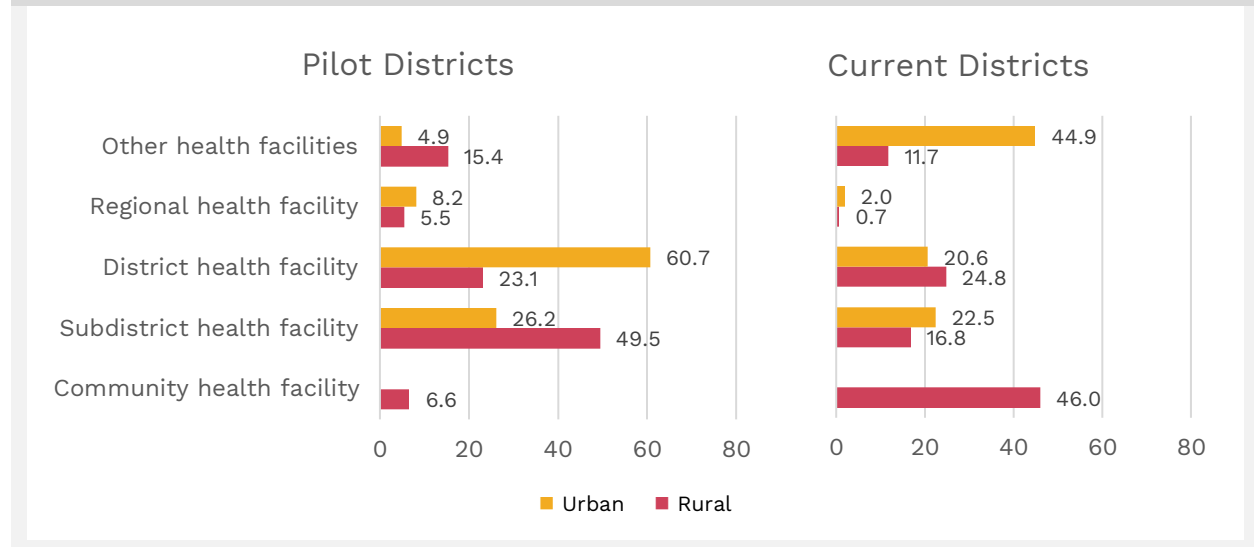
Pilot Districts

Facility	Urban	Rural
Other health facilities	4.9	15.4
Regional health facility	8.2	5.5
District health facility	60.7	23.1
Subdistrict health facility	26.2	49.5
Community health facility		6.6

Current Districts

Facility	Urban	Rural
Other health facilities	44.9	11.7
Regional health facility	2.0	0.7
District health facility	20.6	24.8
Subdistrict health facility	22.5	16.8
Community health facility		46.0

Legend: Urban, Rural

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In both the pilot and current districts, there was a similarity in the proportion of households that would have preferred seeking health care at another facility (p=0.937), but there was a significant difference in the named healthcare facility preferred by equity groups (p<0.001) (See Annex Tables). For example, in the pilot districts, 45.2%, 38.1%, and 73.1% of households in the poorest, second, and fourth wealth quintiles, compared to 67.3%, 62.3%, and 41.2% in current districts, respectively, preferred another facility (Table 6).

Table 6. Comparison of health facility preference in pilot and current districts by wealth quintile

	Pilot Districts						Current Districts						P-Value
	Overall	1 Poorest	2	3	4	5 Wealthiest	Overall	1 Poorest	2	3	4	5 Wealthiest	
Preferred Another Healthcare Facility													
Yes	67 52.8%	14 45.2%	8 38.1%	12 54.5%	19 73.1%	14 51.8%	125 53.2%	37 67.3%	33 62.3%	22 40.0%	21 41.2%	12 57.1%	
No	60 42.2%	17 54.8%	13 61.9%	10 45.5%	7 26.9%	13 48.2%	110 46.8%	18 32.7%	20 37.7%	33 60.0%	30 58.8%	9 42.9%	0
Total	127 100%	31 100%	21 100%	22 100%	26 100%	27 100%	235 100%	55 100%	53 100%	55 100%	51 100%	21 100%	
Preferred Healthcare Facility													
Community health facility	4 6.0%	-	-	1 8.3%	1 5.3%	2 14.3%	2 1.6%	1 2.7%	1 3.0%	-	-	-	
Subdistrict health facility	5 7.5%	1 7.1%	-	-	2 10.5%	2 14.3%	5 4.0%	1 2.7%	3 9.1%	2 9.1%	4 19.1%	4 33.3%	
District health facility	55 82.1%	13 92.9%	8 100%	11 91.7%	14 73.7%	9 64.3%	72 57.6%	25 67.6%	21 63.6%	13 59.1%	10 47.6%	3 25.0%	0
Regional health facility	3 4.4%	-	-	-	2 10.5%	1 7.1%	19 15.2%	3 8.1%	6 18.2%	4 18.2%	3 14.3%	3 25.0%	
Other health facilities	-	-	-	-	-	-	27 21.6%	7 18.9%	2 6.1%	3 13.6%	4 19.1%	2 16.7%	
Total	67 100%	14 100%	8 100%	12 100%	19 100%	14 100%	125 100%	37 100%	33 100%	22 100%	21 100%	12 100%	

The proportion of female-headed households who preferred network facilities in the current districts was 5.4% compared to 15.0% in the pilot districts. However, there were no significant gender differences in healthcare facility preferred between the pilot and current districts (p=0.181) (Table 7). Additionally, about the same proportion

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of rural households in the pilot and current districts preferred to use network facilities (CHPS and subdistrict healthcare facilities). However, the overall distribution shows significant differences in the preferred healthcare facilities between the pilot and current districts ($p < 0.05$) (Table 8).

Table 7. Preferred health facility in pilot and current districts by gender of household heads

Preferred Healthcare Facility	Pilot Districts			Current Districts			P-Value
	Overall	Female	Male	Overall	Female	Male	
Community Health Facility	4 6.0%	1 5.0%	3 6.4%	2 1.6%	1 1.8%	1 1.5%	
Subdistrict Health Facility	5 7.5%	2 10.0%	3 6.4%	5 4.0%	2 3.6%	3 4.4%	
District Health Facility	55 82.1%	15 75.0%	40 85.1%	72 57.6%	30 53.6%	42 60.9%	0.181
Regional Health Facility	3 4.5%	2 10.0%	1 2.1%	19 15.2%	7 12.5%	12 17.4%	
Other Health Facilities	-	-	-	27 21.6%	16 28.6%	11 15.9%	
Total	**67 100%**	**20 100%**	**47 100%**	**125 100%**	**56 100%**	**69 100%**	

Table 8. Preferred health facility in pilot and current districts by location of household

Preferred Healthcare Facility	Pilot Districts			Current Districts			P-Value
	Overall	Rural	Urban	Overall	Rural	Urban	
Community Health Facility	4 6.0%	2 5.9%	2 6.1%	2 1.6%	2 2.3%	-	
Subdistrict Health Facility	5 7.5%	1 2.9%	4 12.1%	5 4.0%	5 5.8%	-	
District Health Facility	55 82.1%	30 88.2%	25 75.8%	72 57.6%	62 72.1%	10 25.6%	0.004
Regional Health Facility	3 4.5%	1 2.9%	2 6.1%	19 15.2%	3 3.5%	16 41.0%	
Other Health Facilities	-	-	-	27 21.6%	14 16.3%	13 33.3%	
Total	**67 100%**	**34 100%**	**33 100%**	**125 100%**	**86 100%**	**39 100%**	

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Distance to Health Facility Visited in Pilot and Current Districts

About 68.0% of those who sought care in the current districts journeyed 1–5km to a health facility, compared to 38.9% of those in the pilot districts. On the other hand, 31.3% of households in the pilot districts traveled less than 1km to a health facility, compared to only 10.6% of those in the current districts. In both groups, significant equity differences exist in distance traveled to healthcare facilities (Figure 12).

Factors That Determine Health Facility Use in Pilot and Current Districts

Figure 12. Household distance to health facility visited in pilot and current districts
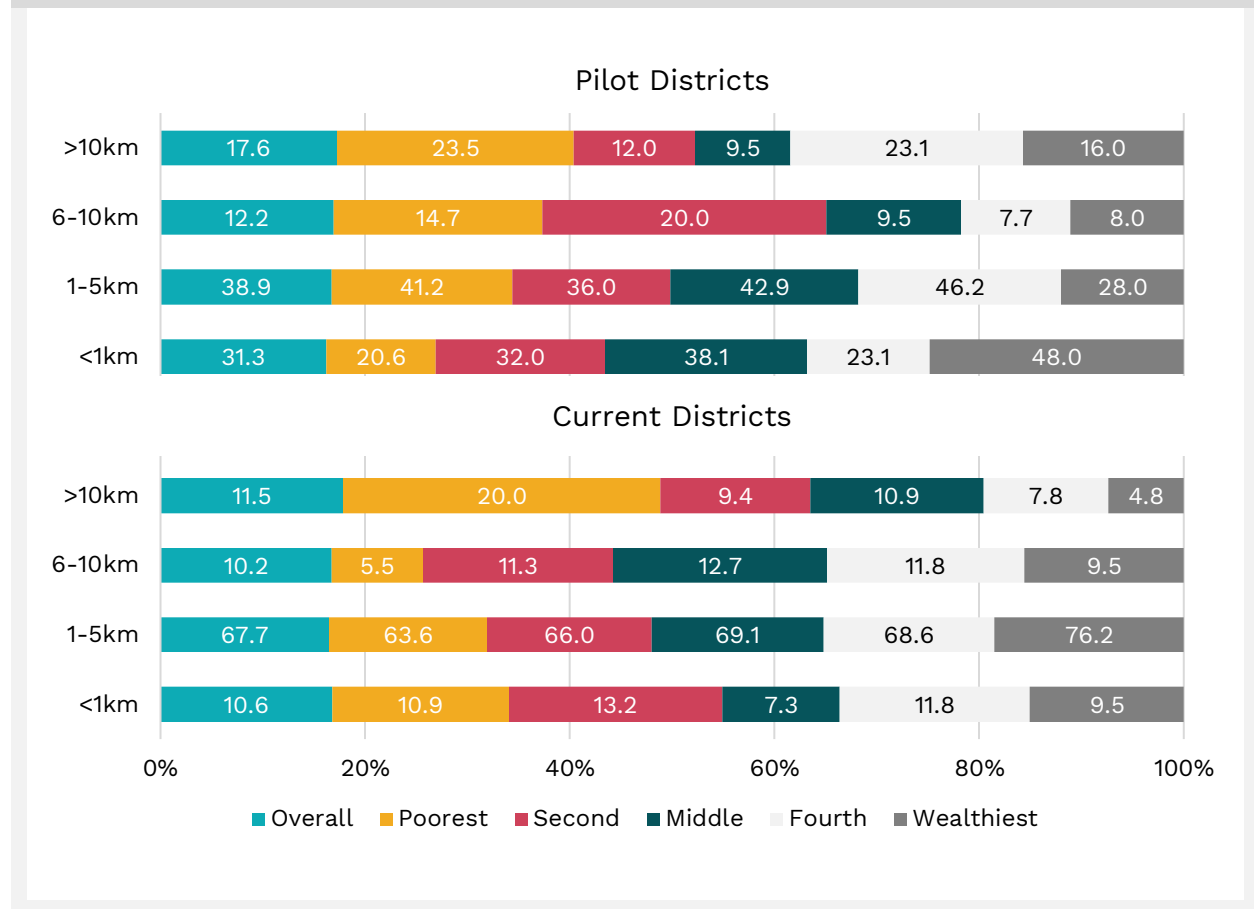
Two separate pooled regression analyses were performed to identify patterns in the factors that determine health facility use in both the pilot and current districts. The results showed similarities and differences in the factors that influenced health facility use in both the pilot and current districts. Regarding similarities, households with valid health insurance were about two times more likely to use health facilities than those without (Table 9).

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Concerning the differences, female-headed households, married household head, and belonging to the fourth wealth quintile were determining factors for health service use in the current districts but not the pilot districts. Likewise, having secondary/vocational education and belonging to the wealthiest quintile were determining factors for health service use in the pilot districts but not the current districts. The differences may have resulted from the unique geographic and socioeconomic characteristics between the pilot and current districts. This means different approaches must be applied to improve community access to health services within NoP catchment areas.

Table 9. Pooled regression analysis of factors determining health service use

Variables	Pilot Districts (N=152)		Current Districts (N=235)	
	OR [95% CI]	P-Value	OR [95% CI]	P-Value
Gender of Household Head (male=ref)				
Female	0.95 [0.64–1.41]	0.503	1.66 [1.02–2.67]	0.038*
Age of Household Head (years)				
(<30=ref)	0.82 [0.39–1.74]	0.573	1.42 [0.63–3.19]	0.398
30–40	1.41 [0.68–2.91]	0.373	1.65 [0.72–3.75]	0.195
41–50	1.2 [0.64–2.48]	0.559	1.63 [0.77–3.44]	0.196
>50				
Marital Status (single=ref)				
Married	0.94 [0.61–1.44]	0.712	1.93 [1.21–3.09]	0.006*
Highest School Grade Completed (none=ref)				
Basic School	1.19 [0.66–2.16]	0.480	0.77 [0.45–1.32]	0.346
Secondary/Vocational	2.07 [1.01–4.29]	0.010*	1.23 [0.56–2.72]	0.598
Tertiary	1.06 [0.51–2.21]	0.987	0.59 [0.23–1.49]	0.266
Household Location (urban=ref)				
Rural	1.01 [0.69–1.49]	0.302	0.92 [0.63–1.49]	0.714
Has Valid Health Insurance (yes=1)	1.67 [1.06–2.62]	0.007*	1.67 [1.10–2.53]	0.016*
Wealth Status (quintile 1= ref)				
Quintile 2	1.16 [0.66–2.06]	0.511	1.03 [0.58–1.86]	0.909
Quintile 3	0.99 [0.55–1.79]	0.888	1.05 [0.57–1.92]	0.865
Quintile 4	1.31 [0.75–2.29]	0.295	2.25 [1.14–4.43]	0.019*
Quintile 5	1.38* [1.16–2.51]	0.041	1.08 [0.46–2.53]	0.862
Distance to Health Facility Accessed (>10km=ref)				
<1km	2.2 [1.09–4.49]	0.018*	1.89 [0.29–1.86]	0.523
1–5km	0.66 [0.41–1.04]	0.372	1.47 [0.19–1.71]	0.917
6–10km	0.79 [0.39–1.58]	0.525	0.31 [0.59–1.39]	0.691

*P<0.05

Note: Dependent variable (outcome) is health service use; Yes (n=235 [47.0%]), No (n=265 [53.0%])

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Statistical Significance and Magnitude of NoP in Improving Equity

Both logit and linear regression models were used to evaluate household intention to treat and whether access to NoP through CHPS in the pilot districts correlates with health services utilization and treatment seeking, respectively. The results show that households in the pilot districts (South Tongu and South Dayi) were less likely to use CHPS (OR 0.49, P-value <0.01) compared to their counterparts in the current districts (Akatsi South and North Tongu). Additionally, there was no significant association between access to NoP and health services utilization in the pilot districts (p=0.479) (see Appendix B).

Unlike in the pilot study, the implications of COVID-19 on health services use were not looked at in the current study due to the different timing of data collection. Thus, COVID-19 could have had an impact on waiting time and service use, but this assumption was not explored in the current study. Nevertheless, the results indicate that networks have an opportunity to improve access to health services. In the future, a good way to evaluate the impact of networks is to conduct an evaluation study in the same districts.

Discussions

Provider Networks and Access to Equitable Healthcare Services

This IR study evaluated NoP's effect on equitable access to high quality, essential services among vulnerable, underserved, and priority populations. Specifically, the study evaluated the performance of provider networks over time in two study districts by collecting baseline utilization information on preventive and curative health services; and by completing a comparative evaluation of the two current study districts and two pilot districts to identify patterns in health services utilization equity and the barriers households in the communities faced in accessing health services. This section discusses study findings in relation to the effectiveness of provider networks and their implications on health services utilization in communities.

Patterns and Factors That Determine Health Services Use

The multivariate regression analysis uncovered certain inequities in healthcare-seeking behavior in the study catchment area. Wealthier and urban households patronized higher-level facilities compared with poorer ones. Altogether, 73.7% of those in the third to highest wealth quintiles sought health care from district-level facilities for curative care, compared with 26.3% of those in the poorest and second quintiles. Of those in the poorest quintile, 68.0% would have preferred going to a district health facility, but more than half (53.0%) sought curative care from community health facilities.

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Additionally, female-headed households, those with valid health insurance, and married household heads were about twice as likely to use a health facility than their counterparts. A study conducted in Ghana (Anarwat, et al., 2021) found that women tend to use health facilities more frequently and enroll in NHIS (including big household sizes) because they are more susceptible to illness, particularly during their reproductive years. Difficulty obtaining authorization to seek care, which is a major barrier to healthcare utilization for women and children, is not an issue for women with children under five who also double as the heads of household.

Similarly, the cost of medical care or treatment is more likely to drive the uninsured to delay or forego medical attention when ill or injured than the insured. Lack of health insurance reduces the utilization of primary care and preventative care services and is associated with negative health outcomes (Tolbert, et al., 2020).

Finally, those in the fourth quintile were 2.3 times more likely to use health services than those in the poorest quintile. The wealthiest quintiles are more likely to see a doctor than the poorest quintiles, suggesting that higher incomes are associated with an increase in health (Braveman, et al., 2018; Jaeggi, et al., 2021).

Preference for Facilities by Equity Variables

Most of the respondents from the sample reported proximity to the facility as the main reason for accessing healthcare services. While the results did not show a significant level of inequity between urban and rural households in terms of travel distance (km) to access health care, the results did show that only 33.0% from the wealthiest quintile indicated proximity as the main reason for choosing a facility, compared with 70.9% from the poorest quintile.

Many respondents in both quintiles would have preferred to use a different facility than the one they accessed. This means that proximity to secondary health facilities will remain a challenge for poorer households since the majority preferred using district hospitals, which by design are farther away. Availability of modern facilities and good quality of care were the main reasons cited for this preference of district and regional hospitals.

The expected effect on CHPS use as the first point of care has not been observed. All equity groups showed a definite preference for subdistrict and district facilities. However, 20.0% of the poorest households traveled more than 10km to access a facility, compared to 4.7% of the wealthiest, showing inequities. For urban communities, which also tended to be wealthier households, this can be explained by their close location to district hospitals.

Poorer and rural households, in contrast, seemed to bypass their closest community facility and visit the subdistrict facilities, which usually served as the network hub. The trend to bypass the nearest facility for better availability of services and drugs (Macarayan, et al., 2019), especially in rural communities, has been observed elsewhere in Ghana (Bell, et al., 2020; Ashiagbor, et al., 2020), undermining the

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PCPNs' efforts to advance equity and leading to higher out-of-pocket payments. This could also be due to a general assumption that CHPS compounds only provide preventive/promotive care or service availability issues.

The quantitative survey examined perceptions of care quality by households based on length of time at the facility, friendliness and attentiveness of health staff, availability of staff and drugs, and overall referral system. Generally, households were satisfied with the quality of care they received. The majority of respondents cited the attentiveness of health staff with the highest satisfaction ratings, which is consistent with other findings (Al-Jabri, et al., 2021; Amporfro, et al., 2021). However, measuring patient satisfaction using global criteria varies remarkably because of different cultural settings with needs and expectations that affect overall satisfaction with healthcare services (Alotaibi, et al., 2021).

Health insurance enrollment also has a significant negative effect on the perception of healthcare quality. A reasonable explanation for this could be that the uninsured are kept in a different queue, quickly attended to at OPD consultations and at the pharmacy for drugs, whereas the insured spend long hours in queues to go through the NHIS process for receiving health care (Fenenga, et al., 2014; Duku, et al., 2018).

Comparison of and Patterns in Utilization Equity of Health Services in Pilot and Current Districts

Results of the comparative analysis showed that no household in the wealthiest quintile received care at CHPS compounds in both the pilot and current districts. However, significant inequities emerged in health-seeking patterns, with the majority of respondents (78.0%) in the pilot districts patronizing higher-level facilities (subdistrict and district), perceived to have better availability of drugs and services, compared to those in the current districts (46.0%). At the same time, more than 50.0% of households in the current districts traveled farther (1–5km) to health facilities compared to those in the pilot district. Poorer and rural households travel farther distances and prefer higher-level facilities. There was no significant gender difference in the type of facility used in the current districts compared to the pilot districts.

Analysis of the factors that determine health facility use in both districts showed mixed results. Two separate pooled regression analyses revealed that households with valid health insurance were about twice as likely to use health facilities than those without health insurance. Inequities in the results also showed that female-headed households, married household heads, and those belonging to the fourth wealth quintile were determining factors for health service use in the current districts but not the pilot districts. Likewise, having secondary/vocational education and belonging to the wealthiest quintile were determining factors for health service use (Braveman, et al., 2018; Anarwat, et al., 2021; Jaeggi, et al., 2021) in the pilot districts but not the current districts.

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The inequities could be attributed to the geographic and socioeconomic characteristics between the current and pilot districts, as households in rural areas are much poorer than those in urban areas. Poverty and rural residence are associated with worse maternal and child health outcomes in Ghana (Ghana Statistical Service, et al., 2018). Underlying contributing factors of health inequities are social determinants of health, such as economic stability and social status, access to education (as it improves health by increasing knowledge, skills, efficiency, and other abilities), transportation and roads, and health insurance coverage (Roj & Jankowiak, 2021).

Results of the logit and linear regression models used to evaluate whether access to the provider network through CHPS in the pilot districts correlates with health services utilization and treatment-seeking shows that there was no significant association between access to networks and health service utilization. The pilot districts were less likely to use CHPS. This indicates that networks have an opportunity to improve access to health services and to institutionalize a monitoring and evaluation system that tracks progress, challenges, and opportunities, which will inform how existing networks operate and scale up.

Implications for Equity

From the evidence generated in this study, the potential benefits of NoP in improving equitable access to health care are evident in the increased utilization of network facilities, especially CHPS in the current districts. This signals the potential benefit of NoP in delivering needed care to communities in hard-to-reach areas where CHPS facilities are mostly located. These provide preliminary evidence that the scale-up of NoP may help reduce inequities in healthcare access. An impact evaluation study conducted in the same pilot or current districts is recommended, as this would help ascertain NoP's potential impact on improving health equity over time. There is a need to study whether the type of health facility used and the reasons for its use change over time due to the presence of NoPs in the same district.

The available data generated from the pilot and current districts can serve as the baseline data for future impact evaluations of NoP equity-enhancing potential as networks in these districts are sustained and scaled up nationally.

Challenges and Study Limitations

Phase 2 IR was purely quantitative in its approach and did not include qualitative data collection, which could have enriched the depth of the analysis by enabling complementarity, triangulation, and validation of the quantitative findings. Also, while the quantitative method enabled the collection of quantifiable baseline data on the

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utilization of health services in the study districts, the lack of qualitative data limited our understanding of the context surrounding NOP influences on health-seeking behavior and the resulting impacts on health inequities. For example, limitations to women's access to health care were not explored qualitatively to allow them to speak openly about their difficulties and to compare those for noticeable inequities.

The research relied on the interview method. Recall bias cannot be avoided, as this study was dependent on responses from sampled individuals without any documentary evidence. This could result in various issues of reliability and validity of final conclusions.

This study could not establish the magnitude of NoP's contribution on equity, because Phase 1 and Phase 2 data were collected at different times, making comparability a challenge.

Unlike Phase 1, the implications of COVID-19 on health services use were not looked at in Phase 2 due to the different timing (COVID was not at its height at the time of this study). However, COVID-19 could still have had an impact on waiting time and services use, even though this assumption was not explored in Phase 2.

In the pilot study, the data collection tool focused on curative care, and the results may not accurately reflect how often CHPS is used for preventative or promotive care. Consequently, the tool was revised in the current study to include questions on facility type used for health prevention.

Conclusion and Recommendations

PHC is fundamental to achieving equity in the implementation and distribution of UHC benefits at the community level and among the most underserved and vulnerable populations. Ghana launched the PCPN model to address systemic deficiencies in the provision of health services at the PHC level and is currently in the process of a nationwide scale-up of NoP. Promoting IR capacities improves health systems and addresses a variety of health needs to ensure effective, lasting, and accessible interventions for communities. Specifically, IR can lead to the improved adoption and sustainability of key interventions that can improve quality of life. For example, it can inform the scale-up or replication of NoP across the country.

This IR was commissioned to understand how the NoP model promotes equitable access to quality essential health services among vulnerable, underserved, and priority populations in Ghana. It has implications for health equity and is frequently linked to financing equity as well.

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Recommendations

This section outlines key recommendations that emerged from the study. These recommendations were validated in plenary and small group sessions at the dissemination workshop organized to share findings with key stakeholders in the study districts. The following recommendations target different levels of health service delivery.

At the NoP level:

- Use community scorecards as a tool to engage chiefs and community members in addressing specific health challenges and needs.
- Use the NoP launch within the district and other social gatherings as avenues to create awareness about NoPs among communities.
- Intensify outreach clinical services within the network to increase the scope and reach of services to communities and remove access barriers.
- Work closely with Community Health Management Committees (CHMC) to identify priority households for targeted services.
- Liaise with the Department of Social Welfare to enroll vulnerable groups onto NHIS.
- Have future NoPs liaise with CHMCs to improve emergency transport systems within communities.
- Use endline data collection as NoPs are scaled up to conduct a more thorough and reliable future analysis that responds to a more general question about networks' potential contributions to Ghana's UHC goals.
- Establish regular assessments as NoPs are rolled out across the country.

At district and regional levels:

- Have health authorities lobby district assemblies, development partners/NGOs, and civil society organizations to support logistics, staff training and capacity building, and construction and renovation of health facilities.
- Provide leadership and support to networks through monitoring, supervision, coaching, refresher trainings, and more.
- Facilitate identification of equipment and infrastructure gaps within networks (especially network hubs) and lobby for support from stakeholders to fill gaps.
- Engage with CSOs and other appropriate groups to advocate for full implementation of Ghana's new essential service package for UHC.

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At the national level:

- Have NHIA and GHS collaborate to deal with key policy and operational issues impeding NoPs' efficient delivery of services, including to:
  - Align GHS outreach policies and NHIS credentialing and reimbursement regulations such that outreach services will be reimbursed to reflect both the cadre of staff and the facility/location for service delivery. This will encourage PAs/MWs to provide more and better outreach services within networks and thereby bring quality services nearer to communities.
  - Formulate a policy to credential networks as entities for service delivery and NHIS reimbursement. Networks should be credentialed at the level of the highest cadre within the network.
  - Allow limited quantities of certain essential medicines in lower-level facilities under special conditions and with oversight from a higher-level facility.
- Make provisions for further policy revisions on limits to services and types of medications provided at facilities.
- Adopt teleconsultation and telemedicine, as well as a social network-assisted (WhatsApp) referrals and feedback, in NoP implementation, while ensuring client privacy.
- Formalize and adopt network leaders' support to CHPS case management through phone calls as part of teleconsultation.

Conclusion

The patterns of health service usage seemed to be at odds with the projected equity advantages of NoPs, despite quantitative data on service use patterns in the districts showing few significant inequities in care utilization. Poorer households frequently had to travel longer to access care. Additionally, when in need of curative care, poor and rural households preferred district-level facilities, indicating the inadequacy of CHPS as the primary point of curative care. This notwithstanding, poorer households and those living in rural areas are the main clientele for the community and subdistrict facilities that form NoP. This creates an opportunity to improve equitable services coverage for these groups.

Addressing the issues of healthcare quality, improving physical access to care, increasing the amount of care available, and trying to address demand-side factors, like sociocultural barriers to accessing services, are all potential remedies to disparities in the utilization of health services.

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Appendix A: Demography of Survey Population

Table A1 shows the descriptive statistics of the participants. A total of 500 households comprising 2,131 members were sampled in the survey, 55.0% of which were females. Persons aged 15 years and older who were either married or in a consensual union accounted for 49.0%. Approximately 34.0% of the household members were either heads (500) or spouses to the head (218). Of those who were household heads, the male sex was dominant at 56.6%. Approximately 70.0% of household members had some level of formal education. About 87.0% of household members had signed up for health insurance before. However, only about 59.0% possessed valid health insurance, meaning they were insured at the time of data collection. Overall, rural households accounted for 60.0% of the sample.

For the age distribution, 48.6% of the household members were under the age of 20 years. When the sample is restricted to only females, 43.3% of them were under 20 years. For the male members, 55.0% were under 20 years (Table A2). Among household heads, the majority were older than 50 years; many more female household heads were this age group (59.5%) compared to 43.1% of the male household heads (Table A3).

Table A1. Socioeconomic characteristics of household members by district

	Overall		Akatsi South		North Tongu		P-Value
	N	%	N	%	N	%	
Gender of Household Members							
Female	1,173	55.0	551	55.4	622	54.8	
Male	958	50.0	444	44.6	514	45.3	0.773
Total	2,131	100.0	995	100.0	1,136	100.0	
Marital Status ≥15 years							
Married/Consensual Union	669	49.1	319	48.6	350	49.5	
Divorced/Separated	77	5.7	41	6.3	36	5.1	
Single/Never Married	488	35.8	211	32.2	277	39.2	0.000
Widowed	129	9.5	85	13.0	44	6.2	
Total	1,363	100.0	656	100.0	707	100.0	
Household Composition							
Child/Adopted/Foster/Stepchild	863	40.5	382	38.4	481	42.3	
Grandchild	348	16.3	167	16.8	181	15.9	
Head	500	23.5	250	25.1	250	22.0	
Other Relatives	164	7.7	73	7.3	91	8.0	0.169
Son/Daughter/Parent-in-Law	38	1.8	23	2.3	15	1.32	
Spouse	218	10.2	100	10.1	118	10.4	
Total	2,131	100.0	995	100.0	1,136	100.0	

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Table A1. Socioeconomic characteristics of household members by district

	Overall		Akatsi South		North Tongu		P-Value
	N	%	N	%	N	%	
Ever Signed Up for Health Insurance							
Yes	1,859	87.2	850	85.4	1,009	88.8	
No	272	12.8	145	14.6	127	11.2	0.019
Total	2,131	100.0	995	100.0	1,136	100.0	
Type of Insurance Ever Registered							
NHIS	1,858	99.9	849	99.9	1,009	100.0	
Private Health Insurance	1	0.1	1	0.1	-	-	0.276
Total	1,859	100.0	850	100.0	1,009	100.0	
Currently Insured							
Yes	1,100	59.2	527	62.0	573	56.8	
No	759	40.8	232	38.0	436	43.2	0.023
Total	1,859	100.0	850	100.0	1,009	100.0	
Highest School Grade Completed							
None	647	30.4	219	22.0	428	37.7	
Preschool/Primary School	711	33.4	415	41.7	296	26.7	
Middle or Junior High School	473	22.2	203	20.4	270	23.8	0.000
Secondary/Vocational	240	11.3	126	12.7	114	10.0	
Tertiary	60	2.8	32	3.2	28	2.5	
Total	2,131	100.0	995	100.0	1,136	100.0	
Household Location							
Rural	300	60.0	150	60.0	150	60.0	
Urban	200	40.0	100	40.0	100	40.0	1.000
Total	500	100.0	250	100.0	250	100.0	
Gender of Household Head							
Female	217	43.4	118	47.2	99	39.6	
Male	283	56.6	132	52.8	151	60.4	0.086
Total	500	100.0	250	100.0	250	100.0	
Household Size							
OR [95% CI]	4.3 [4.0–4.5]		3.9 [3.7–4.2]		4.5 [4.2–4.9]		0.007
Mean Age of Household Head							
OR [95% CI]	52 [50–53]		55 [53–57]		48 [46–50]		0.000

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Table A2. Age and sex distribution of household members

Age (years)	Overall		Female		Male		Chi² P-Value
	N	%	N	%	N	%	
<10	494	23.2%	243	20.7%	251	26.2%	
10–20	541	25.4%	265	22.6%	276	28.8%	
21–30	311	14.6%	190	16.2%	121	12.6%	
31–40	268	12.6%	159	13.6%	109	11.4%	<0.001
41–50	162	7.6%	102	8.7%	60	6.3%	
51–60	138	6.5%	84	7.2%	54	5.6%	
>60	217	10.2%	130	11.1%	87	9.1%	
Total	**2,131**	**100.0%**	**1,173**	**100.0%**	**958**	**100.0%**	

Table A3. Age distribution of household heads

Age Group	Overall	Female	Male	P-Value
<30 years	55 11.0%	20 9.2%	35 12.4%	
30–40 years	109 21.8%	32 14.8%	77 27.2%	
41–50 years	85 17.0%	36 16.6%	49 17.3%	0.001
>50 years	251 50.2%	129 59.4%	122 43.1%	
Total	**500** **100.0%**	**217** **100.0%**	**283** **100.0%**	

Gender Distribution

The analysis also included cross-tabulations between the gender of household heads and some variables. For education, overall, there was a larger proportion of females without formal education compared to male household heads, and there was a significant difference between the two groups (Table A4). Less than 39.0% of female household heads were married compared to 79.2% of male-headed household (Table A5).

About 60.0% of both male and female household heads lived in rural areas. There was no statistically significant difference between the two groups (Table A6). The proportion of female- and male-headed households with valid health insurance was the same at 58.7%. Thus, in proportionate terms, about half of female and male household heads were likely to have financial risk protection (Table A7).

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Table A4. Educational level and gender of household heads

Educational Level	Overall	Female	Male	P-Value
None	119 23.8%	81 37.3%	38 13.4%	
Middle or Junior High School	154 30.8%	48 22.1%	106 37.5%	
Preschool	12 2.4%	9 4.2%	3 1.1%	<0.001
Primary School	106 21.2%	59 27.2%	47 16.6%	
Secondary/Vocational	71 14.2%	18 8.3%	53 18.7%	
Tertiary	38 7.6%	2 0.9%	36 12.7%	
Total	**500** **100.0**%	**217** **100.0**%	**283** **100.0**%	

Table A5. Marital status and gender of household heads

Marital Status	Overall	Female	Male	P-Value
Consensual Union	19 3.8%	5 2.3%	14 4.9%	
Divorced	23 4.6%	14 6.5%	9 3.2%	
Married	307 61.4%	83 38.3%	224 79.2%	
Separated	16 3.2%	13 6.0%	3 1.1%	<0.001
Single	42 8.4%	26 12.0%	16 5.6%	
Widowed	93 18.6%	76 35.0%	17 6.0%	
Total	**500** **100.0%**	**217** **100.0%**	**283** **100.0%**	

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Table A6. Residential location by gender of household head

	Overall	Female	Male	P-Value
Rural	300 60.0%	140 64.5%	160 56.5%	
Urban	200 40.0%	77 35.5%	123 43.5%	0.071
Total	**500** **100.0%**	**217** **100.0%**	**283** **100.0%**	

Table A7. Gender of household head and health insurance

Gender	Ever Registered With Any Health Insurance			
	Yes	No	Total	
Female	201 92.6%	16 7.4%	217 100%	
Male	230 81.3%	53 18.7%	283 100%	<0.001
Total	**431** **86.2%**	**69** **13.8%**	**500** **100%**	
Type of Insurance Ever Registered With				
Gender	NHIS	Private Insurance	Total	
Female	201 100%	0 0.0%	201 100%	
Male	229 99.6%	1 0.2%	230 100%	0.349
Total	**430** **99.8%**	**1** **0.2%**	**431** **100%**	
Currently Insured				
Gender	Yes	No	Total	
Female	118 58.7%	83 41.3%	201 100%	
Male	135 58.7%	95 41.3%	230 100%	0.998
Total	**253** **58.7%**	**178** **41.3%**	**431** **100%**	

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Wealth Quintile Distribution

Approximately 50.0% of the overall households were in the bottom two wealth quintiles, as opposed to 26.0% in the top two wealth quintiles. However, there was no statistically significant difference in household wealth classification between the two districts (Table A8). A total of 36.0% of households in the urban cluster were in the top two wealth quintiles, compared to 19.3% of rural households (Table A9).

Table A8. Quintile classification of household by district

National Quintile	Overall		Akatsi South		North Tongu		Chi² P-Value
	N	%	N	%	N	%	
1 (poorest)	122	24.4%	63	25.2%	59	23.6%	
2	126	25.2%	63	25.2%	63	25.2%	
3	121	24.2%	58	23.2%	63	25.2%	0.764
4	86	17.2%	40	16.0%	46	18.4%	
5 (wealthiest)	45	9.0%	26	10.4%	19	7.6%	
Total	**500**	**100.0%**	**250**	**100.0%**	**250**	**100.0%**	

Table A9. Quintile classification by household location (rural/urban)

National Quintile	Overall		Rural		Urban		Chi² P-Value
	N	%	N	%	N	%	
1 (poorest)	122	24.4%	103	34.3%	19	9.5%	
2	126	25.2%	74	24.7%	52	26.0%	
3	121	24.2%	65	21.8%	56	28.0%	0.000
4	86	17.2%	44	14.7%	42	21.0%	
5 (wealthiest)	45	9.0%	14	4.7%	31	15.5%	
Total	**500**	**100.0%**	**300**	**100.0%**	**200**	**100.0%**	

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Appendix B: Tables From Quantitative Survey

Objective 1: Collect baseline information on utilization of preventive and curative health services in two study districts to evaluate performance of provider networks over time

Table A10. Reported health service utilization and treatment seeking by quintile

Sought Health Care for Illness	Quintile Classification						P-Value
	Overall	**Poorest**	**Second**	**Middle**	**Fourth**	**Wealthiest**	
Yes	235 47.0%	55 45.1%	53 42.1%	55 45.5%	51 59.3%	21 46.7%	
No	265 53.0%	67 54.9%	73 57.9%	66 54.6%	35 40.7%	24 53.3%	0.149
Total	**500 100%**	**122 100%**	**126 100%**	**121 100%**	**86 100%**	**45 100%**	

Table A11. Reported reasons for accessing healthcare facility in last four weeks by quintile classification

Reasons for Accessing Health Care	Quintile Classification						P-Value
	Overall	**Poorest**	**Second**	**Middle**	**Fourth**	**Wealthiest**	
Screening	2 0.9%	-	1 1.9%	-	-	1 4.8%	
Check-Up	54 23.0%	9 16.4%	7 13.2%	12 21.8%	16 31.4%	10 47.6%	
Illness/Injury	163 69.4%	43 78.2%	41 77.4%	39 70.9%	31 60.8%	9 42.9%	0.060
Other[1]	16 6.8%	3 5.5%	4 7.5%	4 7.3%	4 7.8%	1 4.8%	
Total	**235 100%**	**55 100%**	**53 100%**	**55 100%**	**51 100%**	**21 100%**	

[1]Includes counselling, weighing, delivery, and blood donation.

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Table A12: Reported healthcare facility accessed for preventive care in last four weeks by quintile classification

Healthcare Facility Accessed for Preventive Care	Quintile Classification						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
Community Health Facility	12 16.7%	3 25.0%	1 8.3%	5 31.3%	3 15.0%	-	
Subdistrict Health Facility	13 18.1%	1 8.3%	4 33.3%	2 12.5%	4 20.0%	2 16.7%	
District Health Facility	26 36.1%	6 50.0%	1 8.3%	4 25.0%	9 45.0%	6 50.0%	0.175
Other Health Facilities	21 29.2%	2 16.7%	6 50.0%	5 31.3%	4 20.0%	4 33.3%	
Total	**72 100%**	**12 100%**	**12 100%**	**16 100%**	**20 100%**	**12 100%**	

Table A13. Reported healthcare facility accessed for curative care (illness/injury) in last four weeks by wealth quintile

Healthcare Facility Accessed for Curative Care	Quintile Classification						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
Community Health Facility	53 32.5%	23 53.5%	17 41.5%	6 15.4%	7 22.6%	-	
Subdistrict Health Facility	32 19.6%	9 20.9%	10 24.4%	7 17.9%	5 16.1%	1 11.1%	
District Health Facility	38 23.3%	6 14.0%	4 9.8%	12 30.8%	12 38.7%	4 44.4%	0.003
Regional Health Facility	3 1.8%	1 2.3%	-	2 5.1%	-	-	
Other Health Facilities	37 22.7%	4 9.3%	10 24.4%	12 30.8%	7 22.6%	4 44.4%	
Total	**163 100%**	**43 100%**	**41 100%**	**39 100%**	**31 100%**	**9 100%**	

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Table A14. Reported reasons for accessing healthcare facility by quintile

Reported Reasons for Accessing Health Care Facility	Quintile Classification						Gender of Household Head		Household Location	
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	Female	Male	Rural	Urban
Proximity	122 51.9%	39 70.9%	27 50.9%	27 49.1%	22 43.1%	7 33.3%	57 51.8%	65 52.0%	86 62.8%	36 36.7%
Only Facility Available	34 14.5%	4 7.3%	11 20.8%	7 12.7%	12 23.5%	–	15 13.6%	19 15.2%	9 6.6%	25 25.5%
NHIS Provider	7 3.0%	2 3.6%	–	1 1.8%	2 3.9%	2 9.5%	3 2.7%	4 3.2%	4 2.9%	3 3.1%
Good Reputation	29 12.3%	7 12.7%	7 13.2%	3 5.5%	6 11.8%	6 28.6%	12 10.9%	17 13.6%	11 8.0%	18 18.4%
Availability of Modern Facility	12 5.1%	1 1.8%	3 5.7%	6 10.9%	2 3.9%	–	6 5.5%	6 4.8%	10 7.3%	2 2.0%
Short Waiting Time	6 2.6%	–	2 3.8%	2 3.6%	1 2.0%	1 4.8%	4 3.6%	2 1.6%	3 2.2%	3 3.1%
Availability of Drugs	8 3.4%	–	2 3.8%	5 9.1%	–	1 4.8%	6 5.5%	2 1.6%	7 5.1%	1 1.0%
Nice Health Workers	3 1.3%	1 1.8%	–	–	2 3.9%	–	3 2.7%	–	1 0.7%	2 2.0%
Good Quality of Care	14 6.0%	1 1.8%	1 1.9%	4 7.3%	4 7.8%	4 19.1%	4 3.6%	10 8.0%	6 4.4%	8 8.2%
Total	**235 100%**	**55 100%**	**53 100%**	**55 100%**	**51 100%**	**21 100%**	**110 100%**	**125 100%**	**137 100%**	**98 100%**

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Table A15. Preferred seeking health care at another facility by quintile

Preferred Another Health Care Facility	Quintile Classification						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
Yes	125 53.2%	37 67.3%	33 62.3%	22 40.0%	21 41.2%	12 57.1%	
No	110 46.8%	18 32.7%	20 37.7%	33 60.0%	30 58.8%	9 42.9%	0.011
Total	**235 100%**	**55 100%**	**53 100%**	**55 100%**	**51 100%**	**21 100%**	

Table A16. Preferred alternate facility by quintile

Preferred Healthcare Facility	Quintile Classification						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
Community Health Facility	2 1.6%	1 2.7%	1 3.0%	-	-	-	
Subdistrict Health Facility	5 4.0%	1 2.7%	1 3.0%	1 4.6%	1 4.8%	1 8.3%	
District Health Facility	72 57.6%	25 67.6%	21 63.6%	13 59.1%	10 47.6%	3 25.0%	0.646
Regional Health Facility	19 15.2%	3 8.1%	6 18.2%	4 18.2%	3 14.3%	3 25.0%	
Other Health Facilities	27 21.6%	7 18.9%	4 12.1%	4 18.2%	7 33.3%	5 41.7%	
Total	**125 100%**	**37 100%**	**33 100%**	**22 100%**	**21 100%**	**12 100%**	

Note: Respondents are those who answered "Yes" to "Was there any facility you would have preferred to attend for illness/injury if chance was given? They were then asked, what was this facility?

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Table A17. Reason for preferring alternate facility

	Quintile Classification						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
Good Quality of Care	23 18.4%	4 10.8%	5 15.2%	6 27.3%	5 23.8%	3 25.0%	
Good Reputation	6 4.8%	2 5.4%	2 6.1%	1 4.6%	1 4.8%	- -	
Low Charges	10 8.0%	1 2.7%	4 12.1%	3 13.6%	2 9.5%	- -	
Nice Health Workers	1 0.8%	- -	- -	- -	1 4.8%	- -	
Regular Source of Treatment	5 4.0%	2 5.4%	3 9.1%	- -	- -	- -	
Availability of Drugs	11 8.8%	5 13.5%	4 12.1%	- -	1 4.8%	1 8.3%	
Availability of Modern Facility	25 20.0%	9 24.3%	5 15.2%	5 22.7%	4 19.1%	2 16.7%	0.895
NHIS Provider	10 8.0%	4 10.8%	3 9.1%	2 9.1%	1 4.8%	- -	
Proximity	23 18.4%	7 18.9%	4 12.1%	3 13.6%	5 23.8%	4 33.3%	
Short Waiting Time	3 2.4%	- -	1 3.0%	1 4.5%	- -	1 8.3%	
More Likely to Be Seen by a Doctor	3 2.4%	1 2.7%	1 3.0%	- -	1 4.8%	- -	
Other Reasons	5 4.0%	2 5.4%	1 3.0%	1 4.6	- -	1 8.3%	
Total	**125** **100.0%**	**37** **100.0%**	**33** **100.0%**	**22** **100.0%**	**21** **100.0%**	**12** **100.0%**	

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Table A18. Health facility type accessed by distance

Distance to a Health Facility	Quintile Classification						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
<1km	25 10.6%	6 10.9%	7 13.2%	4 7.3%	6 11.8%	2 9.5%	
1–5km	159 67.7%	35 63.6%	35 66.0%	38 69.1%	35 68.6%	16 76.2%	
6–10km	24 10.2%	3 5.4%	6 11.3%	7 12.7%	6 11.7%	2 9.5%	0.765
>10km	27 11.5%	11 20.0%	5 9.4%	6 10.9%	4 7.8%	1 4.8%	
Total	235 100%	55 100%	53 100%	55 100%	51 100%	21 100%	

Table A19. Time waited before seeking care, from the onset of illness/injury

Waiting Time Before Accessing Healthcare Facility	Quintile Classification						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
Less than a day	77 32.8%	15 27.3%	12 22.6%	22 40.0%	20 39.2%	8 38.1%	
1–5 days	123 52.3%	31 56.4%	35 66.0%	23 41.8%	25 49.0%	9 42.9%	
6–10 days	12 5.1%	4 7.3%	2 3.8%	4 7.3%	2 3.9%	-	0.415
Above 10 days	23 9.8%	5 9.1%	4 7.5%	6 10.9%	4 7.8%	4 19.1%	
Total	235 100.0%	55 100.0%	53 100.0%	55 100.0%	51 100.0%	21 100.0%	

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Table A20: Aggregated results of satisfaction level with services received during last visit to health facility

Overall Assessment	Quintile Classification N [%]						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
Waiting Time at Health Facility							
Satisfied	195 [83.0]	44 [80.0]	48 [90.6]	49 [89.1]	38 [74.5]	16 [76.2]	
Not Satisfied	40 [17.0]	11 [20.0]	5 [9.4]	6 [10.9]	13 [25.5]	5 [23.8]	0.124
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Friendliness of Health Staff							
Satisfied	216 [91.9]	52 [94.6]	49 [92.4]	53 [96.4]	43 [84.3]	19 [90.5]	
Not Satisfied	19 [8.1]	3 [5.4]	4 [7.6]	2 [3.6]	8 [15.7]	2 [9.5]	0.198
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Attentiveness of Health Staff							
Satisfied	217 [92.3]	52 [94.6]	49 [92.4]	53 [96.4]	44 [86.3]	19 [90.5]	
Not Satisfied	18 [7.7]	3 [5.4]	4 [7.6]	2 [3.6]	7 [13.7]	2 [9.5]	0.355
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Availability of Health Staff							
Satisfied	216 [91.9]	48 [87.3]	47 [88.7]	52 [94.6]	50 [98.0]	19 [90.5]	
Not Satisfied	19 [8.1]	7 [12.7]	6 [11.3]	3 [5.4]	1 [2.0]	2 [9.5]	0.241
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Availability of Drugs							
Satisfied	201 [85.5]	49 [89.1]	42 [79.3]	47 [85.4]	43 [84.3]	201 [85.5]	
Not Satisfied	34 [14.5]	6 [10.9]	11 [20.7]	8 [14.6]	8 [15.7]	34 [14.5]	0.418
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	235 [100.0]	
Referred to Another Facility							
Yes	24 [10.2]	9 [16.4]	8 [15.1]	3 [5.5]	4 [7.8]	-	
No	211 [89.8]	46 [83.6]	45 [84.9]	52 [94.5]	47 [92.2]	21 [100.0]	0.103
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Referral System Assessment							
Satisfied	21 [87.5]	8 [88.9]	7 [87.5]	3 [100.0]	3 [75.0]	-	
Not Satisfied	3 [12.5]	1 [11.1]	1 [12.5]	-	1 [25.0]	-	0.797
Total	24 [100.0]	9 [100.0]	8 [100.0]	3 [100.0]	4 [100.0]	-	
Overall Assessment*							
Satisfied	206 [87.7]	51 [92.7]	47 [88.7]	52 [94.6]	39 [76.5]	17 [80.9]	
Not Satisfied	29 [12.3]	4 [7.3]	6 [11.3]	3 [5.4]	12 [23.5]	4 [19.1]	0.032
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	

Overall assessment of the services received from the health facility visited four weeks ago.

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Table A21: Disaggregated results of satisfaction level with services received during last visit to health facility

Overall Assessment	Quintile Classification N [%]						P-Value
	Overall	**Poorest**	**Second**	**Middle**	**Fourth**	**Wealthiest**	
Waiting Time at Health Facility							
Very Satisfied	60 [25.5]	15 [27.3]	17 [32.1]	9 [16.4]	16 [31.4]	3 [14.3]	
Satisfied	135 [57.5]	29 [52.7]	31 [58.5]	40 [72.7]	22 [43.1]	13 [61.9]	
Somewhat Satisfied	26 [11.1]	5 [9.1]	2 [3.8]	5 [9.1]	11 [21.6]	3 [14.3]	0.041
Not Satisfied at All	14 [6.0]	6 [10.9]	3 [5.7]	1 [1.8]	2 [3.9]	2 [9.5]	
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Friendliness of Health Staff							
Very Satisfied	83 [35.3]	27 [49.1]	18 [34.0]	15 [27.3]	17 [33.3]	6 [28.6]	
Satisfied	133 [56.6]	25 [45.5]	31 [58.5]	38 [69.1]	26 [51.0]	13 [61.9]	
Somewhat Satisfied	12 [5.1]	3 [5.5]	1 [1.9]	1 [1.8]	6 [11.8]	1 [4.8]	0.125
Not Satisfied at All	7 [3.0]	-	3 [5.7]	1 [1.8]	2 [3.9]	1 [4.8]	
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Attentiveness of Health Staff							
Very Satisfied	70 [29.8]	21 [38.2]	15 [28.3]	12 [21.8]	17 [33.3]	17 [33.3]	
Satisfied	147 [62.6]	31 [56.4]	34 [64.2]	41 [74.6]	27 [52.9]	27 [52.9]	
Somewhat Satisfied	13 [5.5]	2 [3.6]	2 [3.8]	2 [3.6]	6 [11.8]	6 [11.8]	0.400
Not Satisfied at All	5 [2.1]	1 [1.8]	2 [3.8]	-	1 [2.0]	1 [2.0]	
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	51 [100.0]	
Availability of Health Staff							
Very Satisfied	66 [28.1]	16 [29.1]	15 [28.3]	13 [23.6]	16 [31.4]	6 [28.6]	
Satisfied	150 [63.8]	32 [58.2]	32 [60.4]	39 [70.9]	34 [66.7]	13 [61.9]	
Somewhat Satisfied	12 [5.1]	3 [5.5]	3 [5.7]	3 [5.5]	1 [2.0]	2 [9.5]	0.462
Not Satisfied at All	7 [2.98]	4 [7.27]	3 [5.66]	-	-	-	
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Availability of Drugs							
Very Satisfied	58 [24.7]	19 [34.6]	11 [20.8]	10 [18.2]	16 [31.4]	2 [9.5]	
Satisfied	143 [60.9]	30 [54.6]	31 [58.5]	37 [67.3]	27 [52.9]	18 [85.7]	
Somewhat Satisfied	24 [10.2]	3 [5.5]	7 [13.2]	8 [14.6]	6 [11.8]	-	0.098
Not Satisfied at All	10 [4.3]	3 [5.5]	4 [7.6]	-	2 [3.8]	1 [4.8]	
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	
Referred to Another Facility							
Yes	24 [10.2]	9 [16.4]	8 [15.1]	3 [5.5]	4 [7.8]	-	
No	211 [89.8]	46 [83.6]	45 [84.9]	52 [94.6]	47 [92.2]	21 [100.0]	0.103
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	

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Overall Assessment	Quintile Classification N [%]						P-Value
	Overall	Poorest	Second	Middle	Fourth	Wealthiest	
Referral System Assessment							
Very Satisfied	2 [8.3]	1 [11.1]	-	-	1 [25.0]	-	
Satisfied	19 [79.2]	7 [77.8]	7 [87.5]	3 [100.0]	2 [50.0]	-	
Somewhat Satisfied	1 [4.2]	-	1 [12.5]	-	-	-	0.602
Not Satisfied at All	2 [8.3]	1 [11.1]	-	-	1 [25.0]	-	
Total	24 [100.0]	9 [100.0]	8 [100.0]	3 [100.0]	4 [100.0]	-	
Overall Assessment*							
Very Satisfied	73 [31.1]	19 [34.6]	17 [32.1]	12 [21.8]	19 [37.3]	6 [28.6]	
Satisfied	133 [56.6]	32 [58.2]	30 [56.6]	40 [72.7]	20 [39.2]	11 [52.4]	
Somewhat Satisfied	25 [10.6]	4 [7.3]	4 [7.6]	2 [3.6]	12 [21.8]	3 [14.3]	0.021
Not Satisfied at All	4 [1.7]	-	2 [3.8]	1 [1.8]	-	1 [4.8]	
Total	235 [100.0]	55 [100.0]	53 [100.0]	55 [100.0]	51 [100.0]	21 [100.0]	

Overall assessment of the services received from the health facility visited four weeks ago.

Equity Variable: Household Location

Table A22. Sought healthcare in last four weeks by residential location

	Overall	Rural	Urban	P-value
No	265 53.0%	163 54.3%	102 51.0%	
Yes	235 47.0%	137 45.7%	98 49.0%	0.464
Total	**500 100.0%**	**300 100.0%**	**200 100.0%**	

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Table A23. Health facility accessed by residential location of households

	Overall	Rural	Urban	P-Value
Community Health Facility	63 26.8%	63 46.0%	- -	
Subdistrict Health Facility	45 19.2%	23 16.8%	22 22.5%	
District Health Facility	64 27.2%	34 24.8%	30 30.6%	
Regional Health Facility	3 1.3%	1 0.7%	2 2.0%	0.000
Other Health Facility	60 25.5%	16 11.7%	44 44.9%	
Total	**235** **100.0%**	**137** **100.0%**	**98** **100.0%**	

Table A24. Name of facility if a private facility was first accessed

Private Facility Accessed	Overall	Rural	Urban	P-Value
Drugstore	2 3.3%	2 12.5%	- -	
Private Clinic	23 38.3%	2 12.5%	21 47.7	0.006
Private Hospital	35 58.3%	12 75.0%	23 52.3	
Total	**60** **100.0%**	**16** **100.0%**	**44** **100.0%**	

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Table A25. Reasons for health facility accessed by residential location of households

Reasons for Facility Accessed	Household Location			P-Value
	Overall	Rural	Urban	
Proximity	122 51.9%	86 62.8%	36 36.7%	
Only Facility Available	34 14.5%	9 6.6%	25 25.5%	
NHIS Provider	7 3.0%	4 2.9%	3 3.1%	
Good Reputation	29 12.3%	11 8.0%	18 18.4%	
Availability of Modern Facility	12 5.1%	10 7.3%	2 2.0%	
Short Waiting Time	6 2.6%	3 2.2%	3 3.1%	0.000
Availability of Drugs	8 3.4%	7 5.1%	1 1.0%	
Nice Health Workers	3 1.3%	1 0.7%	2 2.0%	
Good Quality of Care	14 6.0%	6 4.4%	8 8.2%	
Total	**235 100%**	**137 100%**	**98 100%**	

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Table A26. Prefers another facility by residential location

Prefers Another Facility	Overall	Rural	Urban	P-Value
No	110 46.8%	51 37.2%	59 60.2%	
Yes	125 53.2%	86 62.8%	39 39.8%	0.001
Total	**235** **100%**	**137** **100%**	**98** **100%**	

Table A27: Preferred healthcare facility by residential location of household

	Overall	Rural	Urban	P-Value
Community Health Facility	2 1.6%	2 2.3%	- -	
Subdistrict Health Facility	5 4.0%	5 5.8%	- -	
District Health Facility	72 57.6%	62 72.1%	10 25.6%	
Regional Health Facility	19 15.2%	3 3.5%	16 41.0%	0.000
Other Health Facilities	27 21.6%	14 16.3%	13 33.3%	
Total	**125** **100.0%**	**86** **100.0%**	**39** **100.0%**	

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Table A28. Reasons for preferred facility by gender of household head

	Overall	Rural	Urban	P-Value
Good Quality of Care	23 18.4%	20 23.3%	3 7.7%	
Good Reputation	6 4.8%	2 2.3%	4 10.3%	
Low Charges	10 8.0%	1 1.2%	9 23.1%	
Nice Health Workers (good reception)	1 0.8%	- -	1 2.6%	
Regular Source of Treatment	5 4.0%	5 5.8%	- -	
Availability of Drugs	11 8.8%	9 10.5%	2 5.1%	
Availability of Modern Facilities	25 20.0%	17 19.8%	8 20.5%	0.000
NHIS Provider	10 8.0%	10 11.6%	- -	
Proximity	23 18.4%	15 17.4%	8 20.5%	
Short Waiting Time	3 2.4%	1 1.2%	2 5.1%	
More Likely to Be Seen by a Doctor	3 2.4%	3 3.5%	- -	
Other Reasons	5 4.0%	3 3.5%	2 5.1%	
Total	**125** **100.0%**	**86** **100.0%**	**39** **100.0%**	

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Table A29: Distance to health facility by residential location

Distance to Health Facility	Overall	Rural	Urban	P-Value
<1km	25 10.6%	16 11.7%	9 9.2%	
1–5km	159 67.7%	88 64.2%	71 72.5%	
6–10km	24 10.2%	15 11.0%	9 9.2%	0.603
>10km	27 11.5%	18 13.1%	9 9.2%	
Total	**235 100.0%**	**137 100.0%**	**98 100.0%**	

Equity Variable: Gender of Household Head

Table A30. Reported health service use and treatment seeking by gender of household head

Gender of Household Head	Sought Care in Last Four Weeks			P-Value
	Yes	No	Total	
Female	110 50.7%	107 49.3%	217 100%	
Male	125 44.2%	158 55.8%	283 100%	0.148
Total	**235 47.0%**	**265 53.0%**	**500 100%**	

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Table A31. Health facility accessed by gender of household heads

	Overall	Female	Male	P-value
Community Health Facility	63 26.8%	27 24.6%	36 28.8%	
Subdistrict Health Facility	45 19.2%	24 21.8%	21 16.8%	
District Health Facility	64 27.2%	30 27.3%	34 27.2%	
Regional Health Facility	3 1.3%	2 1.8%	1 0.8%	0.787
Other Health Facilities	60 25.5%	27 24.6%	33 26.4%	
Total	**235** **100.0%**	**110** **100.0%**	**125** **100.0%**	

Table A32. Health facility accessed by gender of household heads

Other Facility Accessed	Overall	Female	Male	P-Value
Drugstore	2 3.3%	1 3.7%	1 3.0%	
Private clinic	23 38.3%	9 33.3%	14 42.4%	
Private hospital	35 58.3%	17 63.0%	18 54.6%	0.771
Total	**60** **100.0%**	**27** **100.0%**	**33** **100.0%**	

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Table A33. Reasons for health facility accessed by gender of household heads

	Overall	Female	Male	P-Value
Proximity	122 51.9%	57 51.8%	65 52.0%	
Only Facility Available	34 14.5%	15 13.6%	19 15.2%	
NHIS Provider	7 3.0%	3 2.7%	4 3.2%	
Good Reputation	29 12.3%	12 10.9%	17 13.6%	
Availability of Modern Facility	12 5.1%	6 5.5%	6 4.8%	0.316
Short Waiting Time	6 2.6%	4 3.6%	2 1.6%	
Availability of Drugs	8 3.4%	6 5.5%	2 1.6%	
Nice Health Workers	3 1.3%	3 2.7%	-	
Good Quality of Care	14 6.0%	4 3.6%	10 8.0%	
Total	**235 100%**	**110 100%**	**125 100%**	

Table A34. Waiting time before accessing health care by gender of household heads

	Overall	Female	Male	P-Value
Less than a day	77 32.8%	41 37.3%	36 28.8%	
1–5 days	123 52.3%	55 50.0%	68 54.4%	
6–10 days	12 5.1%	3 2.7%	9 7.2%	0.284
Above 10 days	23 9.8%	11 10.0%	12 9.6%	
Total	**235 100%**	**110 100%**	**125 100%**	

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Table A35. Reported reasons for not accessing health care at onset of illness/injury

	Overall	Female	Male	P-Value
Illness not considered serious	54 34.2%	21 30.4%	33 37.1%	
Lack of funds	31 19.6%	14 20.3%	17 19.1%	
Long distance to facility	5 3.2%	1 1.5%	4 4.5%	
Initial self-medication at home	36 22.8%	17 24.6%	19 21.4%	
Nobody to accompany patient	4 2.5%	3 4.4%	1 1.1%	0.667
High cost of health care	6 3.8%	2 2.9%	4 4.5%	
Other	22 13.9%	11 15.9%	11 12.4%	
Total	**158 100%**	**69 100%**	**89 100%**	

Table A36. Reported preference to have attended another facility for care

	Overall	Female	Male	P-Value
No	110 46.8%	54 49.1%	56 44.8%	
Yes	125 53.2%	56 50.9%	69 55.2%	0.511
Total	**235 100%**	**110 100%**	**125 100%**	

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Table A37. Preferred healthcare facility by gender of household heads

	Overall	Female	Male	P-Value
Community Health Facility	2 1.6%	1 1.8%	1 1.5%	
Subdistrict Health Facility	5 4.0%	2 3.6%	3 4.4%	
District Health Facility	72 57.6%	30 53.6%	42 60.9%	
Regional Health Facility	19 15.2%	7 12.5%	12 17.4%	0.537
Other Health Facilities	27 21.6%	16 28.6%	11 15.9%	
Total	**125** **100.0%**	**56** **100.0%**	**69** **100.0%**	

Table A38. Reasons for the preferred facility by gender of household head

	Overall	Female	Male	P-Value
Good Quality of Care	23 18.4%	10 17.9%	13 18.8%	
Good Reputation	6 4.8%	3 5.4%	3 4.4%	
Low Charges	10 8.0%	6 10.7%	4 5.8%	
Nice Health Workers (good reception)	1 0.8%	1 1.8%	- -	
Regular Source of Treatment	5 4.0%	3 5.4%	2 2.9%	0.407
Availability of Drugs	11 8.8%	7 12.5%	4 5.8%	
Availability of Modern Facilities	25 20.0%	13 23.2%	12 17.4%	
NHIS Provider	10 8.0%	2 3.6%	8 11.6%	
Proximity	23 18.4%	9 16.1%	14 20.3%	
Short Waiting Time	3 2.4%	1 1.8%	2 2.9%	

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Table A38. Reasons for the preferred facility by gender of household head

	Overall	Female	Male	P-Value
More Likely to Be Seen by a Doctor	3 2.4%	- -	3 4.4%	
Other Reasons	5 4.0%	1 1.8%	4 5.8%	
Total	**125** **100.0%**	**56** **100.0%**	**69** **100.0%**	

Table A39. Distance to health facility by gender of household heads

Distance to Health Facility	Overall	Female	Male	P-Value
<1km	25 10.6%	8 7.3%	17 13.6%	
1–5km	159 67.7%	80 72.7%	79 63.2%	
6–10km	24 10.2%	9 8.2%	15 12.0%	0.279
>10km	27 11.5%	13 11.8%	14 11.2%	
Total	**235** **100.0%**	**110** **100.0%**	**125** **100.0%**	

Table A40. Mode of transportation to health facility by gender of household heads

Mode of Transportation	Overall	Female	Male	P-Value
Car/Bus/Truck	43 18.3%	22 20.0%	21 16.8%	
Foot	90 38.3%	44 40.0%	46 36.8%	
Motorcycle	99 42.1%	42 38.2%	57 45.6%	0.632
Other	3 1.3%	2 1.8%	1 0.8%	
Total	**235** **100.0%**	**110** **100.0%**	**125** **100.0%**	

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Table A41. Satisfaction with services received during the last visit to health facility

	Overall N [%]	Female N [%]	Male N [%]	P-Value
Waiting Time at Health Facility				
Very Satisfied	60 [25.5]	29 [26.4]	31 [24.8]	
Satisfied	135 [57.5]	64 [58.2]	71 [56.8]	
Somewhat Satisfied	26 [11.1]	12 [10.9]	14 [11.2]	0.856
Not Satisfied at All	14 [6.0]	5 [4.6]	9 [7.2]	
Total	235 [100.0]	110 [100.0]	125 [100.0]	
Friendliness of Health Staff				
Very Satisfied	83 [35.3]	31 [28.2]	52 [41.6]	
Satisfied	133 [56.6]	68 [61.8]	65 [52.0]	
Somewhat Satisfied	12 [5.1]	6 [5.5]	6 [4.8]	0.125
Not Satisfied at All	7 [3.0]	5 [4.6]	2 [1.6]	
Total	235 [100.0]	110 [100.0]	125 [100.0]	
Attentiveness of Health Staff				
Very Satisfied	70 [29.8]	26 [23.6]	44 [35.2]	
Satisfied	147 [62.6]	75 [68.2]	72 [57.6]	
Somewhat Satisfied	13 [5.5]	7 [6.4]	6 [4.8]	0.259
Not Satisfied at All	5 [2.1]	2 [1.8]	3 [2.4]	
Total	235 [100.0]	110 [100.0]	125 [100.0]	
Availability of Health Staff				
Very Satisfied	66 [28.1]	29 [26.4]	37 [29.6]	
Satisfied	150 [63.8]	73 [66.4]	77 [61.6]	
Somewhat Satisfied	12 [5.1]	6 [5.5]	6 [4.8]	0.703
Not Satisfied at All	7 [3.0]	2 [1.8]	5 [4.0]	
Total	235 [100.0]	110 [100.0]	125 [100.0]	
Availability of Drugs				
Very Satisfied	58 [24.7]	25 [22.7]	33 [26.4]	
Satisfied	143 [60.9]	67 [60.9]	76 [60.8]	
Somewhat Satisfied	24 [10.2]	11 [10.0]	13 [10.4]	0.477
Not Satisfied at All	10 [4.3]	7 [6.4]	3 [2.4]	
Total	235 [100.0]	110 [100.0]	125 [100.0]	
Referred to Another Facility				
Yes	24 [10.2]	12 [10.9]	12 [9.6]	
No	211 [89.8]	98 [89.1]	113 [90.4]	0.741
Total	235 [100.0]	110 [100.0]	125 [100.0]	

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Table A41. Satisfaction with services received during the last visit to health facility

	Overall N [%]	Female N [%]	Male N [%]	P-Value
Referral System Assessment				
Very Satisfied	2 [8.3]	1 [8.3]	1 [8.3]	
Satisfied	19 [79.2]	10 [83.3]	9 [75.0]	
Somewhat Satisfied	1 [4.2]	-	1 [8.3]	0.789
Not Satisfied at All	2 [8.3]	1 [8.3]	1 [8.3]	
Total	24 [100.0]	12 [100.0]	12 [100.0]	
Overall Assessment*				
Very satisfied	73 [31.1]	26 [23.6]	47 [37.6]	
Satisfied	133 [56.6]	68 [61.8]	65 [52.0]	
Somewhat Satisfied	25 [10.6]	15 [13.6]	10 [8.0]	0.066
Not Satisfied at All	4 [1.7]	1 [0.9]	3 [2.4]	
Total	235 [100.0]	110 [100.0]	125 [100.0]	

Overall assessment of the facility visited in the last four weeks.

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Objective 2: Compare outcomes of current two study districts and two pilot districts to identify utilization equity patterns of health services

Demographic Background of Survey Respondents

Table A42. Comparison of gender and age of household heads and members and household size between pilot and current districts

District		Gender of Household Members		Gender of Household Head		Mean Age of Household Members	Mean Age of Household Head	Average Size of Household
		Female	Male	Female	Male			
Phase 1 (Pilot)	**South Tongu** N %	646 51.5%	608 48.5%	106 42.4%	144 57.6%	27	49	5.0
	South Dayi N %	620 51.5%	583 48.5%	74 29.6%	176 70.4%	27	50	4.6
	Total N %	1,266 51.5%	1,191 48.5%	180 36.0%	320 64.0%	27	50	4.8
Phase 2 (Current)	**North Tongu** N %	622 54.8%	514 45.3%	99 39.6%	151 60.4%	26	48	4.5
	Akatsi South N %	551 55.4%	444 44.6%	118 47.2%	132 52.8%	30	55	3.9
	Total N %	1,173 55.0%	958 45.0%	217 43.4%	283 56.6%	28	52	4.3

Table A43. Comparison of NHIS status of household heads between pilot and current districts

	Household Head Living in Rural Areas		Ever Signed Up for NHIS (%)	Households with Active Insurance (%)
	Female (%)	Male (%)		
Phase 1 (Pilot)	61.7	59.4	78.7	65.9
Phase 2 (Current)	65.0	56.0	87.0	59.0

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Table A44. Relative wealth of households surveyed

Relative Wealth of Population Surveyed					
	Poorest [1]	**Second**	**Middle**	**Fourth**	**Wealthiest [5]**
Phase 1 (Pilot)	28.2	18.8	16.2	19.2	15.6
Rural	44.0	24.0	15.7	12.7	3.7
Urban	4.5	11.0	22.0	29.0	33.5
Phase 2 (Current)	24.4	25.2	24.2	17.2	9.0
Rural	34.3	24.7	21.7	14.7	4.7
Urban	9.5	26.0	28.0	21.0	15.5

Table A45. Reported health services utilization and treatment seeking between study groups

Sought Health Care in Last Four Weeks	Overall	Pilot	Current	P-Value
Yes	387 38.7%	152 30.4%	235 47.0%	
No	613 61.3%	348 69.6%	265 53.0%	0.000
Total	**1,000 100%**	**500 100%**	**500 100%**	
If Yes, From Which Facility...				
Community Health Facility	69 17.8%	6 4.0%	63 26.8%	
Subdistrict Health Facility	106 27.4%	61 40.1%	45 19.2%	
District Health Facility	122 31.5%	58 38.2%	64 27.2%	
Regional Health Facility	13 3.4%	10 6.6%	3 1.3%	0.000
Other Health Facilities	77 19.9%	17 11.2%	60 25.5%	
Total	**387 100%**	**152 100%**	**235 100%**	

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Table A46. Time waited before seeking care from onset of illness/injury

Waiting Time Before Visiting Healthcare Facility	Overall	Pilot	Current	P-Value
Less Than a Day	151 39.0%	74 48.7%	77 32.8%	
1–5 Days	188 48.6%	65 42.8%	123 52.3%	
6–10 Days	20 5.2%	8 5.3%	12 5.1%	0.004
More Than 10 Days	28 7.2%	5 3.3%	23 9.8%	
Total	**387 100%**	**152 100%**	**235 100%**	

Table A47. Main reason for not seeking care at onset

	Overall	Pilot	Current	P-Value
Illness Not Considered Serious	61 33.9%	7 31.8%	54 34.2%	
Lack of Funds	38 21.1%	7 31.8%	31 19.6%	
Long Distance to Facility	7 3.9%	2 9.1%	5 3.2%	
Initial Self-Medication at Home	40 22.2%	4 18.2%	36 22.8%	0.450
Nobody to Accompany Patient	5 2.8%	1 4.6%	4 2.5%	
High Cost of Health Care	6 3.3%	-	6 3.8%	
Other	23 12.8%	1 4.6%	22 13.9%	
Total	**180 100%**	**22 100%**	**158 100%**	

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Table A48. Preferred seeking health care at another facility by study group

	Total	Pilot	Current	P-Value
Prefers Another Healthcare Facility				
Yes	192 53.0%	67 52.8%	125 53.2%	
No	170 47.0%	60 47.2%	110 46.8%	0.937
Total	**362** **100%**	**127** **100%**	**235** **100%**	
If Yes, Preferred Facility				
Community Health Facility	6 3.1%	4 6.0%	2 1.6%	
Subdistrict Health Facility	10 5.2%	5 7.5%	5 4.0%	
District Health Facility	127 66.2%	55 82.1%	72 57.6%	0.000
Regional Health Facility	22 11.5%	3 4.5%	19 15.2%	
Other Health Facilities	27 14.1%	-	27 21.6%	
Total	**192** **100%**	**67** **100%**	**125** **100%**	

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Table A49. Health services use by equity groups (pilot and current districts)

Overall	Pilot Districts					Current Districts					P-Value
	1 Poorest	2	3	4	5 Wealthiest	1 Poorest	2	3	4	5 Wealthiest	
Sought Health Care Four Weeks Ago											
Yes	387 38.7%	39 88.6%	29 96.7%	25 80.7%	32 84.2%	27 93.1%	55 45.1%	53 42.1%	55 45.5%	51 59.3%	21 46.7%	0.000
No	613 61.3%	5 11.4%	1 3.3%	6 19.4%	6 15.8%	2 6.9%	67 54.9%	73 57.9%	66 54.6%	35 40.7%	24 53.3%	
Total	**1,000 100%**	**44 100%**	**30 100%**	**31 100%**	**38 100%**	**29 100%**	**122 100%**	**126 100%**	**121 100%**	**86 100%**	**45 100%**	
Healthcare Facility Accessed for Illness/Injury											
Community Health Facility	59 18.7%	2 5.1%	4 13.8%	-	-	-	23 53.5%	17 41.5%	6 15.4%	7 22.6%	-	
Subdistrict Health Facility	93 29.5%	17 43.6%	18 62.1%	10 40.0%	8 25.0%	8 29.6%	9 20.9%	10 24.4%	7 18.0%	5 16.1%	1 11.1%	
District Health Facility	96 30.5%	7 18.0%	6 20.7%	13 52.0%	17 53.1%	15 55.6%	6 14.0%	4 9.8%	12 30.8%	12 38.7%	4 44.4%	0.000
Regional Health Facility	13 4.1%	5 12.8%	-	-	4 12.5%	1 3.7%	1 2.3%	-	2 5.1%	-	-	
Other Health Facilities	54 17.1%	8 20.5%	1 3.5%	2 8.0%	3 9.4%	3 11.1%	4 9.3%	10 24.4%	12 30.8%	7 22.6%	4 44.4%	
Total[β]	**315[β] 100%**	**39 100%**	**29 100%**	**25 100%**	**32 100%**	**27 100%**	**43 100%**	**41 100%**	**39 100%**	**31 100%**	**9 100%**	

[β]Excludes 72 households who reported seeking preventive care.

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Table A50. Preferred seeking health care at another facility by study group

	Total	Pilot	Current	P-Value
Would Have Preferred Seeking Care at Another Healthcare Facility				
Yes	192 53.0%	67 52.8%	125 53.2%	
No	170 47.0%	60 47.2%	110 46.8%	0.937
Total	362 100%	127 100%	235 100%	
If Yes, Preferred Facility				
Community Health Facility	6 3.1%	4 6.0%	2 1.6%	
Subdistrict Health Facility	10 5.2%	5 7.5%	5 4.0%	
District Health Facility	127 66.2%	55 82.1%	72 57.6%	0.000
Regional Health Facility	22 11.5%	3 4.5%	19 15.2%	
Other Health Facilities	27 14.1 %	-	27 21.6%	
Total	**192 100%**	**67 100%**	**125 100%**	

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Table A51: Pooled regression analysis of factors that determine health services use

Variables	Pilot Districts (N=152)		Current Districts (N=235)	
	OR [95% CI]	P-Values	OR [95% CI]	P-Values
Gender of Household Head (male=ref)				
Female	0.95 [0.64–1.41]	0.503	1.66 [1.02–2.67]	0.038*
Age of Household Head (years) (<30=ref)				
30–40	0.82 [0.39–1.74]	0.573	1.42 [0.63–3.19]	0.398
41–50	1.41 [0.68–2.91]	0.373	1.65 [0.72–3.75]	0.195
>50	1.2 [0.64–2.48]	0.559	1.63 [0.77–3.44]	0.196
Marital Status (single=ref)				
Married	0.94 [0.61–1.44]	0.712	1.93 [1.21–3.09]	0.006*
Highest School Grade Completed (none=ref)				
Basic School	1.19 [0.66–2.16]	0.480	0.77 [0.45–1.32]	0.346
Secondary/Vocational	2.07 [1.01–4.29]	0.010*	1.23 [0.56–2.72]	0.598
Tertiary	1.06 [0.51–2.21]	0.987	0.59 [0.23–1.49]	0.266
Household Location (urban=ref)				
Rural	1.01 [0.69–1.49]	0.302	0.92 [0.63–1.49]	0.714
Has Valid Health Insurance (yes=1)	1.67 [1.06–2.62]	0.007*	1.67 [1.10–2.53]	0.016*
Wealth Status (quintile 1=ref)				
Quintile 2	1.16 [0.66–2.06]	0.511	1.03 [0.58–1.86]	0.909
Quintile 3	0.99 [0.55–1.79]	0.888	1.05 [0.57–1.92]	0.865
Quintile 4	1.31 [0.75–2.29]	0.295	2.25 [1.14–4.43]	0.019*
Quintile 5	1.38* [1.16–2.51]	0.041	1.08 [0.46–2.5]	0.862
Distance to Accessed Health Facility (>10km=ref)				
<1km	2.2 [1.09–4.49]	0.018*	1.89 [0.29–1.86]	0.523
1–5km	0.66 [0.41–1.04]	0.372	1.47 [0.19–1.71]	0.917
6–10km	0.79 [0.39–1.58]	0.525	0.31 [0.59–1.39]	0.691
*P<0.05				

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Table A52. Regression results of evaluating statistical significance and magnitude of impact of PCPN in improving CHPS use.

	Model 1 (n=1,000)		Model 2 (n=387)	
	OR [95% CI]	P-Value	Coeff [95% CI]	P-Value
Phase 2 Districts (ref) Phase 1 Districts	– 0.49 [0.38–0.64]	0.000		
CHPS (yes=1)			-0.02 [-0.03 to -0.01]	0.034
Phase 1 Districts			-0.01 [-0.01 to 0.01]	1.000
CHPS Phase 1 Districts*			0.02 [-0.03 to 0.06]	0.479
	Model 3 (n=1000)		**Model 4 (n=387)**	
Phase 1 Districts	0.37 [0.20–0.68]	0.002		

Wealth Quintile
(poorest=ref)
  Second
  Middle
  Fourth
  Fifth (wealthiest)
	
	0.91 [0.55–1.52]
	1.08 [0.65–1.81]
	1.93 [1.09–3.41]
	1.16 [0.56–2.36]
		
		0.719
		0.754
		0.024
		0.685		

Phase 1 Districts*
Wealth Quintile
(poorest=ref)
  Second
  Middle
  Fourth
  Fifth (wealthiest)
	
	1.3 [0.61–2.8]
	0.92 [0.42–2.01]
	0.69 [0.32–1.55]
	1.21 [0.48–3.07]
		
		0.488
		0.833
		0.377
		0.684		

Phase 1* Sex (male=ref) Female	 0.79 [0.46–1.38]	 0.17		

District (Akatsi South=ref)
  North Tongu
  South Dayi
  South Tongu
	
	0.58 [0.41–0.84]
	0.79 [0.53–1.16]
	1 [omitted]
		
		0.003
		0.226		

Phase 1 District*	Omitted Due to Collinearity and High Number of Households Not Using CHPS			
CHPS Phase 1 District* Female HH			0.04 [-0.05 to 0.12]	0.407
CHPS Phase 1 District* Wealth Quintile			Collinearity or Zero Observations	
CHPS Phase 1 District*			Collinearity or Zero Observations	
CHPS Phase 1 District* Location of Household			Collinearity or Zero Observations	

Denotes interaction between equity variables of interest

Phase 1 equals pilot districts.
Phase 2 equals current districts.

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