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Using GIS data to improve ITN campaign coverage



AMP monthly technical session

October 2026

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–French

–Portuguese

If participants want to speak or react, **please do so in the language of the channel you are on**.

–Eg. if you are on the French channel following the meeting, you only speak French if you want to react

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Français :
Instructions pour la traduction

Cliquez sur l'icône « Interprétation » dans la barre d'outils Zoom en bas de votre écran (icône globe 🌐).

Sélectionnez la langue de votre choix :

– Désactivé : Anglais

– Français

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Si vous souhaitez prendre la parole ou réagir, veuillez le faire dans la langue du canal sur lequel vous êtes.

– Par exemple, si vous êtes sur le canal français, vous devez parler uniquement en français pour réagir.

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Instruções para tradução

Clique no ícone "Interpretação" na barra de ferramentas do Zoom na parte inferior da tela (ícone de globo 🌐).

Selecione o idioma de sua preferência:

– Desligado: Inglês

– Francês

– Português

Se os participantes quiserem falar ou reagir, por favor, façam-no no idioma do canal em que estão.

– Por exemplo, se estiver no canal em francês, fale apenas em francês para reagir.

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Housekeeping Notes

Mute your microphone when not speaking to minimize background noise

Turn off your video to optimize connection quality for all participants

Chat function: For quick questions or comments, please use the chat

Recording notice: This meeting will be recorded. The recordings will be made available shortly after the session on the Alliance for Malaria Prevention website and accessible to its visitors for the purpose of disseminating AMP technical guidance to relevant stakeholders. If you have any concerns kindly reach out to Orianne

Technical support

If you experience issues, message Orianne Berraud in the chat

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October 2026

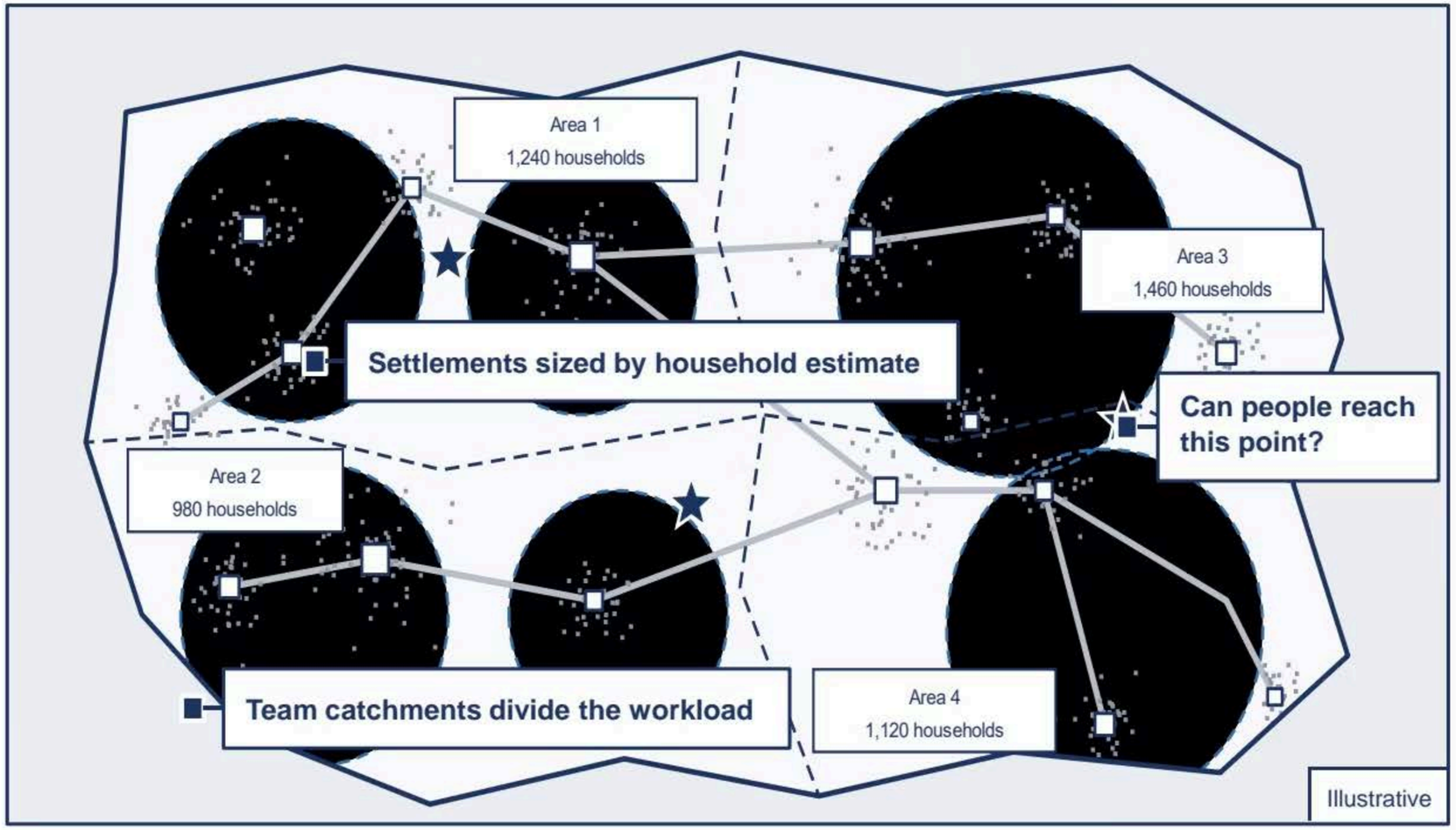
What do we mean by GIS data?

- GIS connects information to a geographic location, allowing us to understand where people, activities and gaps are.
- In an ITN campaign, this can include the location of households, settlements, campaign teams, distribution points and campaign activities.
- Digitalized campaigns increasingly capture this geographic information as part of routine campaign activities.
- This creates an opportunity to use GIS data beyond mapping and reporting to support campaign planning, implementation and decision-making.

Flow of GIS data in the campaign cycle

Microplanning	Household registration	Distribution	Post-campaign
Settlement lists Boundaries Population estimates Team catchment area Distribution point locations Roads / accessibility	Household GPS coordinates Household location Settlement/ community Registration status Enumerator / team location	Household location Distribution records linked to households Distribution activity / movement	Coverage by geographic area Geographic gaps / clusters Potential mop-up areas Comparison with microplan Updated settlement / household information

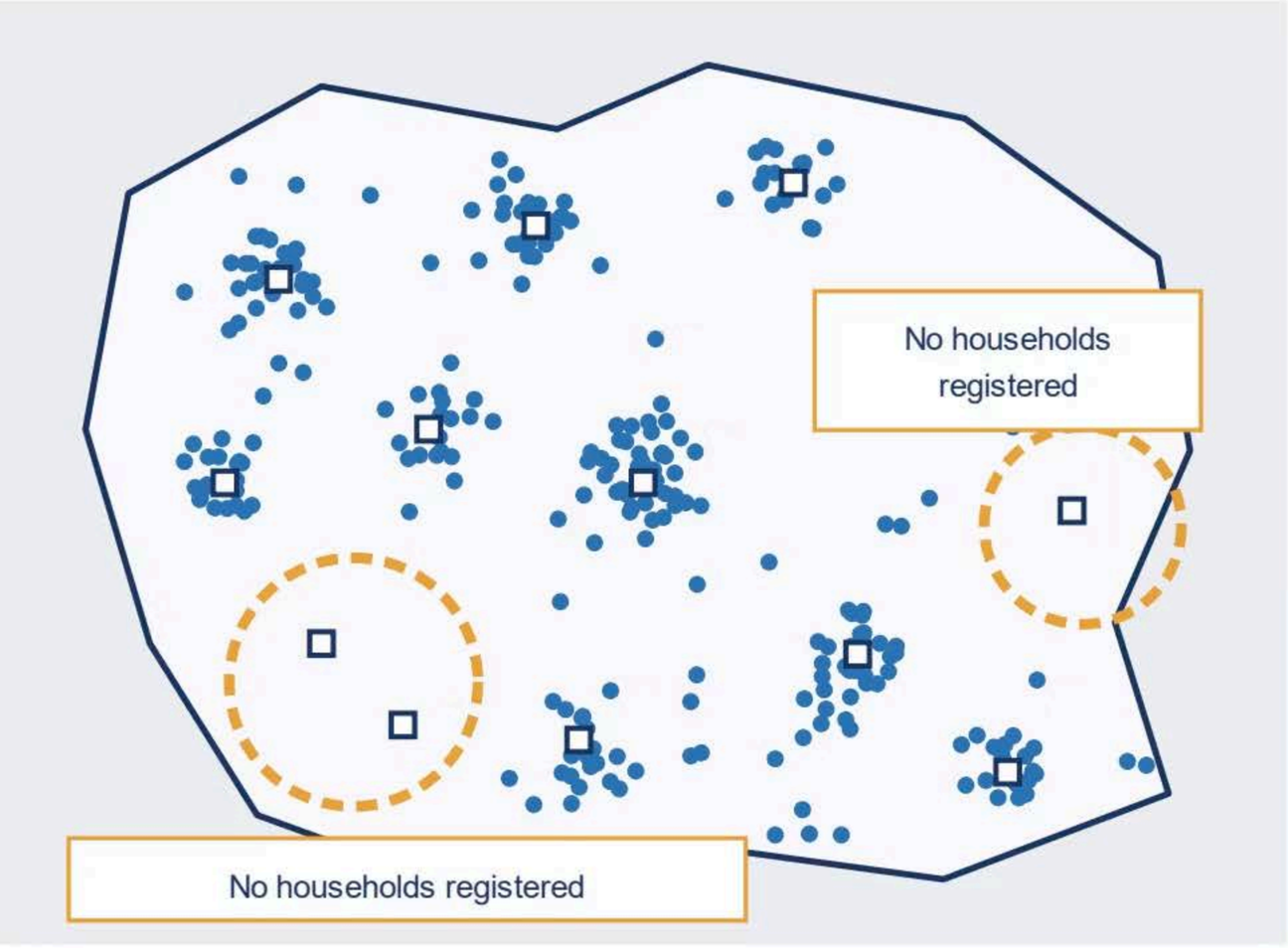
Using GIS for ITN campaign microplanning



- Where are people? settlements, dispersed/remote populations
- How many? population/households and expected workload
- How should we organize? team allocation and resource allocation
- Where should distribution points sit so people can actually reach them?

Settlement identification → Population estimation → Workload allocation → Team planning → Resource allocation

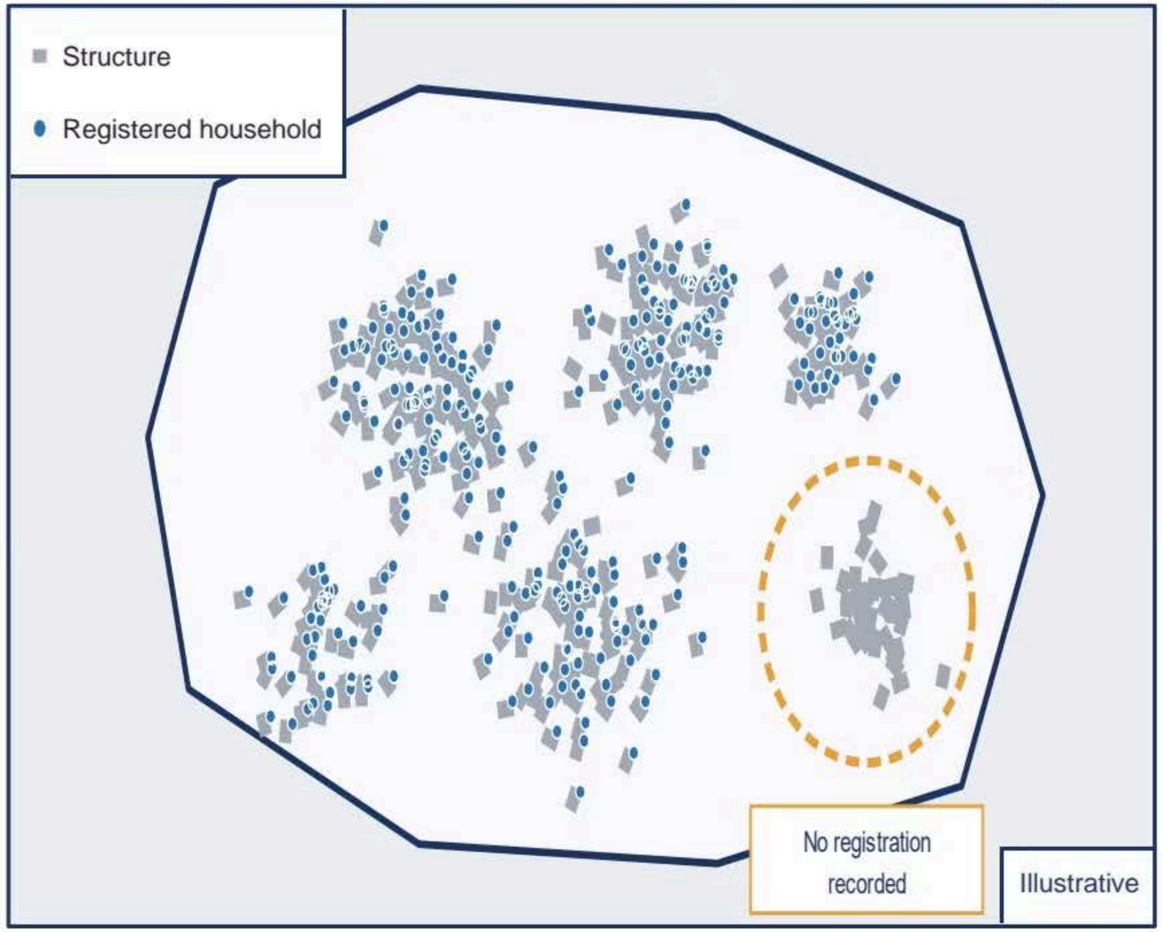
Using GIS during household registration 1/2



- Which communities has nobody visited?
- Are there households within a community that have not yet been registered?
- Are teams following their assigned areas?
- Are there unusual concentrations or gaps in household locations?
- Are households being registered outside the planned area?

Using GIS during household registration 1/2

A. Missed households within a community

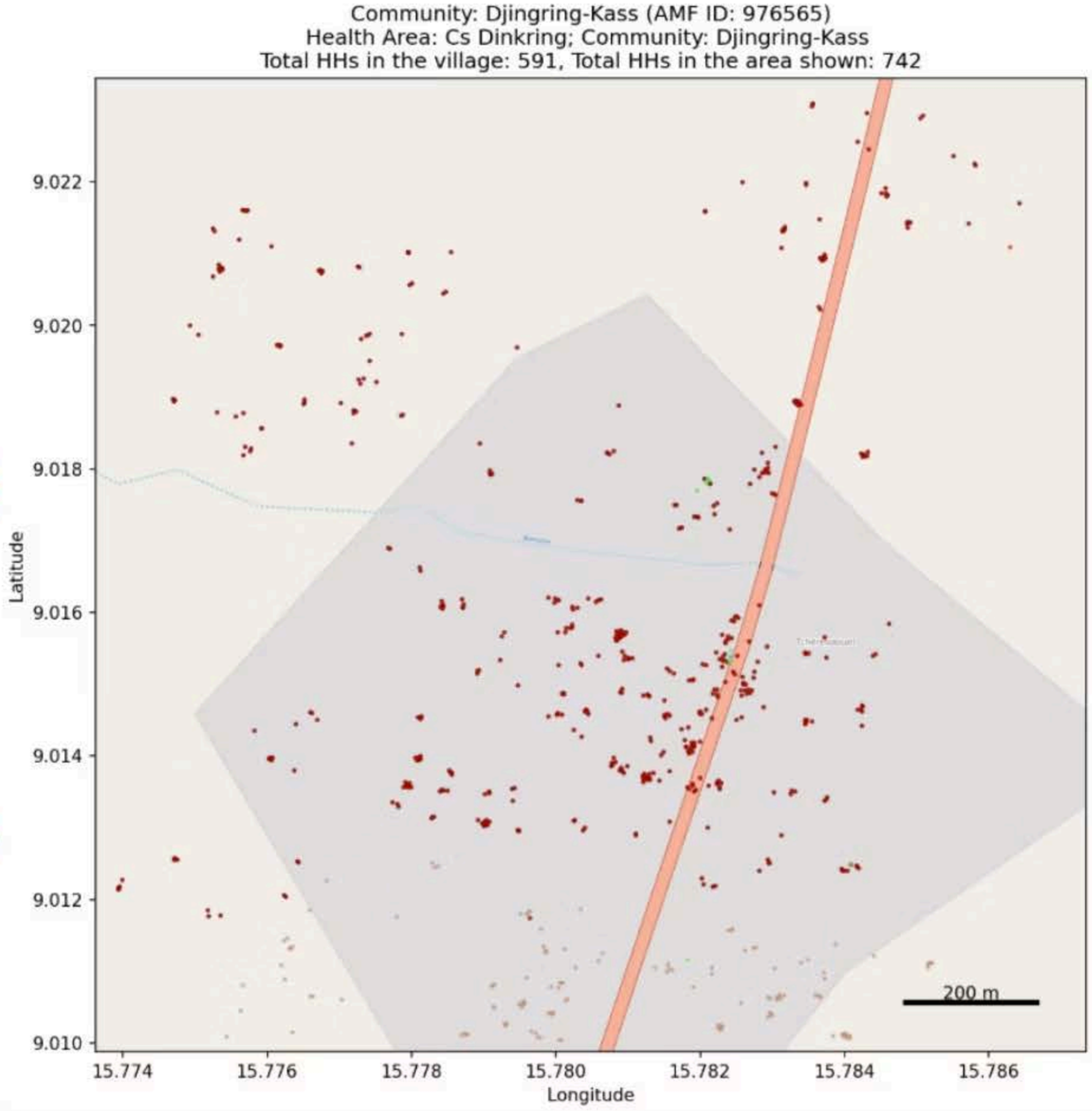


A settlement is rarely either reached or missed. Most are partly reached.

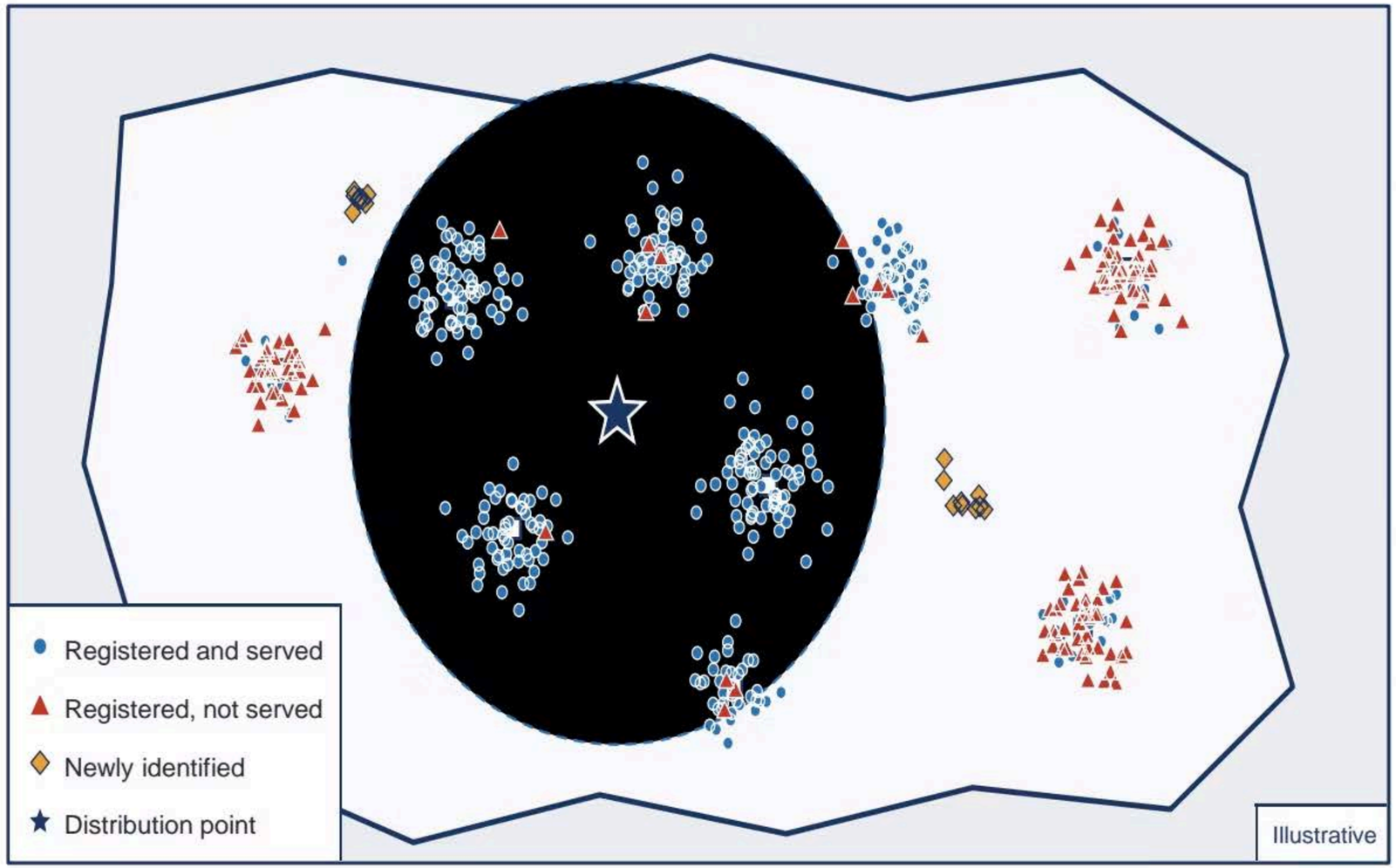
B. How campaign workers are moving



You are doing a door to door ITN distribution and your GIS data shows this. What do you think is wrong here and what actions should be taken?

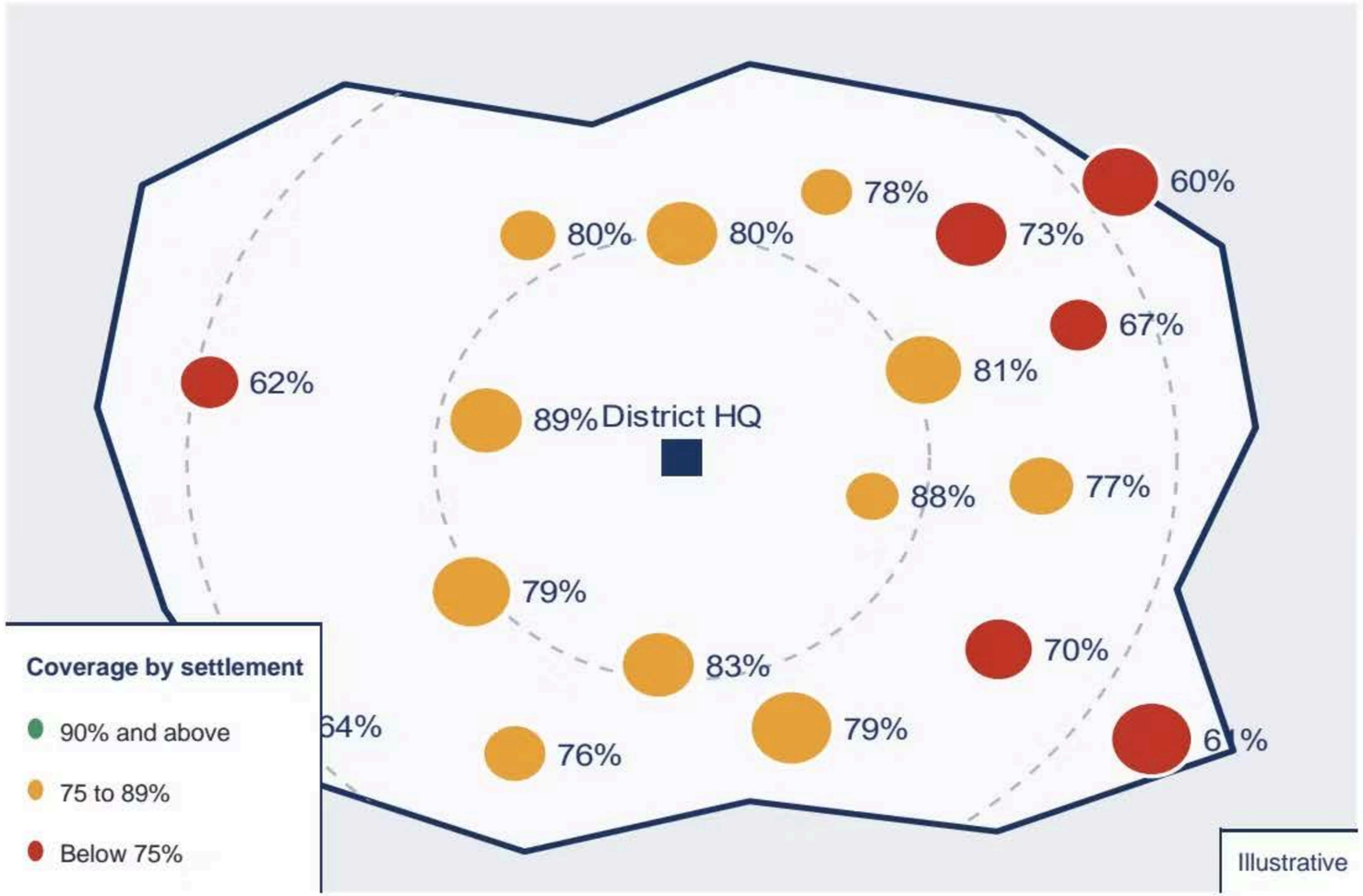


Using GIS data during ITN distribution



- Which registered households received ITNs?
- Which households remain unreached?
- Are there communities with geographic clusters of low coverage?
- Where should teams return or investigate?
- Are distribution teams reaching their assigned areas?

Post-campaign GIS data analysis & reeporting



- Where did we achieve coverage?
- Where are gaps concentrated?
- Which areas may warrant mop up or further investigation?
- What can the next microplan learn from the geographic pattern?

UTILIZAÇÃO DE DADOS SIG E GPS PARA MELHORAR A COBERTURA DA CAMPANHA DE REDES MOSQUITEIRAS TRATADAS COM INSETICIDA

Guiné-Bissau



CAMPANHA NACIONAL MII, 2026

Bissau, 28/09/2026

PLANO DE APRESENTAÇÃO

1. Contexto
2. Abordagem
3. Acompanhamento dos agregados familiares
4. Resultados
5. Desafios e lições aprendidas

CONTEXTO (1/3)

O Paludismo continua a constituir um problema prioritário de saúde pública na Guiné-Bissau, afetando principalmente crianças menores de cinco anos e grávidas.

A distribuição universal de MII constitui uma das estratégias prioritárias do Plano Estratégico Nacional de Luta Contra o Paludismo 2026-2030.

A campanha foi implementada pelo MINSAP atraves de PNLP com apoio tecnico e financeiro de Fundo Global atraves do PNUD.

CONTEXTO (2/3)

A Guiné-Bissau já realizou 6 campanhas nacionais de distribuição universal (2011,2014, 2017, 2020 e 2023), contribuindo significativamente para o aumento da cobertura e utilização das redes mosquiteiras.

A CMII 2026 visou consolidar estes ganhos através da utilização de tecnologias digitais que permitam melhorar a qualidade dos dados, a rastreabilidade das operações e a monitoria em tempo real. A digitalização abrangeu todas as fases da campanha, incluindo a atualização da população, entrega de senhas, gestão logística, distribuição e seguimento & avaliação.

CONTEXTO (3/3)

Para a digitalização da campanha foi contratada uma organização chamada Thrium que trabalhou no processo de recenseamento geral da população e habitação (RGPH4);

A empresa confecionou um aplicativo chamada CMILDA e uma sistema de acompanhamento e recolha (SAR);

A campanha decorreu em duas fases, a primeira com 10 regiões e a segundo com uma unica região que é a capital (SAB).

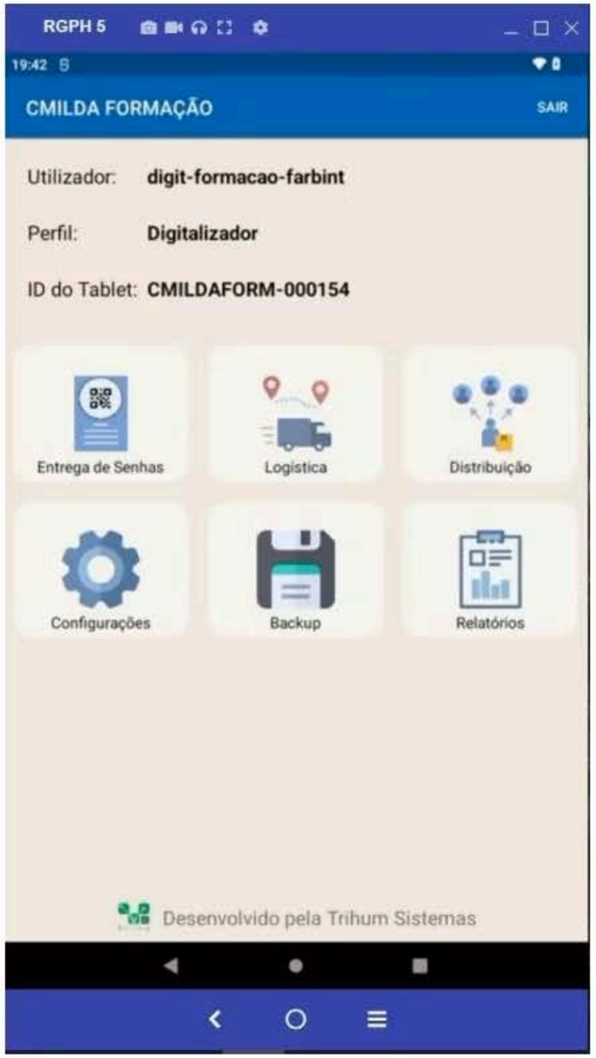
ABORDAGEM (1/10)

O aplicativo C-MILDA foi desenvolvido para apoiar de forma integrada as operações de campo na Campanha Nacional de Distribuição Massiva de Mosquiteiros na Guiné-Bissau, permitindo o planeamento, execução, monitoramento e controle das atividades em tempo real, com funcionamento offline e sincronização posterior.

O aplicativo CMILDA foi utilizado pelos os seguintes:

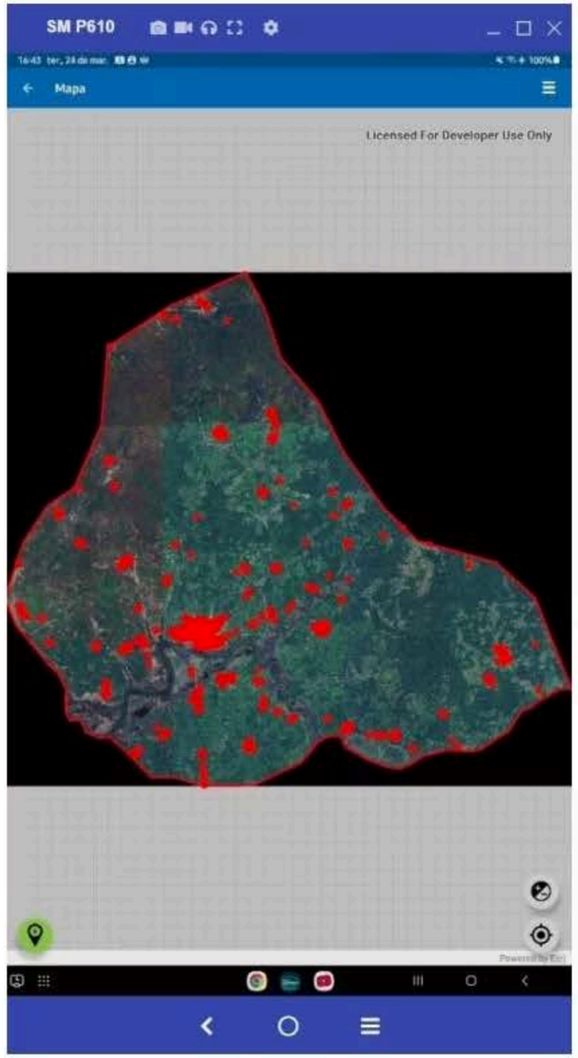
- Coordenadores e Gestores
- Supervisores
- Agentes de Saúde Comunitários (ASC)
- Responsáveis Logísticos

ABORDAGEM (2/10)



A plataforma C-MILDA possui perfis de acesso definidos para garantir segurança, organização operacional e controle das atividades em campo e logística. Cada perfil possui responsabilidades específicas e níveis de acesso distintos.
Ao usuário com perfil de digitalizador (DIGIT), é permitido o acesso aos módulos de Entrega de Senhas e Distribuição. Ao usuário com o perfil de gestão de logística (LOGIST) é permitido o acesso ao módulo de logística. Para o usuário com perfil de Supervisão (SUP) é permitido o acesso aos 3 módulos, com funcionalidades internas específicas.

ABORDAGEM (3/10)

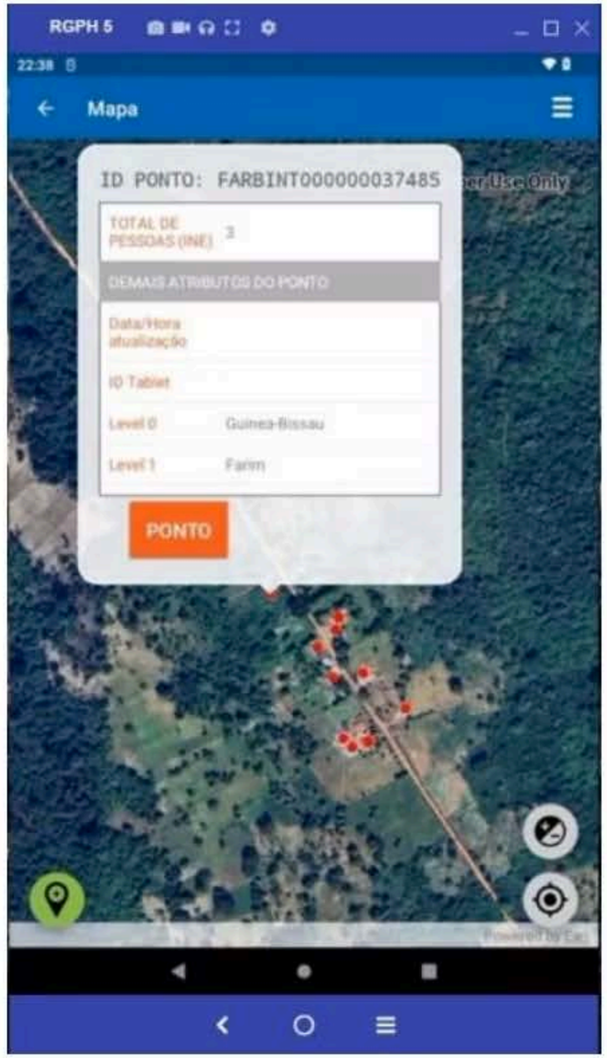


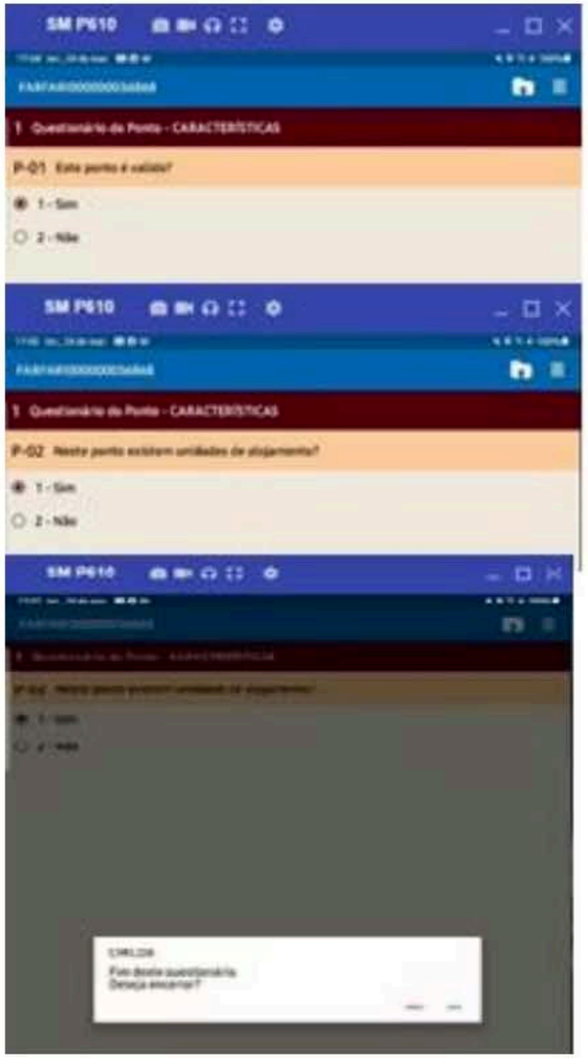
Modulo Entrega de senhas

O mapa oferece diversas funcionalidades para auxiliar o trabalho de campo:

- Zoom para detalhamento
- Exibir ID dos pontos para identificar cada local
- Trocar mapa de fundo (satélite, street, topográfico)
- Pontos trabalhados para acompanhamento do progresso

ABORDAGEM (4/10)

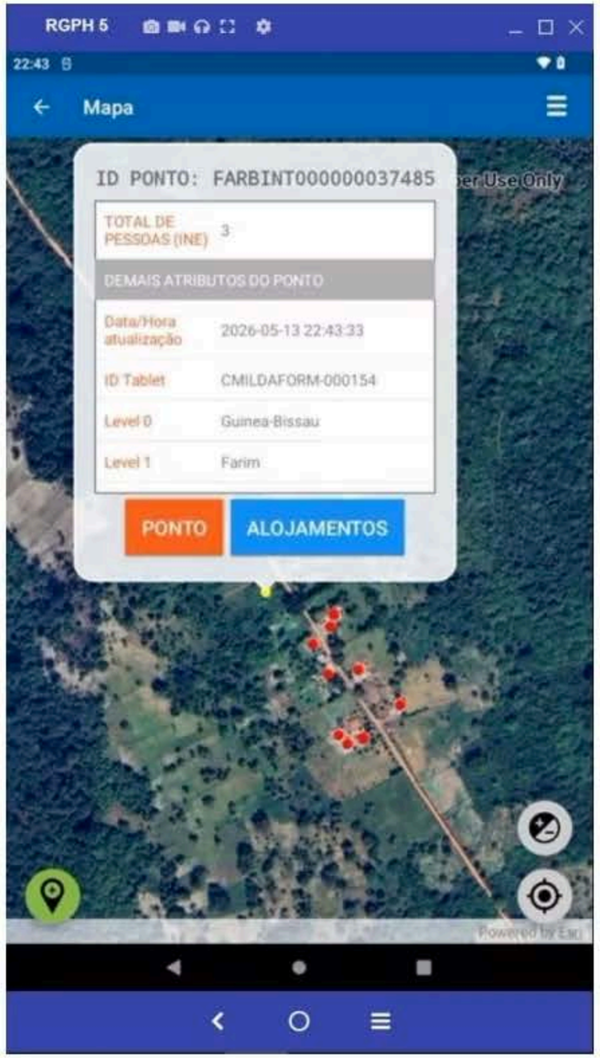




Modulo Entrega de senhas

Ao selecionar um ponto no mapa, o utilizador pode iniciar o questionário para caracterizar o local.

ABORDAGEM (5/10)

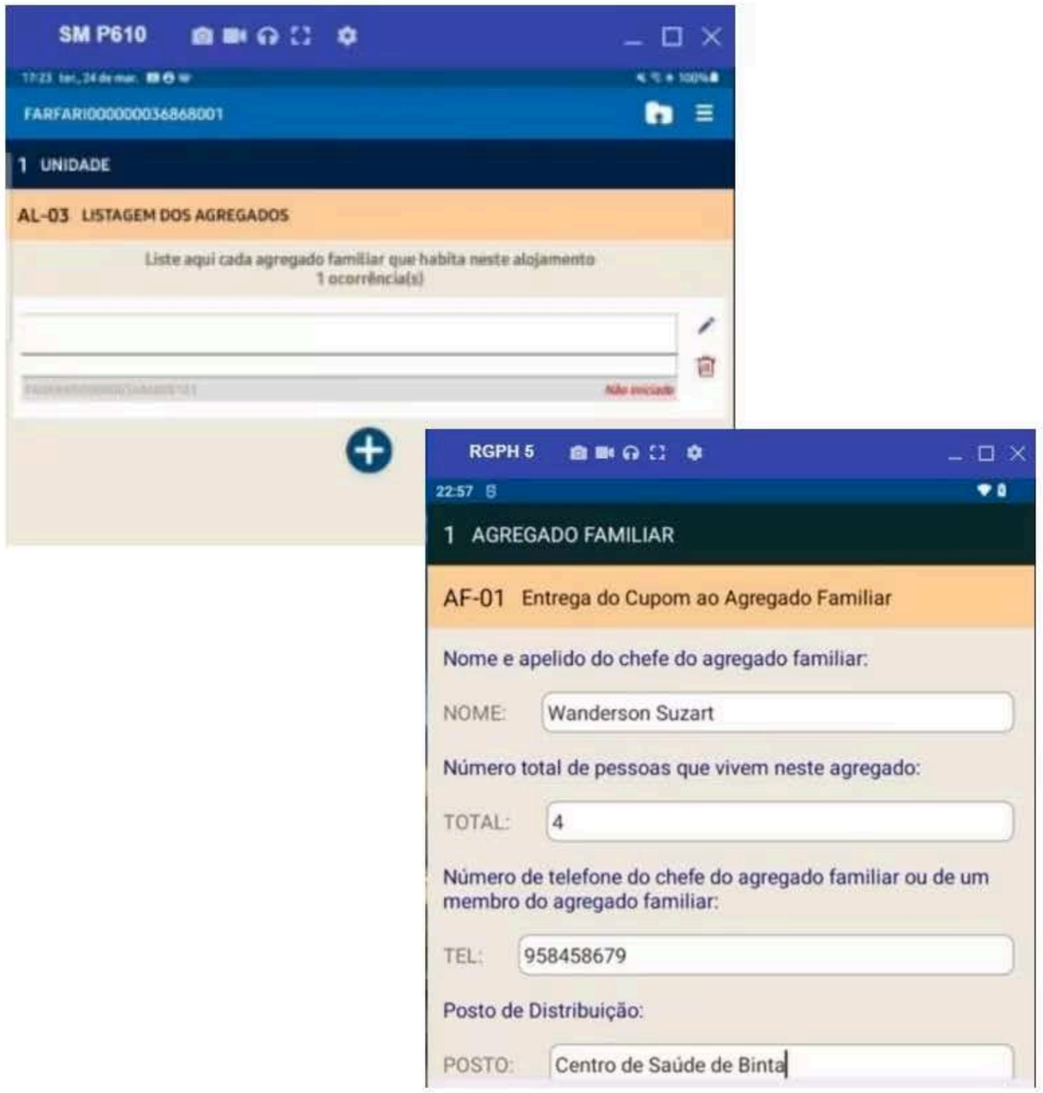




Modulo Entrega de senhas

Após validar o ponto, o utilizador registra as unidades de alojamento existentes. Neste momento, o ponto do ID passa a ficar amarelo (pendente) e aparece a opção “Alojamento” para preenchimento do ponto trabalhado.

ABORDAGEM (6/10)



Modulo Entrega de senhas

Após o cadastro do agregado familiar responsável e o escaneamento de senha, o sistema exibirá uma mensagem de alerta pedindo para o digitalizador verificar se todos os agregados familiares existentes no alojamento foram registrados.

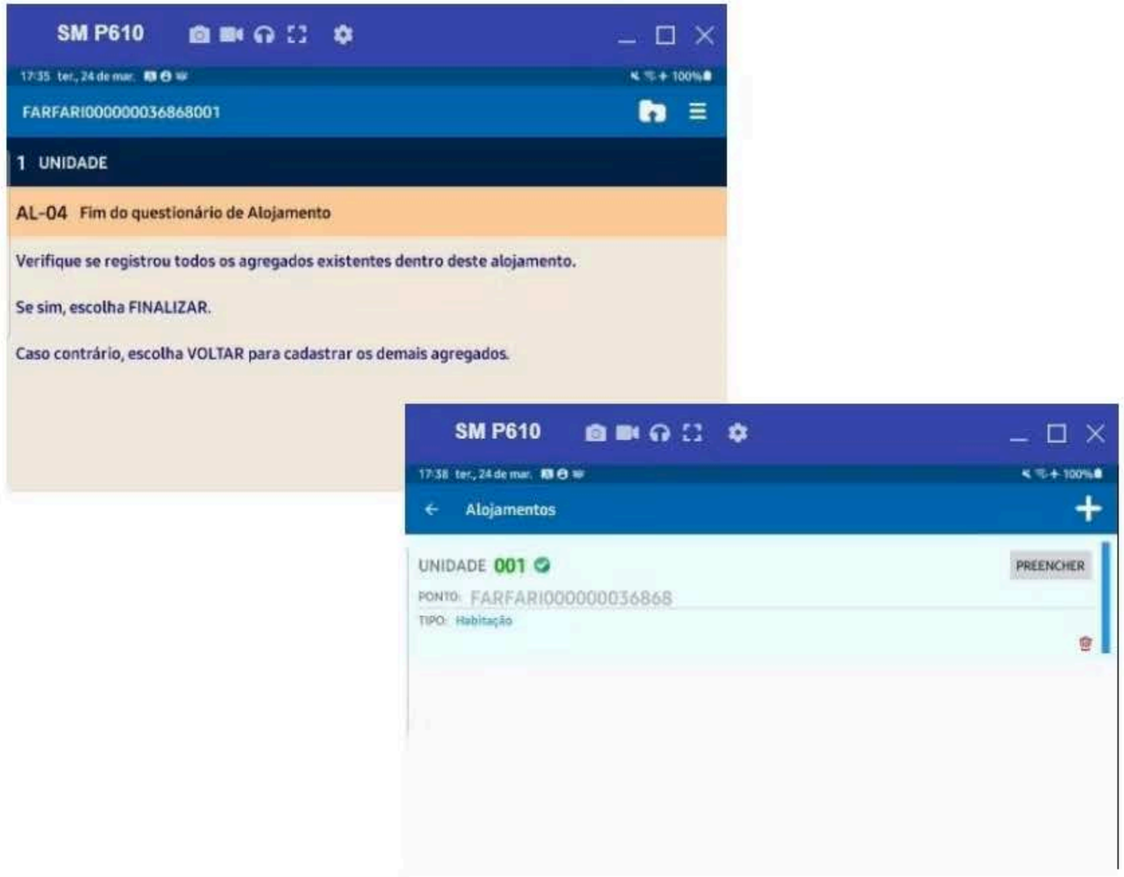
ABORDAGEM (7/10)



Modulo Entrega de senhas

A senha será entregue pelos ASC/Activistas recenseadores ao chefe do agregado de família ou ao seu representante.

ABORDAGEM (8/10)



Modulo Entrega de senhas

Após registrar todos os alojamentos e agregados, o ponto é marcado como trabalhado (verde no mapa). Ainda é possível acompanhar o desempenho de trabalho na opção “Listagem de Entregas” no menu superior direito

ABORDAGEM (9/10)

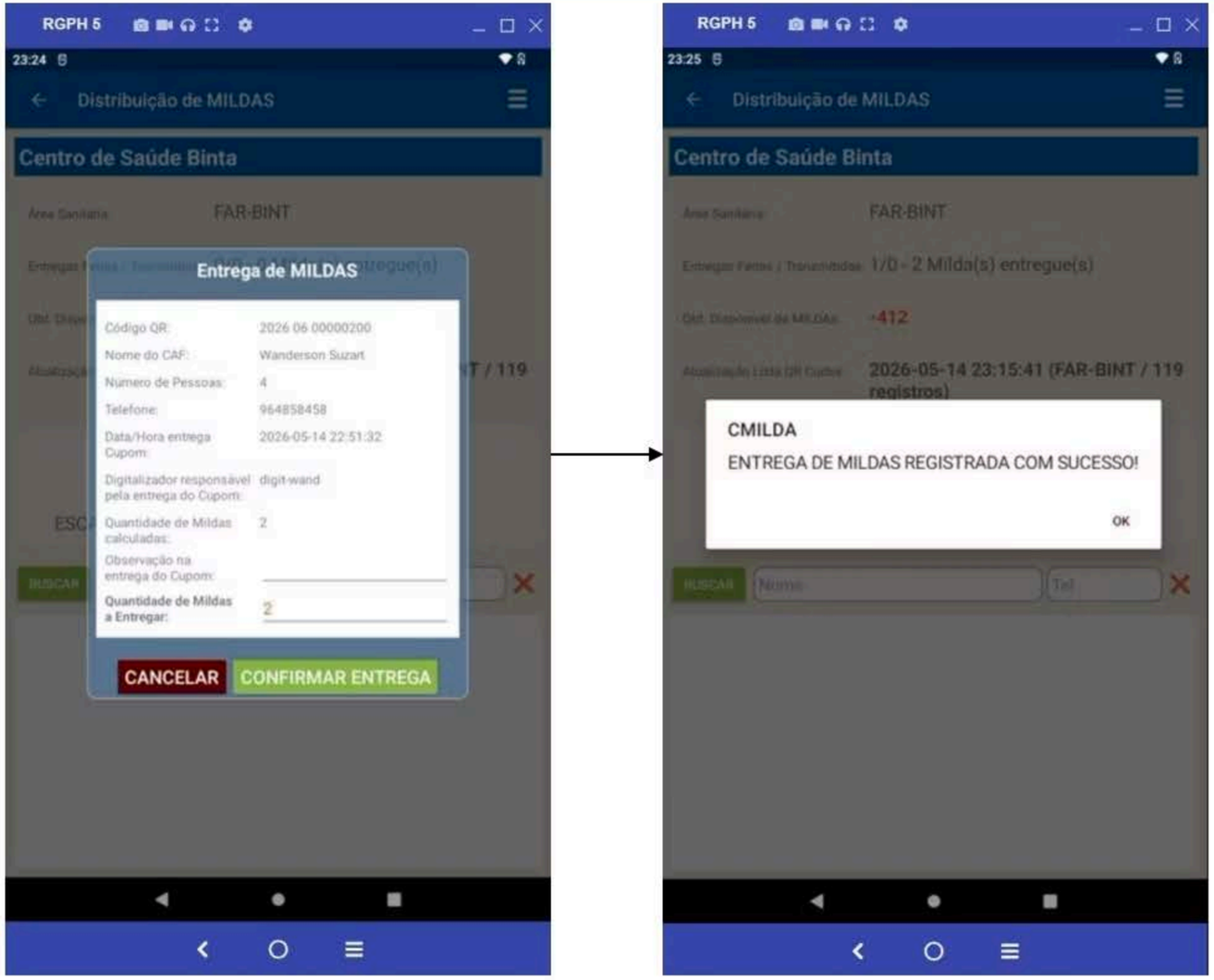




Modulo Distribuição

O utilizador acessa a tela de registro de entregas com opções para ESCANEAR QR CODE ou ESCREVER, além de campo de busca por nome ou ID do beneficiário, exibindo o estoque disponível de MILDAS. Para iniciar o processo de distribuição em um posto de distribuição, o utilizador precisará "Atualizar a Listagem de QR Codes no menu superior. Após esse trâmite, o utilizador poderá iniciar seu trabalho mesmo sem acesso à Internet.

ABORDAGEM (10/10)



Modulo Distribuição

O utilizador deve, preferencialmente, escanear o QR code da senha entregue ao agregado familiar durante o Entrega de Senhas

Após inserir a quantidade a entregar, o utilizador deve confirmar a entrega. O sistema registra a operação e atualiza o estoque do centro automaticamente. Eventualmente, o utilizador deverá "Transmitir Entregas Feitas" no posto de distribuição com conexão com a Internet.

ACOMPANHAMENTO DOS AGREGADOS FAMILIARES (1/2)

Entrega de Senhas utiliza um sistema de cores para identificar o status de cada ponto de recenseamento. A compreensão desta legenda é fundamental para o planeamento e execução das atividades de campo.

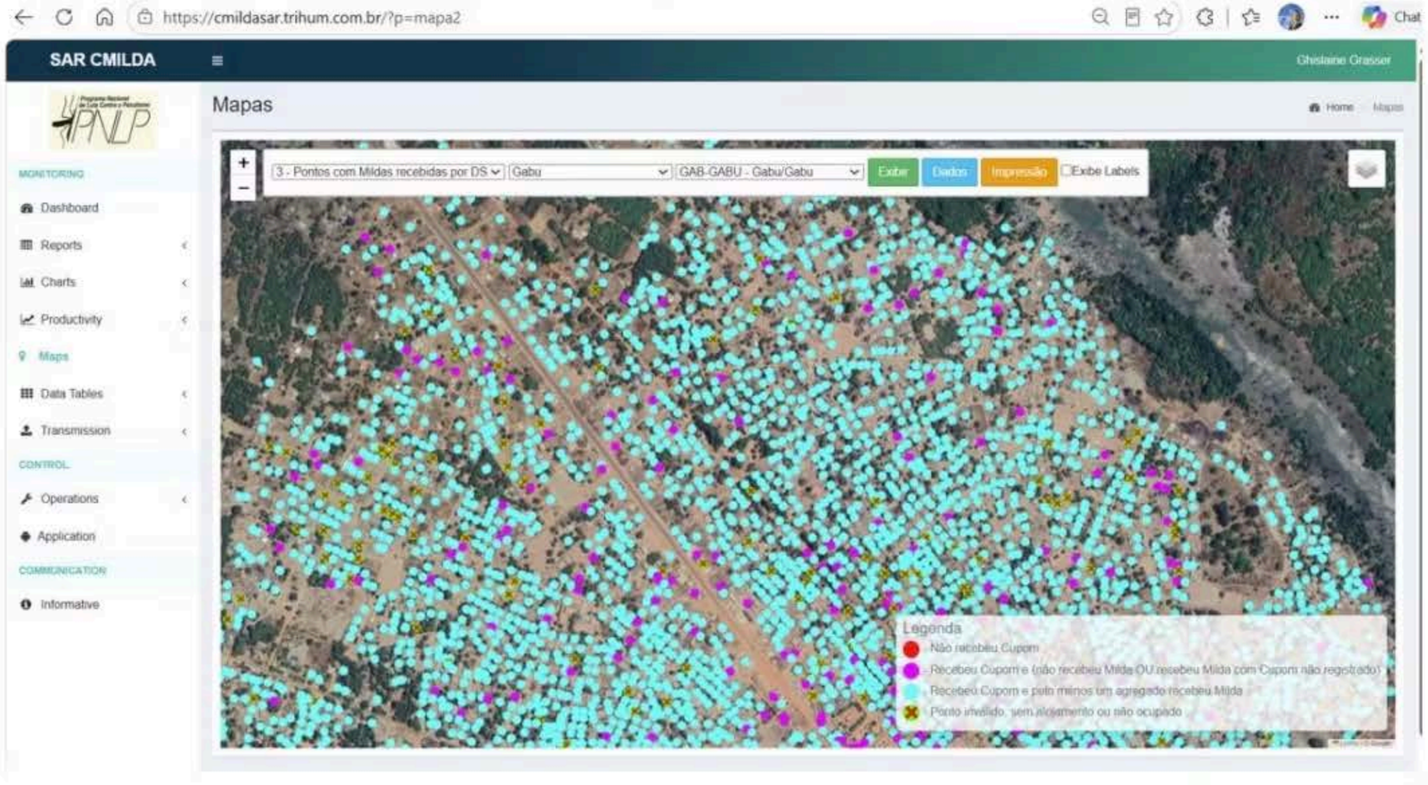


Visão geral do mapa do Distrito Sanitário, exibindo diferentes pontos coloridos que indicam o status de trabalho de cada localidade.



ACOMPANHAMENTO DOS AGREGADOS FAMILIARES (2/2)

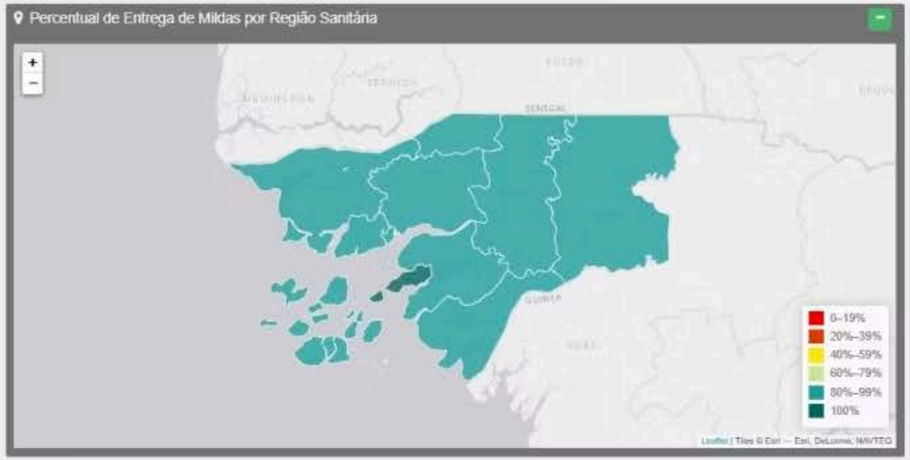
Distribuição utiliza um sistema de cores para identificar o status de cada ponto de recenseamento. A compreensão desta legenda é fundamental para o planejamento e execução das atividades de campo.

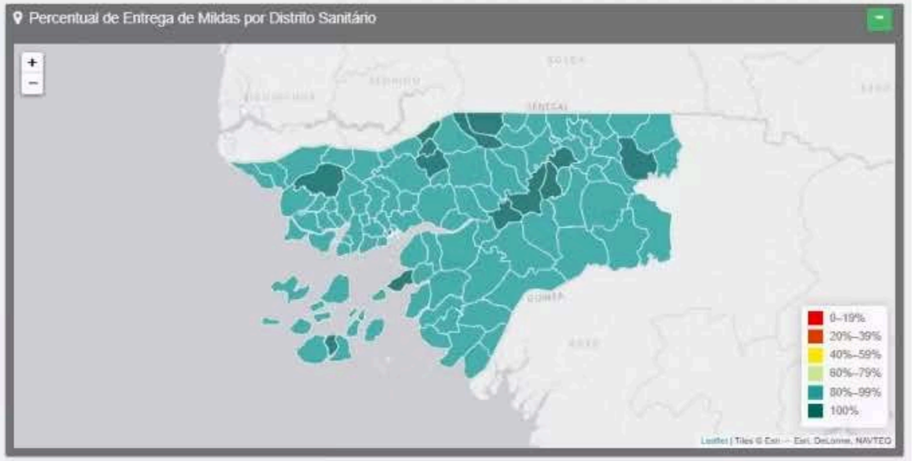


Visão geral do mapa do Distrito Sanitário, exibindo diferentes pontos coloridos que indicam o status de trabalho de cada localidade.

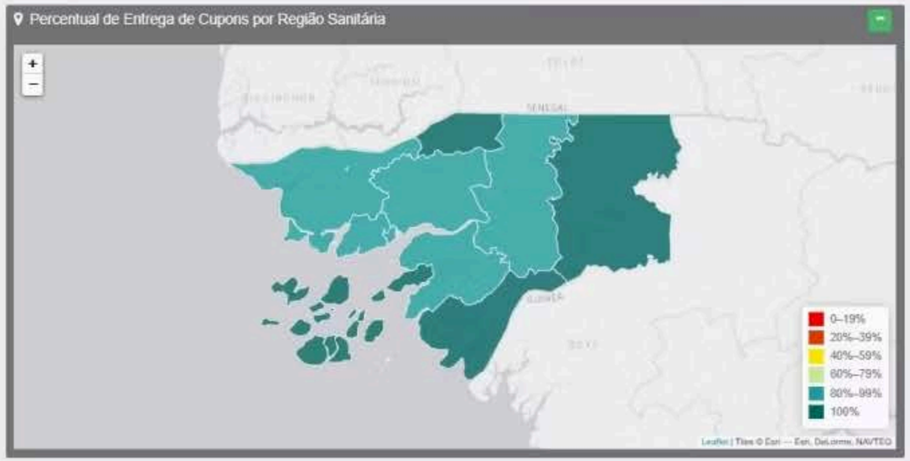
ACOMPANHAMENTO DOS AGREGADOS FAMILIARES (2/2)

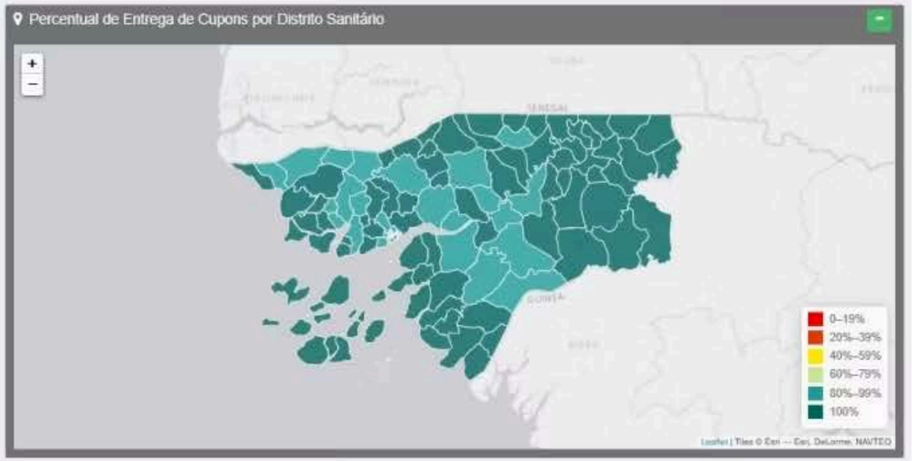
Acompanhamento das mapas atraves do SAR versão Web





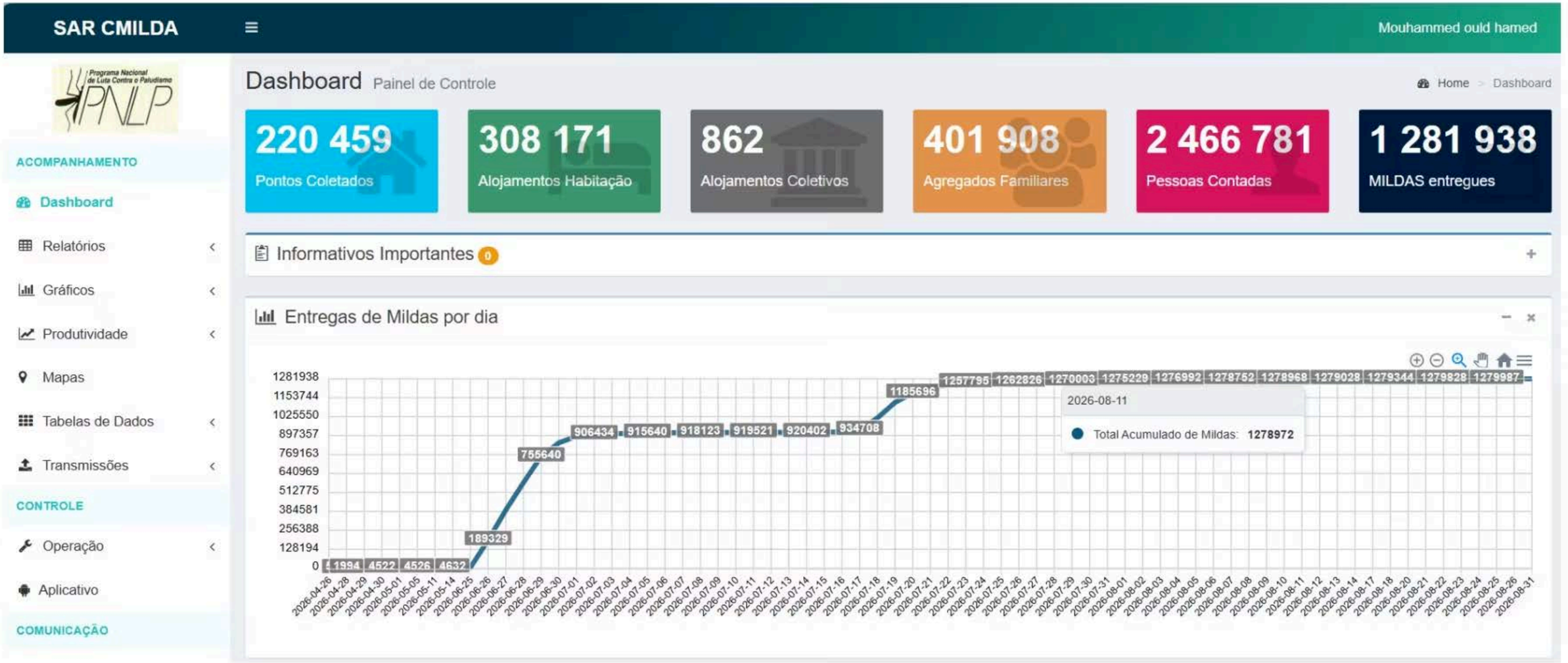
Seguimento da distribuição





Seguimento da entrega de senha

RESULTADOS


SAR CMILDA
Mouhammed ould hamed
Programa Nacional de Luta Contra o Paludismo
PNLP
ACOMPANHAMENTO
Dashboard
Relatórios
Gráficos
Produtividade
Mapas
Tabelas de Dados
Transmissões
CONTROLE
Operação
Aplicativo
COMUNICAÇÃO
Dashboard Painel de Controle
Home > Dashboard
220 459
Pontos Coletados
308 171
Alojamentos Habitação
862
Alojamentos Coletivos
401 908
Agregados Familiares
2 466 781
Pessoas Contadas
1 281 938
MILDAS entregues
Informativos Importantes 0
Entregas de Mildas por dia
1281938
1153744
1025550
897357
769163
640969
512775
384581
256388
128194
0
1984
4522
4526
4632
189329
755640
906434
915640
918123
919521
920402
934708
1185696
1257795
1262826
1270003
1275229
1276992
1278752
1278968
1279028
1279344
1279828
1279987
2026-08-11
Total Acumulado de Mildas: 1278972

RESULTADOS

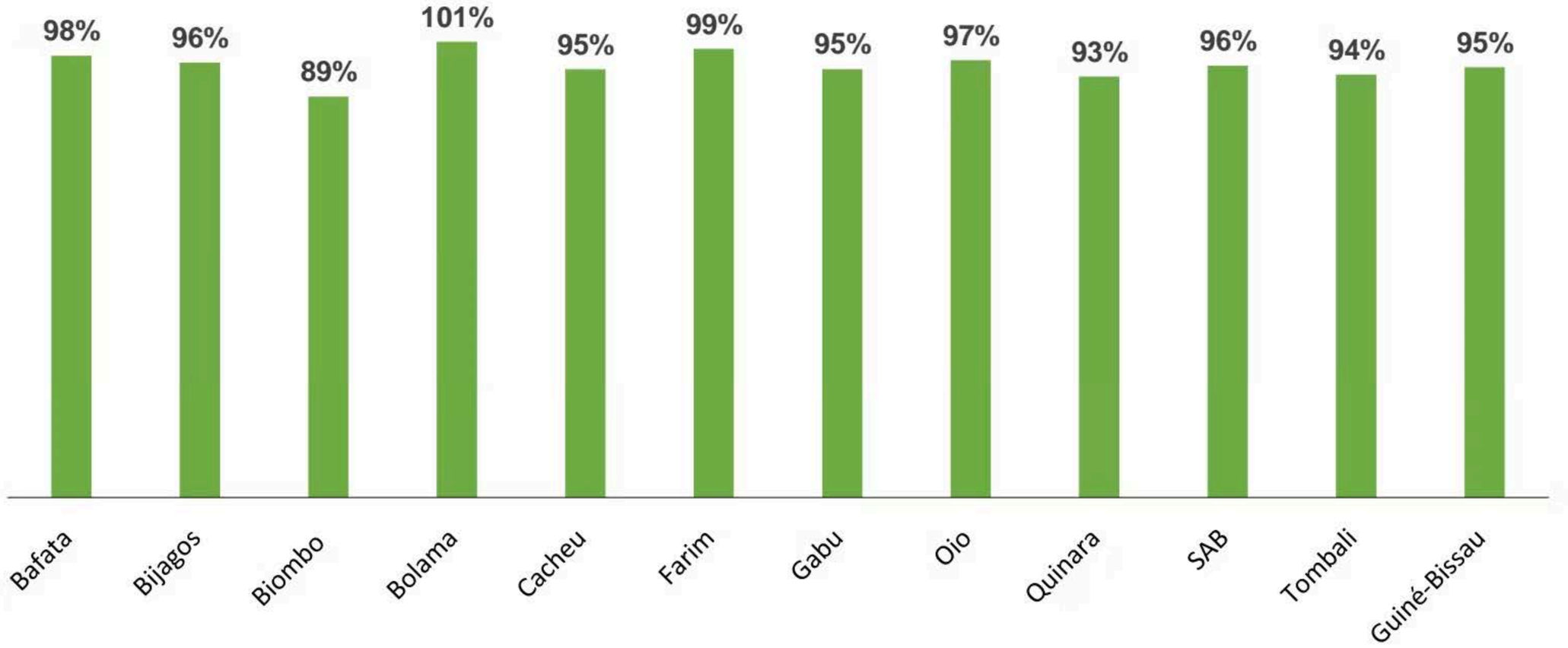
Tabela nº1 : MII distribuidas aos agregados familiares por região, 2026

Região	Pontos	Alojamentos	População	Agregados familiares	MII Entregues
Bafata	29 286	33 498	346 737	47 119	183 425
Bijagos	5 181	5 887	33 967	7 353	18 537
Biombo	21 118	30 968	192 255	34 020	93 763
Bolama	1 958	2 365	10 992	2 158	6 163
Cacheu	30 553	35 729	280 984	50 426	147 085
Farim	5 507	6 024	79 252	9 004	42 130
Gabu	31 832	33 665	332 300	48 868	171 318
Oio	24 186	26 089	282 132	35 882	146 654
Quinara	12 447	13 421	108 325	19 746	56 052
SAB	40 993	102 855	655 071	122 491	342 126
Tombali	17 398	18 532	144 766	24 841	74 685
Guiné-Bissau	**220 459**	**309 033**	**2 466 781**	**401 908**	**1 281 938**

Fonte : SAR/PNLP

RESULTADOS

Gráfico nº1 : Cobertura de MII distribuidas aos agregados familiares por região, 2026



Fonte : SAR/PNLP

DESAFIOS (1/2)

- Número insuficiente de equipas face à população-alvo;
- Limitações do sistema SAR na pesquisa de senhas e atualização do estado das entregas;
- Formação inicial insuficiente para uma campanha totalmente digitalizada;
- Perdas de stock não refletidas corretamente no sistema;
- Limitações de conectividade e energia podem comprometer futuras campanhas digitais;

DESAFIOS (2/2)

- Falhas de tablets/servidor em áreas com elevado volume de dados;
- Falta de filtro de nome postos de distribuição no SAR;
- Atraso na disponibilização de nomes dos digitalizadores para criação dos usuarios;
- Falta criação do ID dos AF;
- Tablets com fraca capacidade de suportar o aplicativo CMILDA;
- Chegada atrasado de Powerbank;
- Realização da campanha na epoca chuvosa.

LIÇÕES APRENDIDAS

- Digitalização da campanha reduziu o risco de fraude, garantindo que apenas agregados registados recebessem MII;
- Redução do número de formulários em papel, aumentando a eficiência operacional;
- Disponibilidade de dados em tempo real, fortalecendo a capacidade analítica dos intervenientes na campanha;
- A motivação dos intervenientes na campanha com a nova estratégia de digitalização;

RECOMENDAÇÃO

- Comprar Tablets com capacidade e os acessorios de proteção;
- Comprar powerbanks e os acessorios;
- Aumentar dias de formação nos diferentes niveis;
- Ajustar população alvos de equipas e consequentemente situação geografica;
- Criar filtros de nomes de postos de distribuição;

RECOMENDAÇÃO

- Realizar a campanha antes da época chuvosa;
- Corrigir sistemas de gestão de stock no SAR;
- Criar ID por cada Agregado Familiar;
- Testar capacidade de tablet com aplicativo antes da implementação









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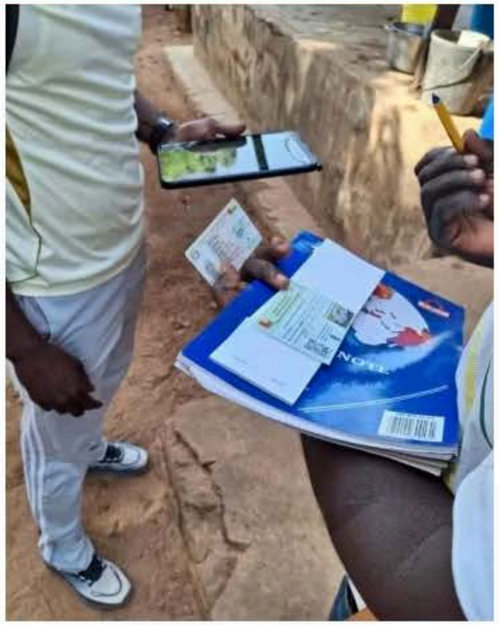


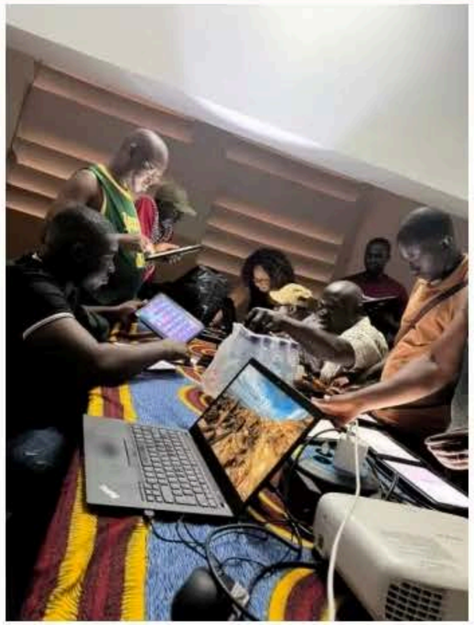
MAN



CMII Digitalizada pela primeira vez















OBRIGADO PELA ATENÇÃO
DISPENSADA



GRID3

IFRC



Spatial data use for malaria campaigns in Nigeria

Hafiz Yaro | 1 October 2026

Discussion guide

01 **GRID3's malaria campaign experience**

How spatial data has strengthened microplanning and campaign implementation

02 **The campaign visibility gap**

Why target achievement does not always translate into geographic coverage

03 **The GIS dashboard innovation**

Data inputs, purpose, capabilities, and anomaly detection

04 **The Kwara experience**

How the dashboard was deployed, used, and what we learned

05 **Implications for future campaigns**

How GIS-enabled monitoring can strengthen subsequent ITN campaigns

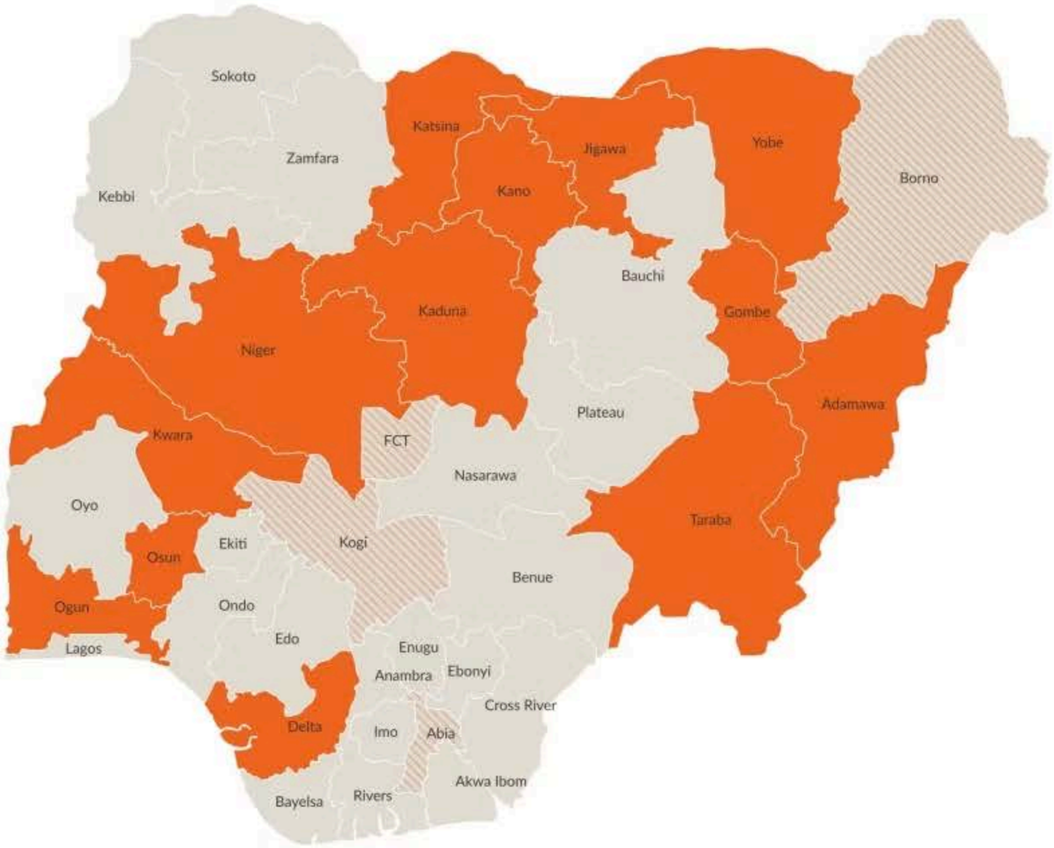
GRID3 has already supported malaria campaigns at scale

A substantial operational foundation already exists to build from.

16,938
maps created & printed

1,517
people trained

17
states supported 2022–2026



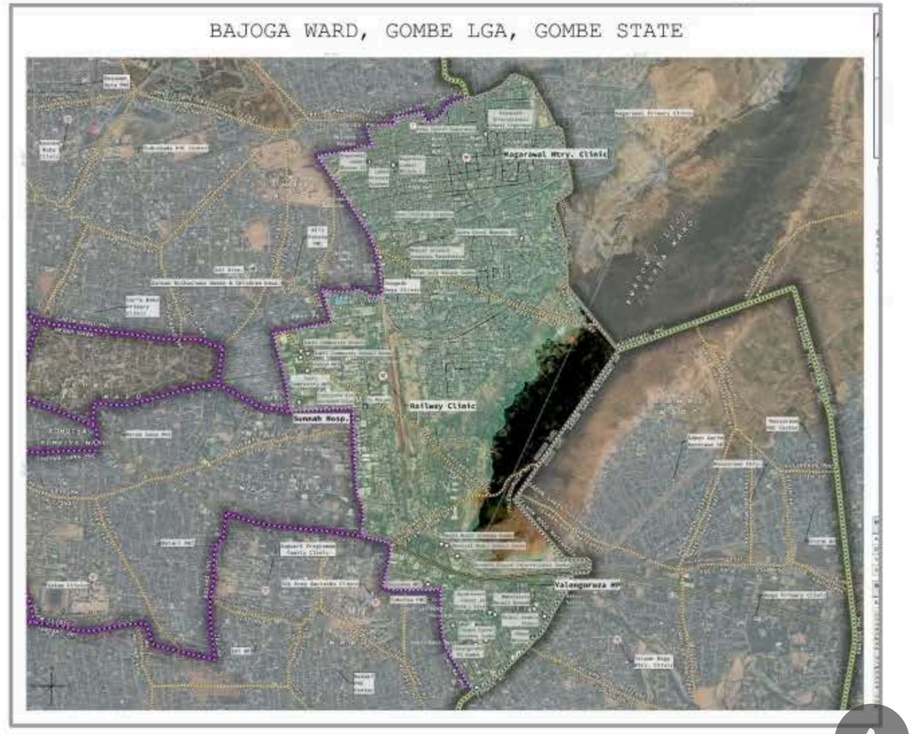
What that support has included

- Improving settlement, health facility, boundary, and catchment data
- Producing georeferenced maps for microplanning and implementation
- Training national and state teams to use spatial information
- Supporting planners to account for settlements, assess distance, and improve catchments
- Piloted a GIS dashboard in Kwara state to improve household mobilization quality

GRID3 support: digitizing campaign microplanning maps



Before GRID3, subnational health officials used **hand drawn maps and lists** of health facilities, settlements, and population estimates



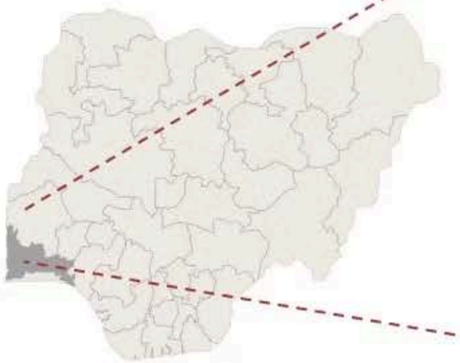
After GRID3, wards used georeferenced microplanning maps to **account for all settlements, measure distances accurately,** and to **optimize distribution point** catchments

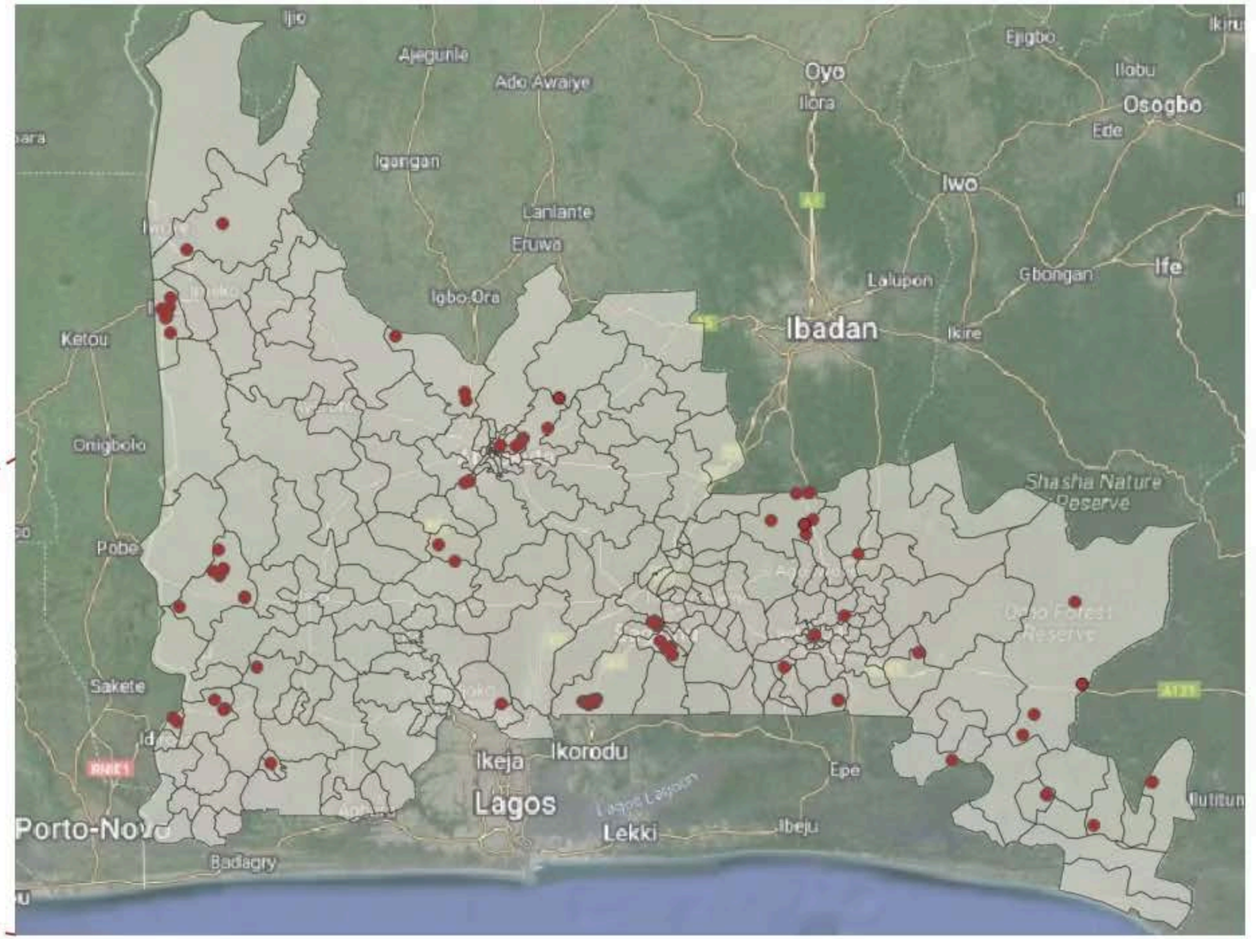
GRID3 support: identifying missed settlements

Hand drawn maps and frequent re-assignment of ward level staff leads to settlements missed or omitted during campaign planning.

In Ogun, GRID3 identified **103 missing settlements** from ward teams lists. These settlements were added to 2024 microplans.

GRID3 data and maps accounted for over **20,000 additional people** in the 2024 campaign.

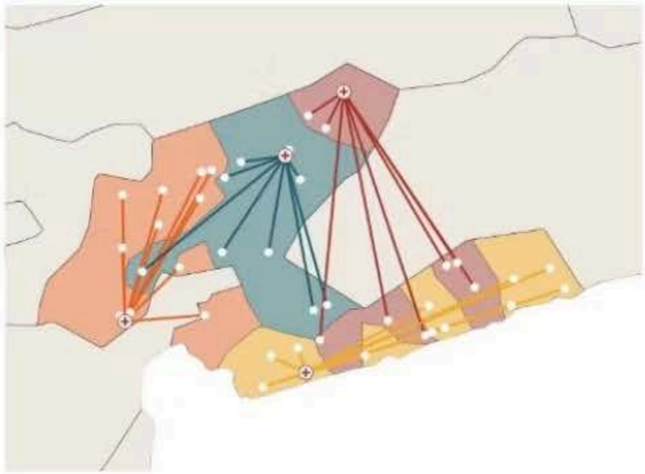




*88 / 103 missed settlements depicted in Ogun State

GRID3 support: consolidating health catchment areas

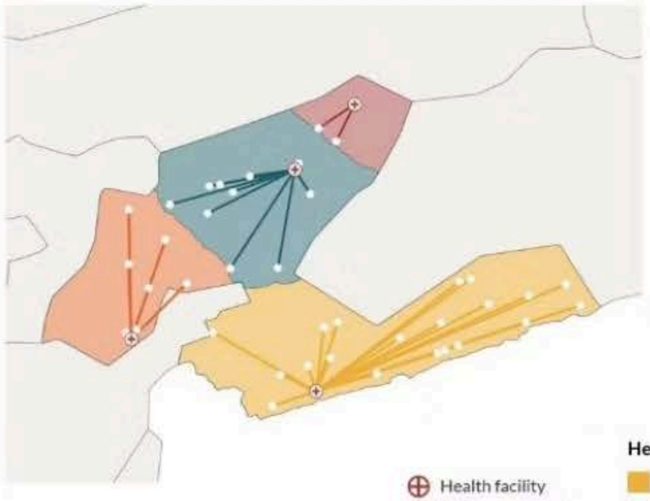
- ✓ In Balago Ward of Jigawa State, health officials used GRID3 maps when planning for seasonal malaria chemoprevention administration and bed net distribution in 2024.
- ✓ Before campaign implementation, they compared existing health facility catchment areas that were based on tabular data and local knowledge with the catchment areas included in GRID3 maps.
- ✓ Planners realized that the catchment areas created by GRID3 were a significant improvement, as they were based on updated data, accurate distances, and travel time.



Before

Fragmented HF catchments areas* based on non-spatial data

**Mapped by GRID3 for the purpose of this example, from catchment areas used in the 2024 malaria microplan*



After

Optimized HF catchment areas created by GRID3

Health facility catchment areas and their assigned settlements

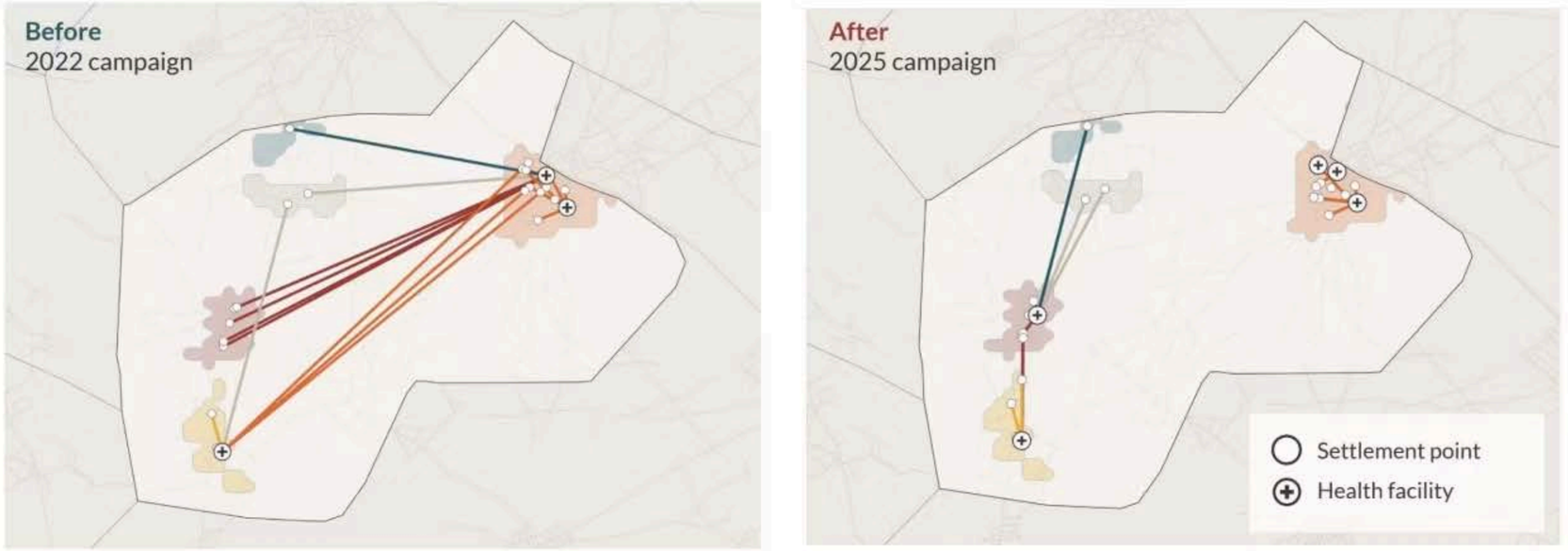
- Health facility
- Settlement point
- Catchment area 1
- Catchment area 2
- Catchment area 3
- Catchment area 4

GRID3 support: reducing travel time

Health officials used updated GRID3 maps when planning for SMC administration and bed net distribution in 2025. Health staff improved their outreach plans – they **allocated two additional bednet distribution points in the ward** to ensure greater accessibility and assigned settlements to the closest distribution point.

People traveled on average 1.7 km
Not enough bednet distribution points
Communities assigned inefficiently

Average travel reduced by 76%
Two additional distribution points
Communities assigned based on accurate distances



Zogarawa Ward, Kano State



The innovation – GIS dashboard

GRID3 dashboards address a mobilization blind spot

Household-level campaign data already exists; the challenge is turning thousands of records into a geographic picture teams can act on in real time.

The problem

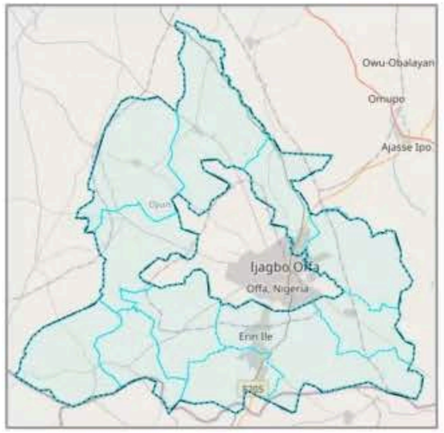
Mobilization and distribution teams register households digitally, but at scale those records are difficult to interpret quickly enough to guide supervision, detect geographic gaps, or distinguish target achievement from spatial coverage.

The opportunity

Pair campaign records with settlement extents, administrative boundaries and road networks so teams can see where field activity is occurring, where settlements remain unreached, and which records may need verification.

The opportunity – GRID3's spatial data as a fix

Because the mobilization data is captured at the point of household contact, it can be paired with GRID3's spatial data products to see at state-wide level where campaigns are succeeding and where they are not



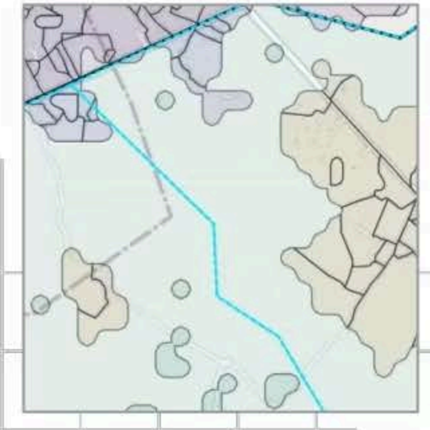
Boundaries

State, LGA and ward boundaries enable coverage analysis and reporting at every level of the campaign admin hierarchy



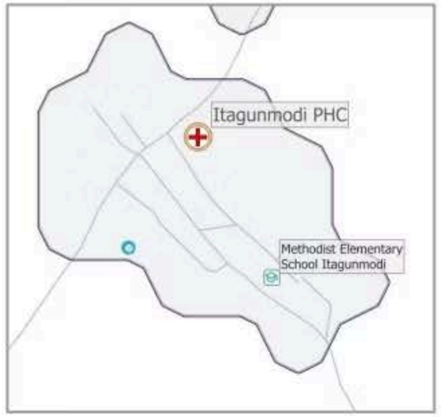
Road network

Road network support anomaly detection (e.g mobilization along roads outside settlement extents)



Settlement Extents

Settlement extents blocks (built-up areas, small settlements and hamlets) acts a ground truth for coverage showing which are fully, partially or not reached



Infrastructure data

Infrastructure data like health facilities and points of interests enhance spatial orientation

Data inputs

The dashboard is only as strong as the data behind it. High-quality well-structured inputs ensured coverage metrics are accurate, anomalies are meaningful and supervisors can act in real time

CSV

Red Rose Data

Household mobilization record

Anonymized household mobilization data for geographic coverage and detecting anomalies

XLS

P3-B Template

Ward prioritization list

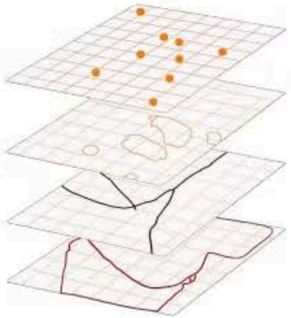
List of deprioritized wards from microplan for exclusion in spatial coverage analysis and anomaly detection

XLS

P3-B Template

Microplan targets

Microplan population and ITN need data for target coverage analysis



Spatial data

Spatial data products from GRID3 (settlement extent blocks, boundaries road network) to support spatial coverage assessments and the detection anomalies

Purpose, value and capabilities

Purpose

Provide campaign team a live, map-based view of household mobilization and ITN distribution across the state and automatically identify activities that needs a closer look.

Value

- **Real-time transparency**
  Coverage and field activity visible as they happen
- **Early issue detection**
  Data-quality problems flagged before they compound
- **Donor-ready evidence**
  A shared source of truth for campaign reporting
- **Targeted supervision**
  Limited oversight capacity aimed where it's needed

Capabilities

- **Geospatial**
  Multi-level visualization
  LGA → Ward → Settlement blocks
- **Daily and cumulative views**
  Toggle the daily data instantly
- **Anomaly detection**
  Suspicious activities flagged as they happened
- **Mobilizer tracking**
  Field activities tracked including suspicious activity

The Kwara experience – how it was deployed and used

Kwara campaign began as an observation visit to watch the campaign run and spot gaps, within days it turned into a live technical deployment

HOW THE ENGAGEMENT UNFOLDED

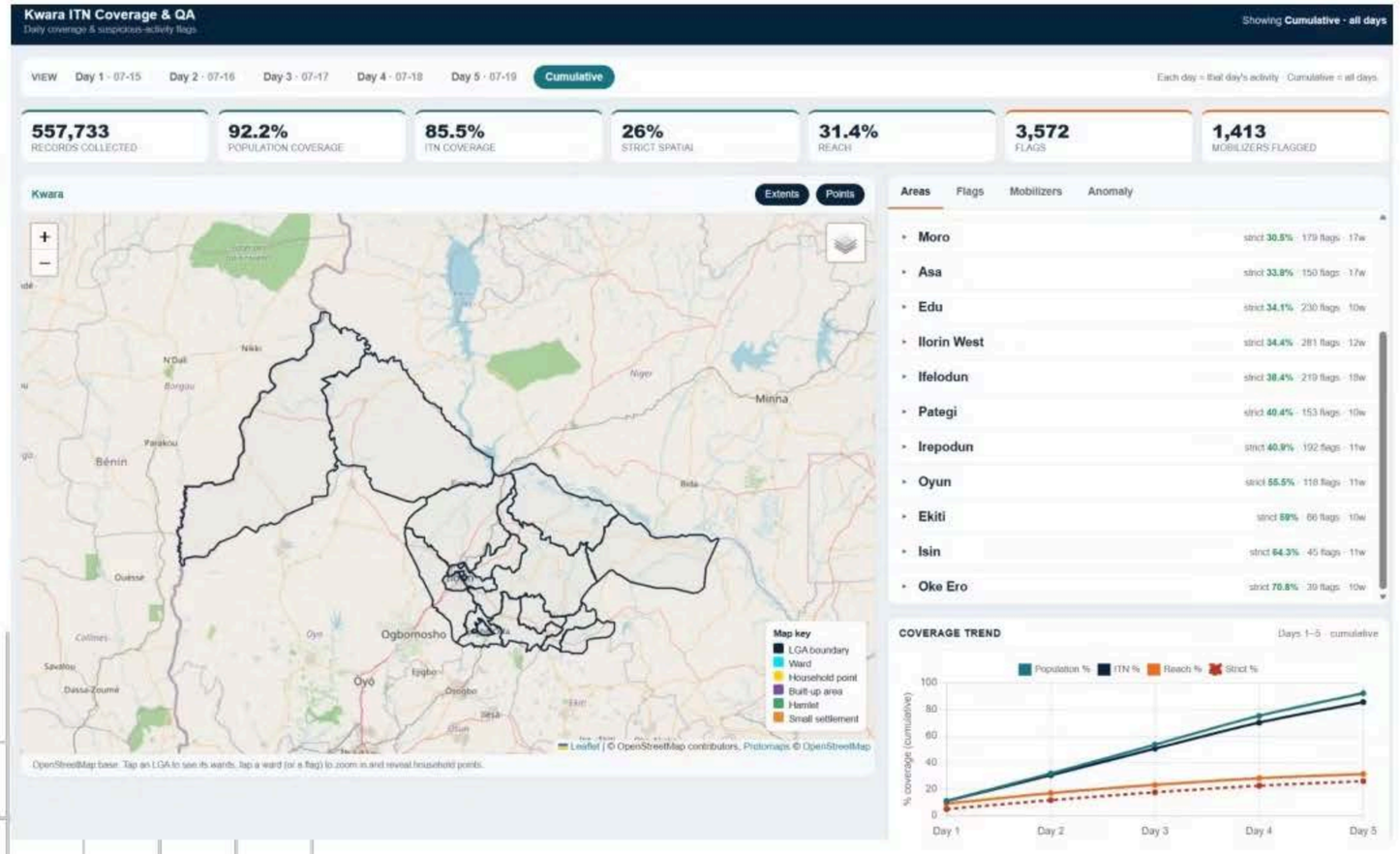
1. **On-site observation**
   A GRID3 representative joined the campaign to observe implementation and identify gaps and opportunities for future support.
2. **Stakeholder engagement**
   Stakeholders were briefed on GRID3 spatial data products — boundaries, settlement extents and the Geospatial Tracking System (GTS) application that could strengthen coverage and quality.
3. **NMEP referral to ICT4D**
   NMEP connected GRID3 with the ICT4D team responsible for managing the campaign's IT component.
4. **A direct request for help**
   ICT4D asked GRID3 to test integrating campaign data with GRID3's spatial products to track household mobilization and detect anomalies during ITN distribution

WHAT WAS DEPLOYED

- **Spatial + campaign data integration**
  Anonymized household mobilization data was combined with GRID3 boundaries, settlement extents, and roads to analyze coverage and detect anomalies.
- **Dashboard and webmap output**
  The analysis was delivered as an interactive dashboard with a webmap, letting campaign team visualize mobilization and bed net distribution as the campaign progressed.
- **Coverage and flag sheets**
  Ward coverage statistics and mobilizers flags were exported as a csv file and shared with supervisors.

Kwara: from planning support to campaign intelligence

A field observation evolved into a live spatial monitoring deployment while the campaign was still underway.



What the dashboard enabled

- Geographic coverage: LGA → Ward → Settlement
- Daily and cumulative monitoring
- Anomaly detection linked to mobilizers
- Exportable coverage and flag sheets

What we learned

1. **Target coverage is not the same as geographic coverage**
2. **Automated flags need a verification and response workflow**
3. **Data access and stakeholder integration matter as much as the technology**

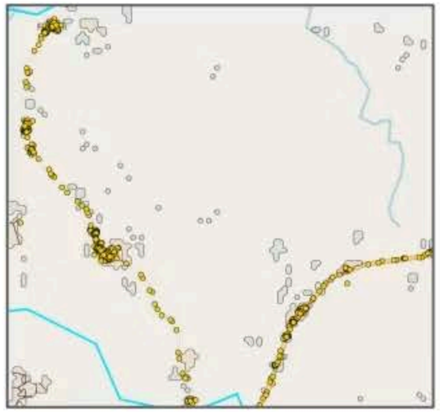
Anomalies detected

Four types of anomalies are detected in the mobilization data and flagged for verification and or action, each anomaly is linked to the mobilizer



Spot

When more than 15 mobilization records are found within 10m radius



Linear

When more than 5 mobilization records are found within 20m on a road network



Clustered

When records are found more than 20m from a settlement blocks, it can be in unmapped area or in a non-settled area



In deprioritized ward

When mobilization records are detected within the boundaries of wards tagged ***deprioritized***

Lessons learned

1 **Better spatial data changes operational decisions**

Accounting for missed settlements, refining catchments, and assigning communities to closer distribution points makes campaign plans more complete and accessible.

2 **Strong target performance can still conceal geographic gaps**

Population and ITN coverage figures need to be assessed alongside settlement coverage to understand where campaign activity is reaching—and where it is not.

3 **Planning and implementation need a shared geographic reference**

Using the same boundaries, settlement data, and microplan priorities helps teams connect planned coverage with actual field activity and investigate discrepancies.

4 **Anomaly detection only delivers value when it leads to action**

Flags should trigger an agreed process for verification, supervisor follow-up, corrective action, and feedback. A flagged record is a reason to investigate, not a confirmed error.

5 **Build spatial monitoring into campaign preparation**

Kwara demonstrated that deployment during implementation is possible. Future campaigns should establish data access, partner roles, and response procedures earlier, with both dashboard views and field-ready exports.

Access the latest GRID3 Nigeria data below




IFRC
Questions?

IFRC

GRID3

Thank you

Hafiz Yaro Engagement Manager, Nigeria hafiz.yaro@grid3.org

Q&A

What other uses of GIS data could support ITN campaigns?

What are the main barriers preventing use of GIS data during ITN campaigns?

IFRC

amp | The Alliance for Malaria Prevention

Thank you!



Thank you