



(RESEARCH ARTICLE)



DOMESTIC, POOLED BUT LATE: A MIXED-METHODS EVALUATION OF FINANCING MODELS FOR REPRODUCTIVE, MATERNAL, NEWBORN AND CHILD HEALTH IN SIX DISTRICTS OF NORTHERN GHANA, 2020 TO 2024

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ABSTRACT

Background: In Ghana, several financing models pay for reproductive, maternal, newborn and child health (RMNCH) services, yet they have not been evaluated together at district level against explicit criteria. We evaluated them in six Northern Region districts from 2020 to 2024.

Methods: A convergent parallel mixed-methods design was guided by the health financing functions framework. We reviewed RMNCH financing records from 6 District Health Directorates (DHDs), 6 National Health Insurance Scheme (NHIS) district offices and 36 facilities (240 institution-years), and held 24 key informant interviews and 4 focus group discussions with 32 participants. Amounts were converted to constant 2020 cedis, and six financing models were rated on five criteria.

Results: Records were complete for 97.9% of institution-years. Facility RMNCH financing rose by 80.5% in nominal terms but fell by 26.3% in real terms. The NHIS share rose from 50.6% to 58.4%, while the donor share fell from 12.9% to 4.9%. DHDs received 86.6% of allocated government funds, a mean of 57 days late. The NHIS paid 85.3% of claimed

value after a mean of 86 days, and no claim batch met the 28-day legal limit. Rural facilities waited 100 days and urban facilities 73 days. In real terms every model was rated weak on adequacy, and only the NHIS was strong on sustainability.

Conclusion: RMNCH financing became more domestic and pooled, but it shrank in real terms, and purchasing was slow and unequal. A fixed monthly NHIS payment calendar with a rural target is the most direct remedy.

Keywords: Health financing, Maternal and child health, National Health Insurance Scheme, Strategic purchasing, Donor transition, Ghana.

1 INTRODUCTION

Reproductive, maternal, newborn and child health (RMNCH) services are central to Ghana's pursuit of universal health coverage. How these services are paid for shapes who can use them, when, and at what personal cost (1). The Northern Region shows why this matters. In the 2022 Ghana Demographic and Health Survey, a skilled provider attended 71.6% of births in the region, whereas eight regions exceeded 90% (2). The region's institutional maternal mortality ratio rose from 94.5 per 100,000 live births in 2022 to 136.7 in 2023, against a national target of 125 (3). Karaga and Gushegu, two of the study districts, have the highest illiteracy in the country: 81.0% and 80.7% of residents aged six years and older cannot read and write (4).

1.1 Financing Models for RMNCH in Ghana

Money for RMNCH reaches a district through several channels, which we call financing models. Government pays health worker salaries centrally and releases smaller sums for goods, services and programmes to District Health Directorates (DHDs), and District Assemblies may add a portion of the District Assemblies Common Fund (DAF). The National Health Insurance Scheme (NHIS), governed by the National Health Insurance Act, 2012 (Act 852), pays facilities for covered services through claims (5). Since 2008 it has enrolled pregnant women without premiums under the free maternal care policy (6). Development partners fund programmes such as immunisation, family planning and nutrition. Facilities retain internally generated funds (IGF), and communities give cash, labour and materials, especially to Community-based Health Planning and Services (CHPS) compounds. When these models fall short, households pay out of pocket (7).

1.2 Evidence Gap

Each part of this system has been studied, but rarely together. National Health Accounts report spending by source for the whole country, do not separate RMNCH and present growth in nominal cedis (8). Research on the NHIS has documented long reimbursement delays and opaque vetting (9). Free maternal care has not ended payments by women, partly because facilities run short of medicines and supplies (6,7,10). In January 2023 the Ministry of Health told Parliament that it was still reimbursing claims from May 2022 (11). Prices also rose fast, with annual average consumer price inflation of 31.3% in 2022 and 38.1% in 2023 (12). Donor transition is under way, and stakeholders in Ghana expect it to leave financial gaps and weaken the accountability that came with external funds (13,14).

No district-level evaluation has measured all financing models at once, followed their flows over several years and judged them against stated criteria. Without it, policy makers cannot tell whether growth in one model offsets decline in another, whether money arrives in time to be useful, or which model is most likely to last (15). Two changes in 2025 make a baseline urgent. Ghana removed the National Health Insurance Fund from the statutory cap on earmarked funds (16), and the suspension of United States assistance left a projected shortfall of US\$78.2 million in health programmes, including maternal and child health and family planning (17).

The general objective was to evaluate the financing models that paid for RMNCH services in six districts of the Northern Region between 2020 and 2024. The specific objectives were:

- To identify the financing models in operation and describe how each raised, pooled and spent money.
- To measure each model's share of RMNCH financing over time, in nominal and real terms.
- To assess the efficiency, predictability and accountability of government releases and NHIS claims payments.
- To rate the sustainability of each model against five criteria.

A companion paper reports out-of-pocket spending, catastrophic expenditure and forgone care among women in the same districts (18).

2 METHODOLOGY

2.1 Study Design

We used a convergent parallel mixed-methods design, with equal weight on the quantitative and qualitative strands and a pragmatic stance (19). Shares, release rates and payment lags can be counted, but the reasons a release arrives late or a claim is cut cannot. Both strands were collected between February and April 2026, and the interviews were completed before the records review began. The strands were analysed separately and brought together at three points: the framework set the content of every instrument, a joint display compared the results, and a sustainability matrix drew on both (20). Reporting followed the Good Reporting of A Mixed Methods Study guidance (21) and, for the qualitative strand, the Standards for Reporting Qualitative Research (22).

2.2 Study Setting

Six of the region's 16 districts took part, two of each type: Tamale Metropolis and Yendi (urban), Sagnarigu and Savelugu (peri-urban), and Gushegu and Karaga (rural). We grouped districts by what their main town does in referral care rather than by the census urban share. Urban districts hold referral hospitals, peri-urban districts adjoin Tamale and borrow its services, and rural districts have scattered settlements far from care. Tolon District was used only for pre-testing. The district was the unit of comparison because all financing models meet there.

2.3 Evaluation Framework

We based the evaluation on the functions framework for health financing (1,15,23). It describes each model by how it raises revenue, whether it pools funds, how it pays providers and the governance rules around these functions. Each model was judged on five criteria: adequacy (the real change in its contribution), financial protection, equity of access, efficiency (the completeness and timeliness of fund flows) and sustainability (the type of revenue and the predictability of flows). Financial protection and equity of access drew on the household survey reported in the companion paper; this paper uses only the resulting ratings.

2.4 Data Sources and Sampling

The records review was a census of RMNCH financing records for 2020 to 2024 at all six DHDs and NHIS district offices and at 36 facilities (6 hospitals, 10 health centres and 20 CHPS compounds), giving 240 institution-years. Facilities were drawn by stratified systematic sampling from DHD registers, so that every level of care present in a district was represented. The urban districts contributed 4 hospitals, 1 health centre and 5 CHPS compounds; the peri-urban districts 1, 5 and 6; and the rural districts 1, 4 and 9. Custodians provided claims registers and payment advices, budgets and release letters, expenditure returns, partner reports and facility cash books. Claim batches and quarterly releases were logged individually. When two documents disagreed, we took the one nearest to the actual movement of money, such as a bank statement. A second person checked every value against its source, and missing years were recorded, not imputed.

We conducted 24 key informant interviews (KIIs). In each district we interviewed the District Director of Health Services, the district NHIS manager, a facility manager and a development partner representative, each of whom had been in post for a year or more. Four focus group discussions (FGDs) brought together 32 adults who had used RMNCH care for themselves or a child in the past year: one group each in the urban and peri-urban districts and two in the rural districts. Groups were moderated in Dagbani, or in Likpakpaanl and Dagbani, and all guides were structured by financing function. From the household survey of 864 women reported in the companion paper, this paper uses two items only: how the woman's most recent RMNCH service was paid for, and whether she received a receipt when she paid.

2.5 Indicators and Benchmarks

A model's share was its amount divided by total RMNCH financing at that level. Release and expenditure rates were the amounts released and spent as percentages of the allocation. We compared release rates with the outturn bands that public financial management assessments apply to aggregate spending, where band A runs from 95% to 105% (24). Release delay counted the days from the scheduled date of each quarterly release to its arrival. For NHIS claims we calculated the reimbursement rate (payments as a percentage of claimed value), the vetting cut (deductions as a percentage of claimed value) and the payment lag of each batch from submission to payment. Two benchmarks applied. Regulation 38 of the National Health Insurance Regulations, 2012 (L.I. 2000) requires payment within four weeks of a claim's receipt (11,25), and the National Health Insurance Authority (NHIA) treats a 90-day arrears window as acceptable (26). Donor dependence was partner cash and in-kind value as a share of total RMNCH financing, and the off-budget share was the part of partner cash that bypassed government accounts.

2.6 Avoiding Double Counting

We kept facility and DHD figures apart. Some DHD money is passed on to facilities, and NHIS district offices hold copies of the very claims that facilities submit, so summing the two levels would count the same cedis twice. Facility IGF was not treated as a separate source, because it is built from NHIS reimbursements and cash fees that are already in the totals. Salaries paid centrally do not appear in district records, so the government share describes recorded non-salary RMNCH financing.

2.7 Conversion to Constant Prices

We converted every annual amount to constant 2020 cedis using the national consumer price index (CPI). Annual average inflation rates from the World Development Indicators, which rest on the CPI compiled by the Ghana Statistical Service, were chain-linked into an index with 2020 = 100 (12). The index stood at 110.0 in 2021, 144.3 in 2022, 199.3 in 2023 and 244.9 in 2024. Shares within a year are unaffected by the conversion. As a sensitivity check, we repeated the conversion with the series of the International Monetary Fund, whose index reached 248.2 in 2024 (27). Records were analysed descriptively in Python.

2.8 Qualitative Analysis and Reflexivity

Sessions were audio-recorded and transcribed verbatim, with local-language discussions translated into English. A second bilingual reader compared a sample of transcripts with the audio, and names, places and other identifiers were removed before coding. The qualitative strand took an exploratory descriptive approach. We analysed transcripts thematically in six phases (28) using NVivo version 15, with deductive codes from the framework and inductive codes from participants' own words. Accounts that cut against the main pattern were kept and reported as counter-views. Following Braun and Clarke (29), we did not compute inter-coder agreement; codes and themes were discussed with the supervising authors. Twenty-four interviews exceed the 9 to 17 at which saturation is usually reached in empirical tests, and four groups sit at the lower end of the 4 to 8 range (30). One author works with district health teams in the region on public health programmes. This eased access but could have shaped what informants said, so reflexive notes were kept and discussed with the supervising authors, one of whom is based outside Ghana.

2.9 Integration and Rating Rules

In the joint display, each theme sat beside its matching quantitative result. The strands converged when they pointed the same way, complemented each other when one supplied what the other lacked, and diverged when they conflicted (20,31). In the sustainability matrix, each model was rated strong (3), moderate (2) or weak (1) on each criterion, under rules fixed before analysis. Adequacy was strong if the model's real contribution rose by more than 10% between 2020 and 2024, moderate if it changed by 10% or less, and weak if it fell by more than 10%. Financial protection compared catastrophic expenditure among women whose last service was paid through the model with all women. Equity of access used the ratio of forgone care in the poorest to the richest wealth quintile: strong at 1.0 or below, moderate above 1.0 up to 2.0, and weak above 2.0. Efficiency took the weaker of two indicators: the release or reimbursement rate (strong at 95% to 105%, weak under 85%) and the delay or lag (strong at 28 days or less, weak over 90 days). Sustainability was strong for compulsory domestic revenue backed by law and paid predictably, moderate for voluntary or irregularly released domestic revenue, and weak for external, time-limited or project-based funds. Where women could not be linked to a model, financial protection and equity of access were rated from interview and records evidence.

2.10 Ethical Considerations

The KIIs and FGDs were approved by the Ghana Health Service Ethics Review Committee (GHS-ERC:017/12/19-23), and the records review and household survey by the University of Port Harcourt Research Ethics Committee (UPH/R&D/REC/EXEC/260). Fieldwork began after both approvals were granted. The Regional Director of Health Services and the six District Directors gave written permission. All participants gave written informed consent, and audio recording required separate consent. Informants and partner organisations are not named.

3 RESULTS

3.1 Data Completeness and Participants

Records were complete for 235 of 240 institution-years (97.9%): 69 of 70 in the urban districts, 79 of 80 in the peri-urban districts and 87 of 90 in the rural districts. Every DHD and NHIS office year was complete. The five missing years were at four facilities: one hospital and one health centre lacked one year each, and two CHPS compounds lacked three years between them. One hospital's conflicting 2022 NHIS figures were settled using the bank statement, one unsigned cash book summary was confirmed as final by its custodian, and one NHIS office did not separate free maternal care claims before April 2020. The KIIs lasted 13 to 15 minutes and the FGDs 40 to 43 minutes. All groups were women only except the peri-urban group, which had six women and two men.

3.2 Financing Models and Their Functions

All six financing models operated in every district in every year (Table 1). The NHIS was the only model that pooled risk across the population.

Table 1: Financing models for RMNCH in the study districts, by financing function

Financing model	Revenue raising and pooling	Paying providers	Main problem found
Government budget (including the DACF)	General tax revenue, pooled nationally but released as separate budget lines; DACF 10.1% of DHD allocations in 2020 and 8.5% in 2024	Quarterly releases to DHDs, passed on to facilities; salaries paid centrally	Released at 86.6% of allocation, a mean of 57 days late
NHIS (including free maternal care)	Earmarked levy and member contributions; the only population-wide risk pool	Claims paid after vetting	Card lapse between pregnancies; mean claims lag of 86 days; vetting cuts not explained
Development partners	External grants and commodities; earmarked by programme, not pooled	Through DHDs or paid directly to activities; off-budget share of DHD partner cash 63.8% in 2022 and 24.7% in 2024	Funds tied to activities; no written plans for transition
Facility internally generated funds (IGF)	NHIS reimbursements plus cash fees (fees 13.7% to 14.6% of IGF); a facility account, not a separate source	Spent by the facility; 25.7% to 27.0% on RMNCH	Small buffer in rural facilities (GH¢4.07 million against GH¢20.79 million in urban facilities, 2020 to 2024)
Community contributions	Cash, labour and materials, about two thirds in kind; local and voluntary	Through Community Health Management Committees	Concentrated at CHPS compounds (20.7% of their financing); falls on poor rural communities
Out-of-pocket payment	Direct payments by households; no pooling	At the point of care and at chemical shops	Not intended by any policy; fills gaps left by the other models

Source: financing records (2020 to 2024), key informant interviews and focus group discussions. CHPS, Community-based Health Planning and Services; DACF, District Assemblies Common Fund; DHD, District Health Directorate; NHIS, National Health Insurance Scheme; RMNCH, reproductive, maternal, newborn and child health.

Table 1 shows why these models did not add up to a system. Twenty-seven of the 28 transcripts described 'separate purses', each governed by its own rules.

"Nobody can tell you the total money spent on RMNCH in a district. Each partner knows its own. Government knows its own. NHIS knows its own. There is no one table." (Development partner representative, urban district; KII-DP-U-01, T040)

Informants in 23 transcripts called NHIS claims the main source of running costs at facilities, and 21 raised card lapse between pregnancies as a gap in cover. Partner money was described as earmarked and often paid straight to activities (16 transcripts).

"The partner money is earmarked. If it is for immunisation, you cannot touch it for anything else, even if mothers are dying for lack of oxytocin." (District Director of Health Services, urban district; KII-DDHS-U-02, T018)

Facility IGF worked as an account fed by other models rather than as a source in its own right. Cash fees made up between 13.7% and 14.6% of facility IGF in each year, and most of the rest came from NHIS reimbursements. Across the period, urban facilities earned GH¢20.79 million in IGF and rural facilities GH¢4.07 million. About two thirds of recorded community contributions each year were labour and materials.

Women met these models at the point of care. Of 859 women who reported how their most recent RMNCH service was paid for, 439 (51.1%) had full NHIS cover and 143 (16.6%) NHIS cover plus a payment of their own. A further 134

(15.6%) paid in full out of pocket, 110 (12.8%) were treated free under a programme run by a donor or non-governmental organisation, and 33 (3.8%) described another arrangement. Full NHIS cover was reported by 166 of 287 urban women (57.8%) but by 133 of 285 rural women (46.7%).

3.3 The Financing Mix, 2020 to 2024

Table 2: Facility RMNCH financing by financing model, 2020 to 2024: shares (%) and totals in nominal and constant 2020 cedis

Year	Government (%)	NHIS (%)	Donor (%)	Patient fees (%)	Community (%)	Total, nominal (GH¢)	Total, constant 2020 (GH¢)	Real change since 2020 (%)
2020	18.8	50.6	12.9	13.1	4.5	4,660,242	4,660,242	Reference
2021	21.2	51.7	9.4	13.3	4.4	5,687,483	5,171,798	+11.0
2022	19.8	54.2	7.9	13.6	4.5	5,744,312	3,979,612	-14.6
2023	19.2	58.7	5.7	12.5	3.9	7,657,634	3,841,331	-17.6
2024	20.0	58.4	4.9	13.2	3.6	8,411,202	3,434,598	-26.3
Change in amount, 2020 to 2024, real (%)	-21.9	-15.0	-72.1	-25.7	-41.4	+80.5 (nominal)	-26.3	

Shares are of total recorded RMNCH financing at the 36 facilities and are the same in nominal and real terms. Facility IGF is not shown because it consists of NHIS reimbursements and patient fees. Government figures exclude salaries paid centrally. Constant 2020 cedis use the consumer price index chain-linked from World Bank annual average inflation (2020 = 100; 2024 = 244.9). Rows may not sum to exactly 100.0 because of rounding.

Table 2 shows that, in nominal cedis, the 36 facilities recorded GH¢4.66 million of RMNCH financing in 2020 and GH¢8.41 million in 2024, a rise of 80.5%. Prices rose faster. In constant 2020 cedis the 2024 total was GH¢3.43 million, 26.3% below the 2020 level. Real financing peaked in 2021, at 11.0% above 2020, and fell in each later year; the alternative deflator gave a real fall of 27.3%. The NHIS accounted for 50.6% of facility financing in 2020 and 58.4% in 2024, with a peak of 58.7% in 2023. Donor funding dropped from 12.9% to 4.9% of the total. Government releases to facilities moved between 18.8% and 21.2% without a clear direction, patient fees stayed within 12.5% to 13.6%, and community contributions slipped from 4.5% to 3.6%. Government and NHIS together supplied 69.5% of facility financing in 2020 and 78.3% in 2024. In real terms, every model contributed less in 2024 than in 2020: NHIS reimbursements fell by 15.0%, government releases to facilities by 21.9%, patient fees by 25.7%, community contributions by 41.4% and partner funds by 72.1%. The NHIS share grew because NHIS money shrank less than the rest.

"NHIS claims have gone up in cedis, but prices have also gone up, so in real terms I am not sure we are better off." (District Director of Health Services, peri-urban district; KII-DDHS-P-01, T018)

Every district type moved in the same direction, but from different starting points (Figure 1). Over the five years, rural facilities drew most on partners and communities (11.8% and 8.1% of their financing) and least on patient fees (8.7%), while urban facilities relied more on fees (16.3%). The rural donor share fell from 18.8% to 7.8%, so the facilities that leaned hardest on partner support lost most of it. CHPS compounds had the most exposed mix: the NHIS provided 39.4% of their recorded financing, communities 20.7% and partners 16.1%.

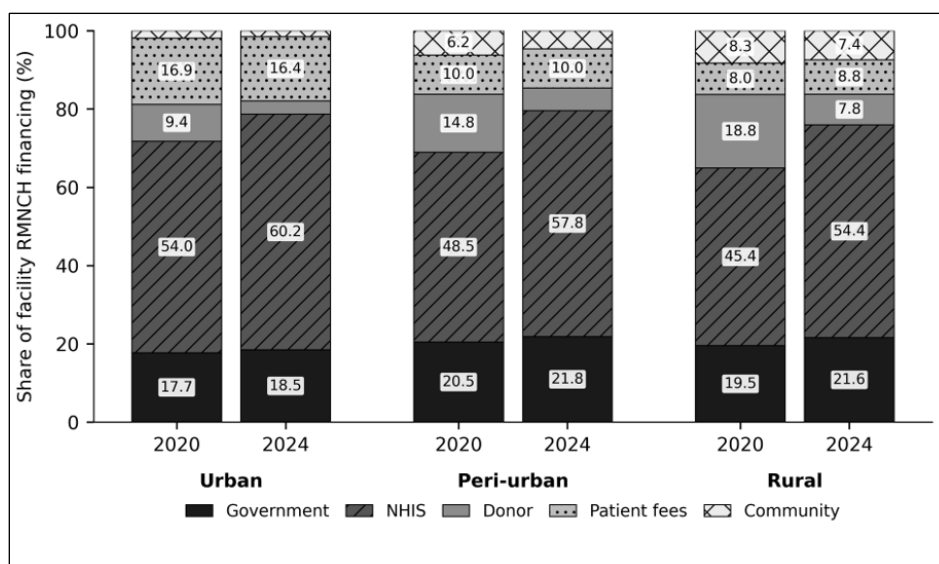


Figure 1: Share of facility RMNCH financing by financing model and district type, 2020 and 2024 (%). Labels show segments of 6% or more. Facility IGF is not shown separately because it consists of NHIS reimbursements and patient fees. Source: financing records of 36 facilities.

At DHD level, where no claims or fees are received, donor dependence fell from 35.4% in 2020 to 16.4% in 2024. Partner funds at DHDs fell by 34.4% in nominal terms and by 73.2% in real terms. Government releases to DHDs rose by 83.3% in cedis but fell by 25.2% after inflation. The DACF provided 10.1% of DHD allocations in 2020 and 8.5% in 2024. Off-budget payments made up 52.1%, 42.6% and 63.8% of partner cash at DHDs in 2020, 2021 and 2022, and about a quarter (23.8% and 24.7%) in 2023 and 2024.

3.4 Execution, Timeliness and Accountability

Table 3: Government release performance at District Health Directorates and NHIS claims performance at facilities, 2020 to 2024

Year or district type	DHD release rate (%)	DHD releases, mean days late	Claims reimbursement rate (%)	Cut at vetting (%)	Claim batches (n)	Mean lag (days)	Median lag, days (IQR)	Paid within 90 days (%)
2020	80.6	70	81.2	7.6	248	88	87 (77 to 97)	61.7
2021	88.3	58	83.0	7.8	260	87	86 (77 to 95)	65.4
2022	88.1	55	83.4	7.5	252	89	87 (79 to 99)	57.5
2023	88.4	49	90.0	7.3	264	77	76 (67 to 85)	83.3
2024	86.0	54	86.1	7.7	264	88	86 (76 to 97)	62.9
Urban	86.5	47	85.4	7.6	388	73	72.5 (65 to 80)	100.0
Peri-urban	86.7	56	85.3	7.5	448	82	82.5 (75 to 89)	77.7
Rural	86.5	69	85.1	7.7	452	100	100 (90 to 110)	26.1
All, 2020 to 2024	86.6	57	85.3	7.6	1,288	86	85 (74 to 95)	66.3

No claim batch was paid within 28 days in any year or district type. Rates are ratios of sums. Release delays are per quarterly release at the six DHDs (24 releases per year); lags are per claim batch at the 36 facilities, with interquartile ranges rounded to whole days. Band A for release rates is 95% to 105%. DHD, District Health Directorate; IQR, interquartile range; NHIS, National Health Insurance Scheme.

Table 3 shows that government releases never matched allocations. DHDs received 86.6% of what had been allocated to them for RMNCH over the five years. The rate was lowest in 2020 (80.6%) and lay between 86.0% and 88.4% from 2021 to 2024, so no year reached band A. The release rate barely differed by district type (86.5% to 86.7%), but timing did. Quarterly releases reached DHDs a mean of 57 days after the scheduled date: 47 days in urban, 56 in peri-urban and 69 in rural districts. Releases to facilities followed the same gradient, at 45, 58 and 72 days.

Facilities recovered 85.3% of the value of their NHIS claims. The rate climbed from 81.2% in 2020 to a peak of 90.0% in 2023, then dropped to 86.1% in 2024. Deductions at vetting took 7.3% to 7.8% of claimed value each year, and reimbursement differed little between district types (85.1% to 85.4%). Across 1,288 claim batches, payment took a mean of 86 days and a median of 85 days (interquartile range 74 to 95). No batch was paid within 28 days, and 66.3% were paid within 90 days. The lag was shortest in 2023, with a mean of 77 days, the year the NHIA announced a return to the 90-day window (26), and rose again to 88 days in 2024.

The lag differed most by district type (Figure 2). Urban batches took 73 days on average, and all were paid within 90 days. Peri-urban batches took 82 days. Rural batches took 100 days, and only 26.1% of them arrived within 90 days.

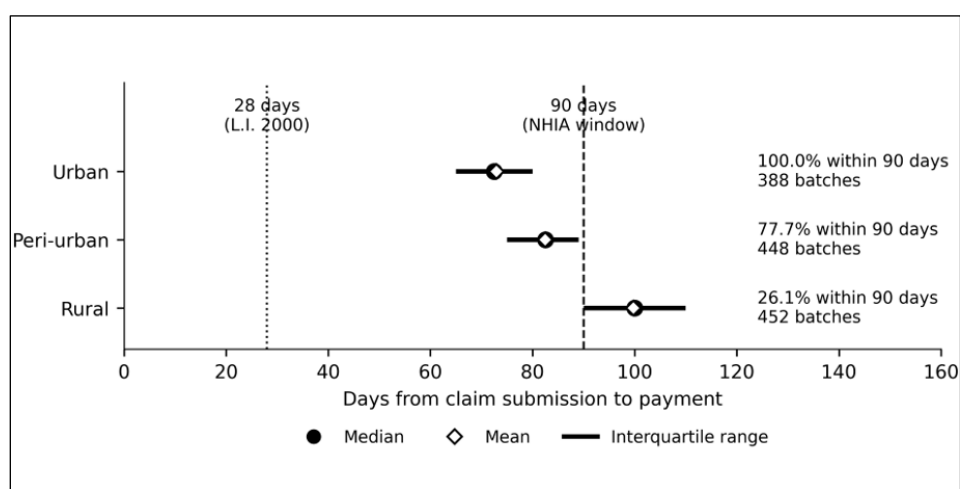


Figure 2: Days from NHIS claim submission to payment for facility claim batches, by district type, 2020 to 2024. Dots show medians, diamonds means and bars interquartile ranges. The dotted line marks the 28-day limit of L.I. 2000 and the dashed line the 90-day arrears window of the National Health Insurance Authority. Source: claim batch logs of 36 facilities (1,288 batches).

Twenty-two transcripts mentioned late claims, and the same number mentioned buying on credit or running out of stock.

"Payment comes after about 3 months, and with deductions. They cut, and the explanation is just a code. We do not understand what we did wrong. ... You cannot predict. One month they pay two months together, then nothing for a while." (Facility manager, rural district; KII-FM-R-01, T028)

"When we have not been paid for three or four months, the stock runs down. You can almost predict it." (Facility manager, rural district; KII-FM-R-02, T026)

The NHIS managers accepted that payments were late. Four of the six, however, argued that facilities shared the blame, through late submission, incomplete forms and medicines that did not fit the recorded diagnosis.

"For example, a facility will claim a drug that does not match the diagnosis, or the dosage is wrong. Vetting will cut it." (NHIS district manager, urban district; KII-NHIS-U-01, T034)

Both sides agreed that deductions were poorly explained. Weak audit and missing receipts were raised in 27 transcripts, reports sent upward without feedback in 16, and the absence of any community voice on health money in 21. In the survey, 207 of 524 women who paid for RMNCH care never received a receipt (weighted 39.6%; 95% confidence interval 34.7 to 44.8), so most payments by women could not be traced afterwards.

3.5 Sustainability of Each Model

Table 4: Sustainability matrix: rating of each financing model against five criteria, with adequacy in real terms

Financing model	Adequacy (real change)	Financial protection	Equity of access	Efficiency	Sustainability
Government budget	Weak (1) fell 25.2%	Moderate (2) ^a	Moderate (2) ^a	Moderate (2)	Moderate (2)
NHIS (including free maternal care)	Weak (1) fell 15.0%	Moderate (2)	Weak (1)	Moderate (2)	Strong (3)
Donor funding	Weak (1) fell 73.2%	Moderate (2)	Strong (3) ^b	Moderate (2) ^a	Weak (1)
Facility internally generated funds	Weak (1) fell 23.2%	Weak (1) ^a	Weak (1) ^a	Not applicable	Moderate (2)
Community contributions	Weak (1) fell 41.4%	Moderate (2) ^a	Moderate (2) ^a	Not applicable	Moderate (2)
Out-of-pocket payments	Weak (1) ^c fell 25.7%	Moderate (2)	Weak (1)	Not applicable	Moderate (2)

Ratings follow the rules in Section 2.9. Adequacy is the real change in each model's contribution from 2020 to 2024 in constant 2020 cedis: government (DHD releases), NHIS (facility reimbursements), donor (DHD partner funds), IGF (facility IGF), community (facility contributions) and out-of-pocket (cash RMNCH fees at facilities). With nominal amounts, every model except donor funding would have been rated strong on adequacy. Financial protection and equity of access ratings draw on the household survey reported in the companion paper. Efficiency does not apply where funds pass through no release or claims process.

^a Rated from interview and records evidence because women could not be classified by this model. ^b Based on small numbers of women in the poorest and richest quintiles. ^c A falling out-of-pocket contribution is desirable; the rating describes the size of the contribution, not its desirability.

Table 4 shows that, in real terms, all six models were rated weak on adequacy. With nominal amounts, five of the six would have been rated strong. The NHIS alone was rated strong on sustainability, as a compulsory pool backed by law whose average lag stayed inside 90 days. Its efficiency rating was moderate, held back by the reimbursement rate and the lag, and its equity rating was weak. The government budget scored moderate on four criteria: it is compulsory domestic revenue, but its releases came to 86.6% of allocations and arrived 57 days late on average. Donor funding was weak on sustainability, and none of the six reached a strong rating for efficiency or financial protection. The ratings are linked. Payment lag holds down the NHIS efficiency rating, and IGF and out-of-pocket payment were rated weak on equity largely because of the same lag, which pushes facilities onto their own funds and women onto the market.

Of the nine comparisons in the joint display, four showed convergence, three were complementary and two diverged. Convergence was clearest for the changing financing mix and for claims delays, where informants' 'two to four months' matched the measured mean of 86 days. On pooling and accountability, interviews explained what the records could not show. One divergence came from a partner representative who argued that withdrawal had done little harm, because government had taken over vaccine co-financing; other informants described delivery kits and outreach that ended with partner support. Three comparisons concern financial protection and are reported in the companion paper. Informants in 22 transcripts proposed predictable public funds, including a ring-fenced share of the DACF, electronic claims with a fixed monthly NHIS payment calendar, continuous cover for mothers and young children, and a voice in budgeting.

"Pay us every month, even small. Predictable money is better than big money that comes once." (Facility manager, peri-urban district; KII-FM-P-01, T048)

4 DISCUSSION

4.1 Domestic Shift and Real Adequacy

Between 2020 and 2024, RMNCH financing in these districts became more domestic and more pooled. The NHIS grew to almost three fifths of facility financing as partner funds fell away, a direction that matches donor transition in other middle-income countries (14). Two cautions apply. First, national accounts, like district budgets, track growth in nominal cedis (8). When consumer prices rise about two and a half times in five years, nominal growth is a poor guide: facilities had about a quarter less RMNCH money in 2024 than in 2020. The rising NHIS share reflects a smaller real

decline in NHIS money than in other money, not real growth. Payment rates fixed in cedis lose value unless they are revised, and the NHIA began reviewing its medicine tariffs in 2024, citing economic conditions (32). Second, partner funds at DHDs fell by almost three quarters in real terms. Stakeholders in Ghana have warned that transition without a plan leaves gaps in the very activities partners paid for (13), and our informants described delivery kits and outreach that stopped when partner support ended.

4.2 Purchasing as the Weakest Link

Purchasing was where the system failed most clearly. A mean lag of 86 days is three times the four-week limit in L.I. 2000, and in five years no batch met that limit. Earlier work in Ghana described long reimbursement delays, unclear vetting and their effect on services (9), and official statements recorded arrears of several months in 2022 and a return to the 90-day window only in mid-2023 (11,26). Our records show that the 2023 improvement did not last. The problem is not confined to Ghana. Kenya's free maternity programme, run through its national insurance fund, met claim processing problems and reimbursement rates that providers judged too low (33), and free care in Burkina Faso, Burundi and Niger worked only after budget rules were changed so that funds could reach primary care facilities directly (34). Our interviews point to how late payment reaches patients: facilities run down stock, buy on credit or ask women to buy items outside. Such payments despite free maternal care have been documented in Northern Ghana before (6,7,10), and the companion paper measures them in these districts (18).

4.3 Unequal Delays

Release and reimbursement rates were almost the same in every district type, but rural facilities waited about four weeks longer for claims and rural directorates about three weeks longer for releases. Only a quarter of rural claim batches were paid within the NHIA's own 90-day window. Rural facilities also held the smallest buffer, with IGF about a fifth of the urban total, so late payment fell hardest where facilities had least to fall back on. Mixing methods mattered here: the rates alone suggested a system that treated districts alike, while the timing data and the interviews showed that it did not. Our data cannot show whether the rural gap arises at submission, vetting or payment, and NHIS managers attributed part of it to late or incorrect claims. Either explanation points to the same response: claims capacity and electronic submission at rural health centres and CHPS compounds, with payment performance reported separately for rural facilities.

4.4 Fragmentation and Accountability

Fragmented pools and flows undermine efficiency and equity, and policy should look at the system rather than at single schemes (1). In these districts six models ran side by side with no single statement of RMNCH spending. A quarter of DHD partner cash was still off budget in 2024, vetting cuts arrived as codes that facilities could not interpret, and four in ten women who paid never received a receipt. Facility IGF, often discussed as a source of funds, was mostly NHIS money, with cash fees making up about one seventh of it. Adding IGF to NHIS reimbursements, or DHD releases to facility receipts, would inflate totals and distort shares, so district analyses should keep levels separate and treat IGF as an account.

4.5 Strengths and Limitations

The records census was nearly complete, levels were analysed separately, amounts were converted to constant prices, rating rules were set before analysis and anchored to external benchmarks, and findings were triangulated across records, interviews and focus groups. The study also has limitations. The all-items CPI may not track the prices of medicines and supplies, although a second deflator gave the same result. The interviews lasted 13 to 15 minutes and followed a structured guide; their value lies in the recurrence of themes across four roles and three district types, and in their agreement with the records, rather than in depth. Because the interviews came before the records review, the quantitative results could not be used to probe informants. Salaries are paid centrally, and partner funds paid directly to vendors were not always recorded at DHDs, so the government and donor shares may be understated. The equity rating for donor funding rests on few women at the two ends of the wealth distribution. Finally, the districts were chosen purposively, so the findings describe district types rather than the whole region, and the records show funds received rather than the full cost of care.

5 CONCLUSION

RMNCH financing in six districts of Northern Ghana became more domestic and more dependent on a single national pool between 2020 and 2024. In real terms, however, it shrank, and the money that did arrive came late and unevenly. Purchasing, not revenue raising, was the weakest link. A predictable NHIS payment schedule with a rural target would improve efficiency, protect facility stocks and reduce the pressure on women to pay. These records provide a baseline against which the 2025 levy reform and the loss of United States funding can be judged.

Recommendations

- The NHIA should pay vetted claims on a fixed monthly calendar and publish district payment performance, with rural facilities reported separately. Progress would show in the share of rural batches paid within 90 days (26.1% at baseline) and within 28 days (0%).
- The Ministry of Finance should pass levy receipts to the National Health Insurance Fund on a fixed timetable, so that removing the cap leads to prompt payment rather than larger arrears.
- The NHIA and the Ghana Health Service should extend electronic claims, with training, to every health centre and CHPS compound.
- The Ministries of Finance and Health should release goods and services funds on schedule each quarter and weight allocations towards rural need, against baselines of 86.6% and 57 days.
- District Assemblies should reserve a share of the DACF for maternal and child health and pay it directly to DHDs, and development partners should bring their funds on budget with written transition plans (17).
- DHDs, NHIS district offices and Assemblies should jointly publish a quarterly account of all RMNCH funds received, in real as well as nominal terms.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS*Acknowledgments*

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Disclosure of conflict of interest

The first author is employed by the Clinton Health Access Initiative (CHAI) Ghana. CHAI did not fund the study and had no role in its design, data collection, analysis, interpretation or the decision to publish. The other authors declare no conflicts of interest.

Statement of ethical approval

The key informant interviews and focus group discussions were approved by the Ghana Health Service Ethics Review Committee (GHS-ERC:017/12/19-23). The records review and household survey were approved by the University of Port Harcourt Research Ethics Committee (UPH/R&D/REC/EXEC/260).

Statement of informed consent

Written informed consent was obtained from all participants. Those who could not write gave a thumbprint in the presence of an independent witness. Separate consent was obtained for audio recording.

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