



REPÚBLICA DE MOÇAMBIQUE
MINISTÉRIO DA SAÚDE
DIRECÇÃO NACIONAL DE SAÚDE PÚBLICA
PROGRAMA NACIONAL DE CONTROLO DA MALÁRIA

Mozambique: Lessons learned from ITN campaign digitization (2022-2023), and vision for future integrated digitization

Mariana da Silva – Mozambique NMCP



Country Context

- Mozambique is one of the countries with highest malaria burden in the world.
- The disease is endemic in the whole country, and its entire population (~32 M) is at some risk of malaria – though with substantial heterogeneity.

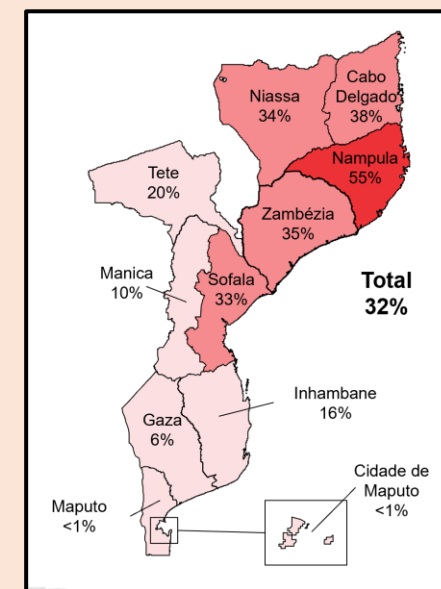
Various malaria control and prevention strategies are implemented: ITN (9/11), IRS (5*/11), SMC (1*/11), PMC (1/11).

Integrated Malaria Information Storage System (iMISS) was developed to meet the National Strategic Plan goal (2017-2022) of complete, timely, and quality data reporting to inform evidence-based decisions at all levels.

4 %
...half of global malaria cases
(WMR 2023)

5th
Place in malaria cases, worldwide (WMR 2023)

392
Incidence per 1,000 (NMCP, 2023)



U5 prevalence, DHS 2022-23



Mozambique's first digitized campaign came in 2021, with success leading to plans for digitizing the national ITN campaign

MDA - 2021

In 2021, campaign digitization was first introduced in a Provincial MDA Campaign in Cabo Delgado. Data captured on the [ODK app](#) was reviewed on [PowerBI dashboards](#) in [daily data review forums](#).

ITNs 2022-2023

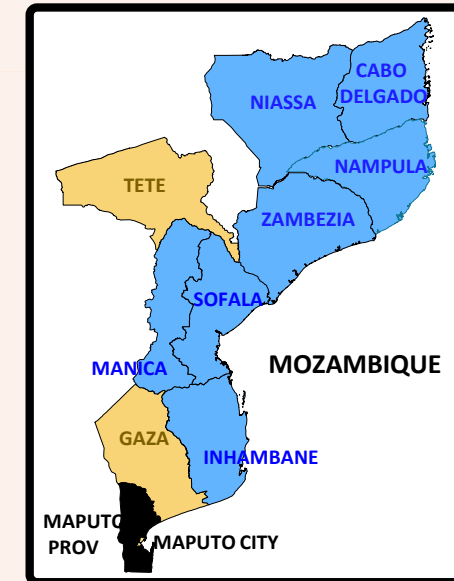
- Year-long campaign to cover 9 provinces
- First digitized campaign with a **national scope**
- Simultaneous registration & distribution
- Door-to-door distribution to over 6.2 million households (per microplanning)

Implementation of two digital platforms:



Both tools provide:

- A mobile app with offline data collection capabilities
- Dashboards and data visualization
- User and geography-locked access
- Potential interoperability with other national malaria information systems



DHIS2 Provinces

DIGIT/Salama Provinces

Non-target Provinces



Expected Outcomes of Digitization



**Increased transparency
on how results were
obtained/by whom**



**Track campaign coverage
and user performance**

**Collection of data that
can later be repurposed**



**Geolocation of
households, demographic
information**

**Shortened lag time
between data collection
and data review/analysis**



- Low coverage areas
- Potential ITN stock-outs
- Poor personnel performance



The ITN campaign is a large, complex process with many actors – with technology use planned to improve the work of each group.

Processes



Households must be **registered** and ITNs **distributed**.



Campaign **targets** must be determined (e.g., populations).



Logistics of ITNs and other materials must be tracked.



Key processes must be **supervised**.



Monitoring & evaluation should be available for all the above.

Actors



Logistics

- District warehouse
- Satellite warehouse
- Local monitor
- Logistics



Register and distribution

- Register
- Local monitor



Supervision

- Local Monitor
- District Supervisor
- Provincial Supervisor
- National Supervisor



Monitoring & evaluation

- TWG –“Núcleo Duro” (NMCP+WV+ADPP+FHA+FDC+CHAI+eGov)
- All end users responsible for reviewing data as part of SOPs

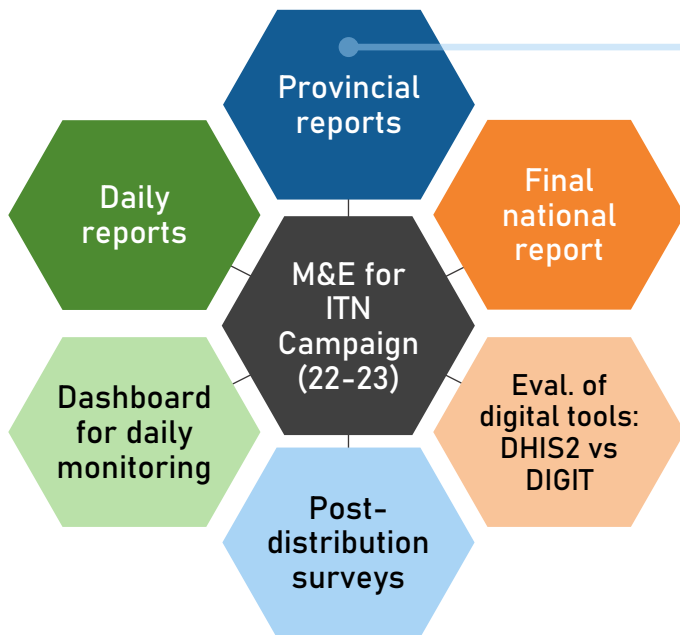


Development of an M&E Strategy and Lessons Learned in the Process

Development of the M&E Strategy

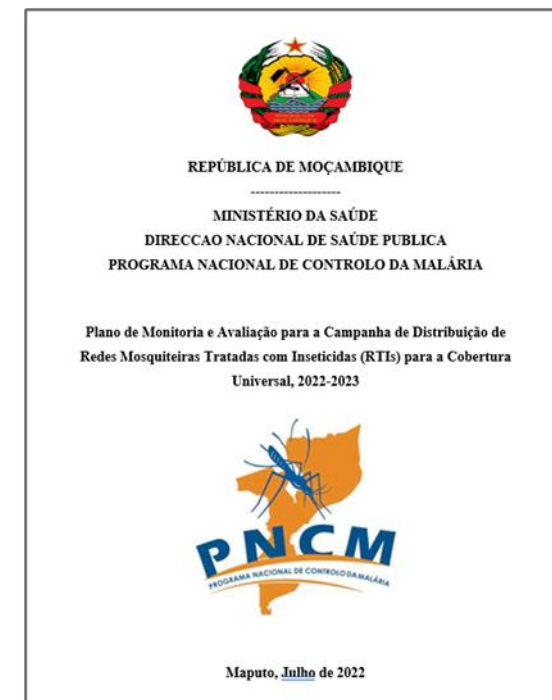
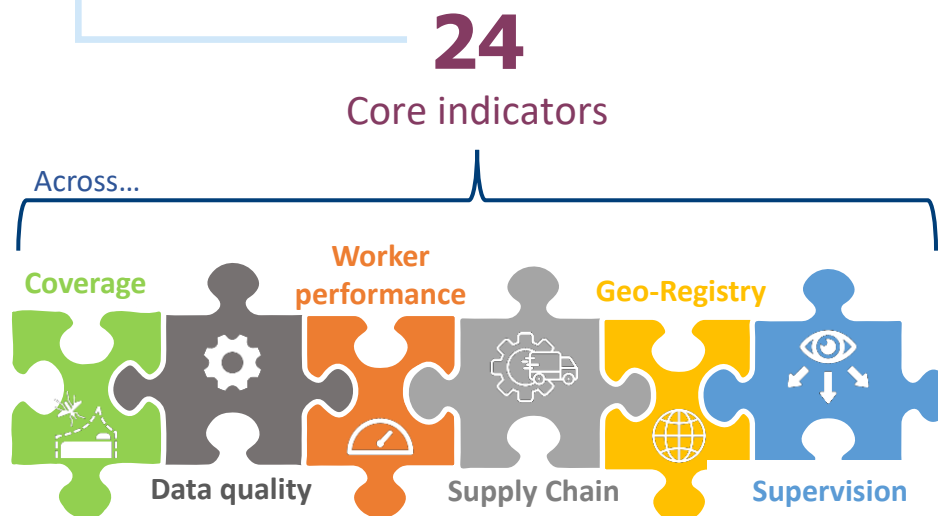
To structure the monitoring and evaluation for this digitization, a comprehensive plan was created to guide data use during the campaign as well as evaluation after it.

1. Based on scope of campaign, determine the M&E needs. Identify all **M&E products** sought:



2. **Define indicators** to measure results and processes for the campaign, and distribute across M&E products.

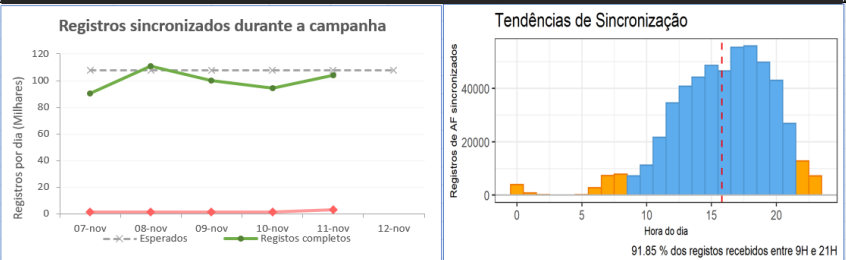
3. Document all defined activities, indicators, responsibilities, resources and timelines in a comprehensive **M&E Plan**.





Key M&E outputs used during the campaign

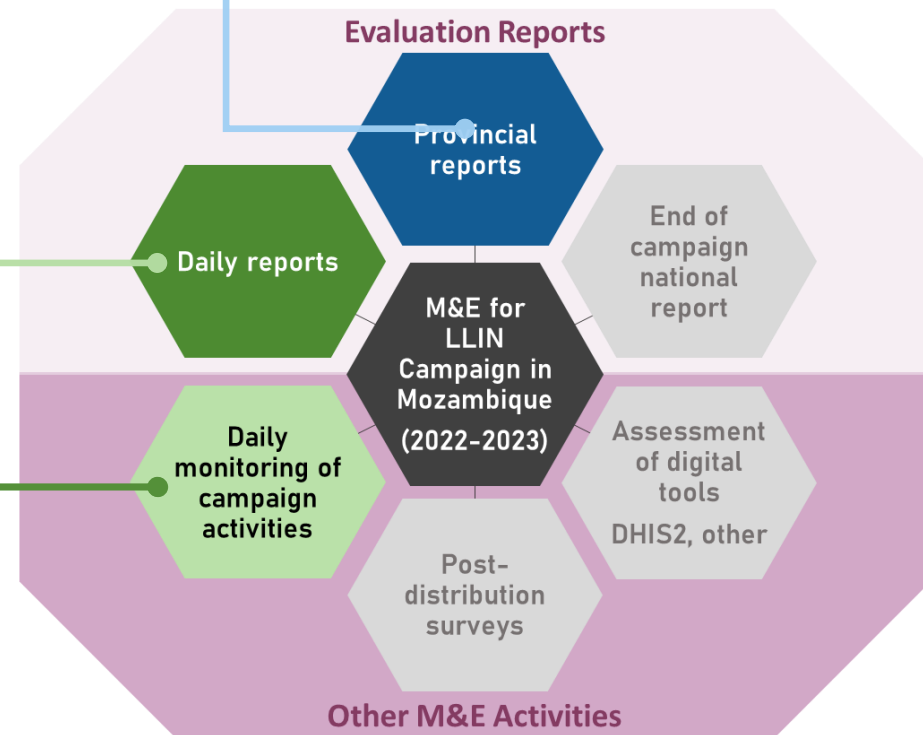
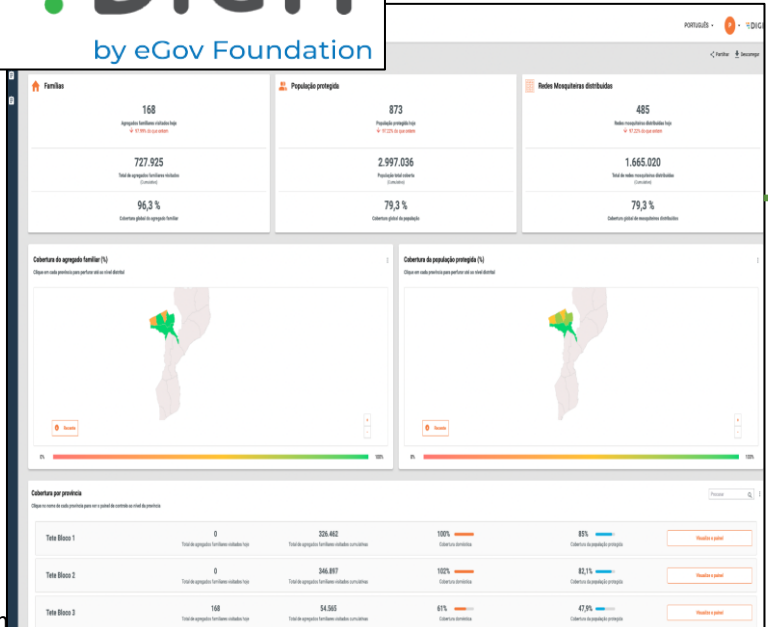
Relatório diário da campanha: MONITORES		Preenchimento de fichas		Registo & Distribuição		Desafios	
Distrito	Monitor	Gestão Stock - Fim do dia	Resumo de Desafios	Nr equipas que trabalharam	Desempenho real	Registos activos	AFs sem dados de geolocalização
		Cumulativo	Cumulativo	Cumulativo	Cumulativo	Cumulativo	No dia
Dia: 10-nov-22		Meta: 1 p dia e equipa		1 p dia e equipa			
MECUBURI	Assane Maulana Cha	5	1	4	598	6	5%
MOGOVOLAS	Hilario Armando Maia	2	3	4	377	2	2%
MECUBURI	Albano Bernardo Uaginga	0	1	5	1153	3	18%
MOGOVOLAS	Josefa Maria Joaquim	2	4	5	983	5	27%
MALEMA	Genita Tevere	19	3	4	754	7	45%
MECONTA	Henriques Ricardo de Anton	15	5	5	1237	225	1%



Campanha de Distribuição de Redes Mosquiteiras para Cobertura Universal 2022/23

Resultados Finais de Cabo Delgado

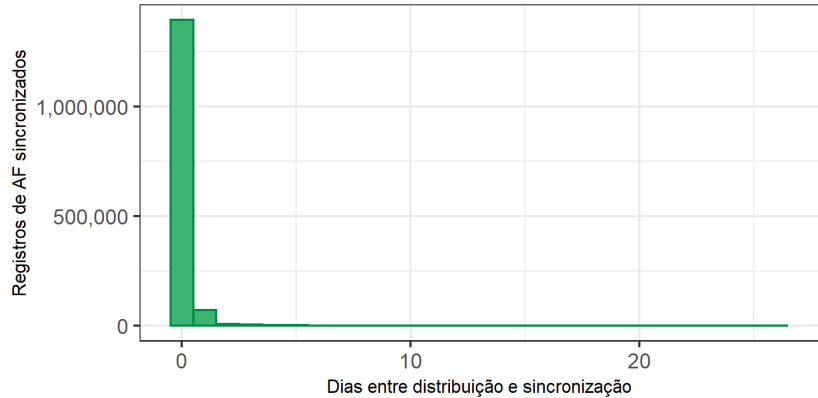
Bloco 1 (15 a 30 de Agosto) & Bloco 2 (5 a 12 de Setembro)



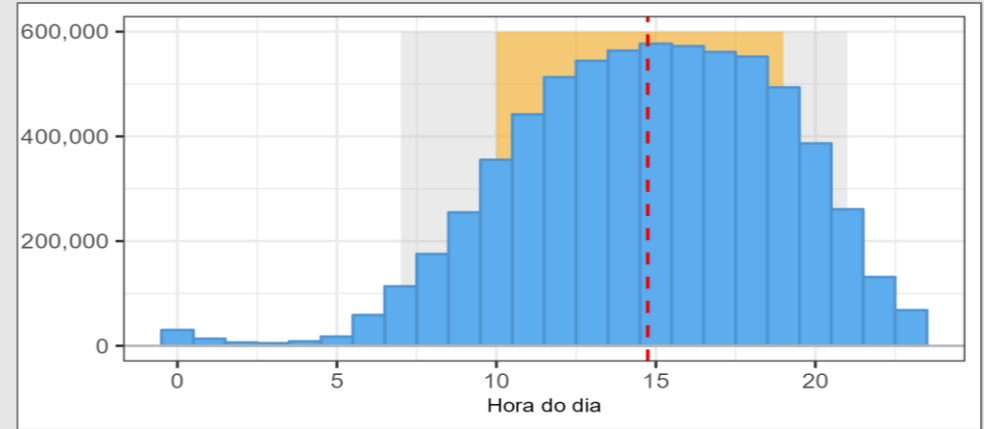


Results: Campaign digitization has proven to be positive in Mozambique.

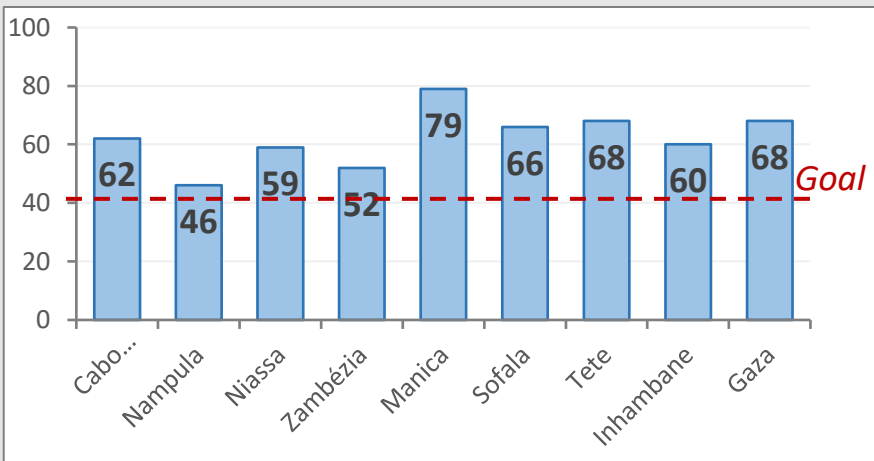
improved timeliness of data



95 % Records sent to server on the same day of data collection

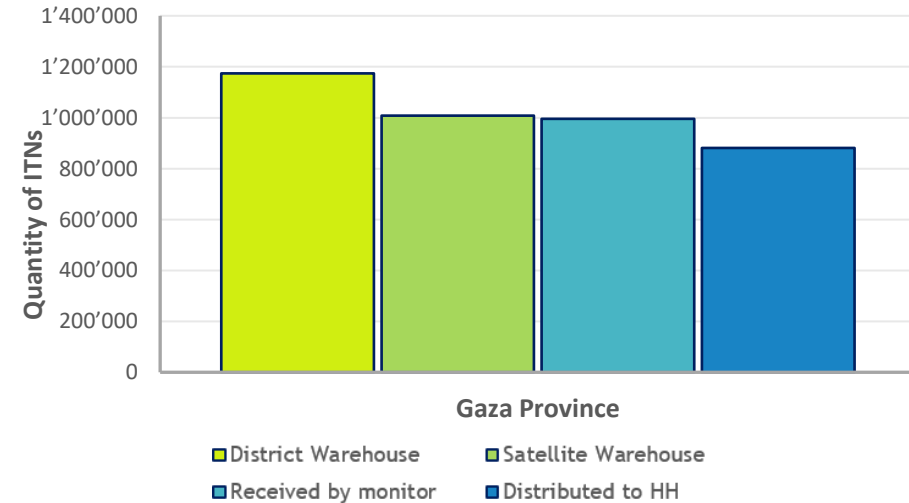


93 % Records synchronized by 7pm during distribution



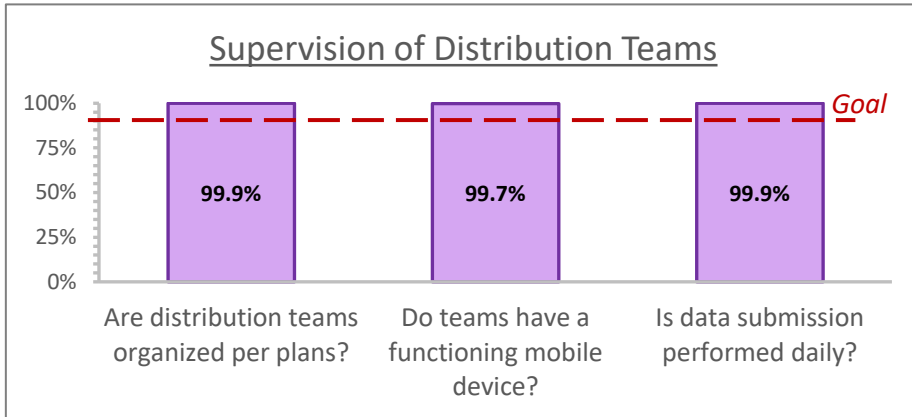
ALL Provinces exceeded mean worker performance goal

ALL ITNs could be tracked across supply chain by end of campaign (Gaza province)

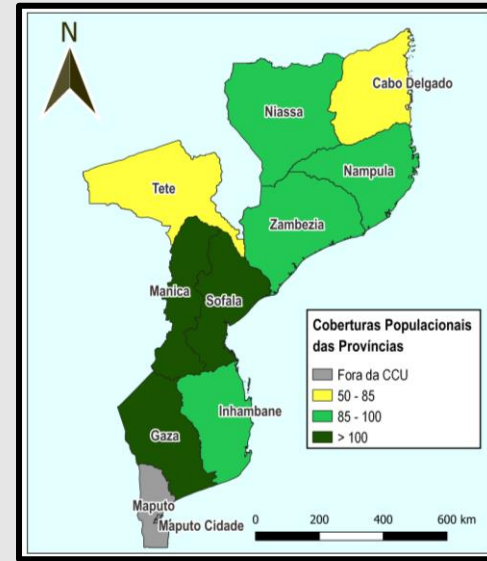




Results: Campaign digitization has proven to be positive in Mozambique.

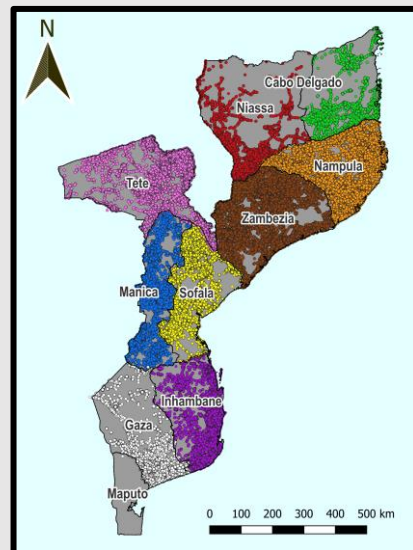


Supervision results consistently over goal of **90 %**



> 82 %

Of visited households have associated GPS data



In achieving these results across the campaign, some key lessons in implementing digital campaigns were learned...

Collection of data that can be reused and repurposed



Lesson 1: Dashboards are most powerful when tailored to inform the decisions of specific user groups

Throughout the campaign, indicators and visualizations were refined iteratively to understand what worked best. Below, an example of how **team performance** was evaluated at different stages:

1. Show total of visited households, aggregated by supervisor.
2. Mean team performance by district, to identify areas where performance goals are largely unmet.
3. Display performance by *named* supervisor, contrasting against expectations and color-coding *specific* personnel who require supervision.

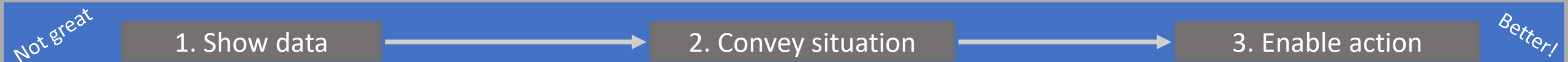
Approaches to developing visualizations:

How to display the data we collect?

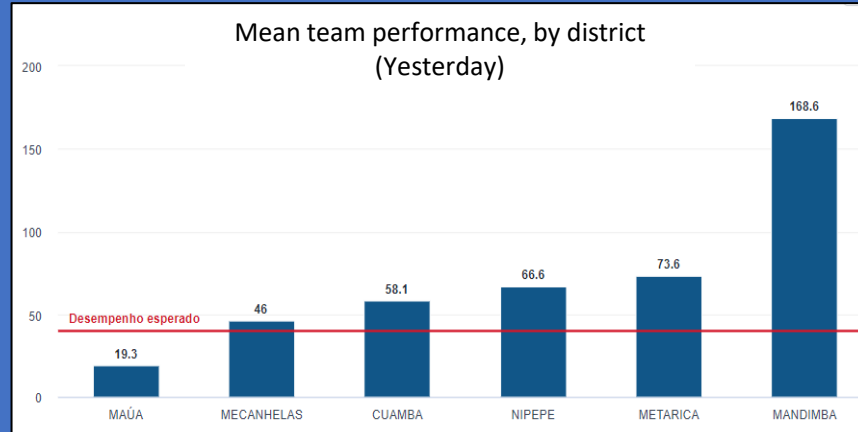
VS.

Which actions can our data inform?

Reverse-engineer visualizations based on specific actions the program can take as response to the data.



Organisation unit	MOÇAMBIQUE			
Codigo do seu SUPERVISOR / Period	2023-02-21	2023-02-22	2023-02-23	2023-02-24
I-SUP-01	296	321	377	340
I-SUP-02	90	400	382	440
I-SUP-03	237	356	386	261
I-SUP-04	35	257	351	255
M-SUP-10	142	225	346	237
M-SUP-11	106	200	256	230
M-SUP-12	141	168	331	321
M-SUP-13	194	261	171	260
M-SUP-14	240	282	413	267



Distrito	Monitor	Desempenho esperado	Desempenho real
Campanha: Dia: 9-junho		Cumulativo 40*Sequipas*dias	Cumulativo -
ALTO MOLÓCUÊ	Virginia Mandlate	600	656
ALTO MOLÓCUÊ	Wilson Pinto	600	863
ALTO MOLÓCUÊ	Zacarias Gogo	600	655
DERRE	Assane Augusto	400	310
DERRE	Benjamim Mesa	600	277
DERRE	Charles charles	600	722
DERRE	Esio Catela	600	980
DERRE	Jawal Sapueia	600	436
DERRE	Jofresse Jofresse	600	431
DERRE	Maite Cotope	600	261



Lesson 2:

Establishing M&E structures and processes for digital campaigns offers builds staff capacity in data interpretation and use.



M&E and dashboard use must be a core part of trainings in digitalized campaigns.



Time saved in collation, quality control and analysis of data can be put toward data interpretation.



Technical partners can model how M&E sessions can be held but passing the torch to the NMCP and local pointpeople will make great strides toward strengthening local capacity.



Work within existing M&E structures, forums and habits, and collaboratively shape these into better versions of themselves.

By the end of the campaign, daily data review sessions were entirely led by purposefully-trained local M&E staff who presented results from dashboards and daily reports to campaign stakeholders.

Relatório diário da campanha: MONITORES		Preenchimento de fichas		Registo & Distribuição		Desafios	
Distrito	Monitor	Gestão Stock - Fim do dia	Resumo de Desafios	Nr equipas que trabalharam	Desempenho real	Registos activos	AFs sem dados de geolocalização
		Cumulativo	Cumulativo	Cumulativo	Cumulativo	Cumulativo	No dia
Dia: 10-nov-22		Meta: 1 p. dia e equipa					
MECUBURI	Assane Maulana Cha	5	1	4	598	6	5%
MOGOVOLAS	Hilario Armando Maia	2	3	4	377	2	2%
MECUBURI	Albano Bernardo Uaginga	0	1	5	1153	3	18%
MOGOVOLAS	Josefa Maria Joaquim	2	4	5	983	5	27%
MALEMA	Genita Teyere	19	3	4	754	7	45%
				1237	225	1%	

REPÚBLICA DE MOÇAMBIQUE
 MINISTÉRIO DA SAÚDE
 DIRECÇÃO NACIONAL DE SAÚDE PÚBLICA
 PROGRAMA NACIONAL DE CONTROLO DA MALÁRIA

**Campanha de Distribuição de
 Redes Mosquiteiras para Cobertura Universal 2022/23**

M&A da CCU Zambézia

Balanço diário – Bloco 2

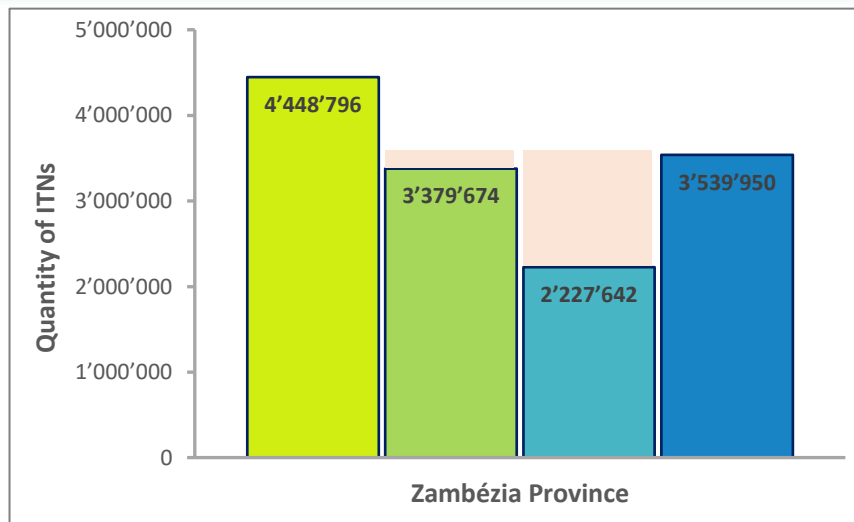
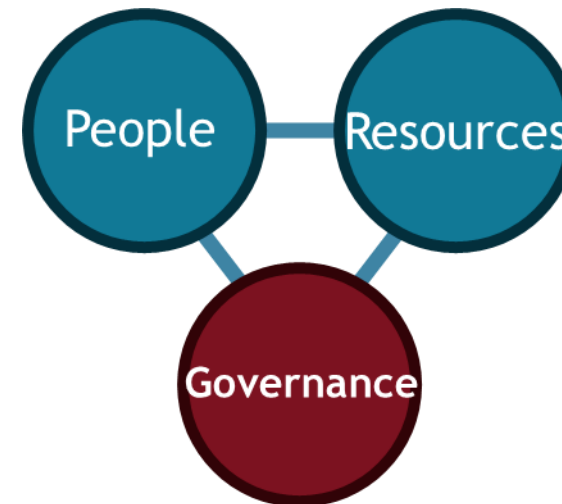
QUELIMANE, 11 de Junho de 2022
 Corte dos dados às 17H



Lesson 3: Successful digitization requires strong governance structures and implementation plans.

- Campaign struggled with reporting of stocks across the ITN supply chain. Data completeness and accuracy were concerns throughout.
- Not every ITNs could be tracked from the district warehouse to the household, as was hoped.
- New user group and data collection instruments were introduced to surmount the challenge.
- Expected improvements were not seen, likely due to the overburdening of staff.

Campaign digitalization requires:



- District Warehouse
- Satellite Warehouse
- Received by monitor
- Distributed to HH
- Unreported ITNs (minimum)

Although there was excitement to digitize the entire ITN supply chain as part of the campaign, the structures in place were not able to fully realize this vision, unlike coverage monitoring.



Lesson 4:

Good documentation of operational hurdles and lessons can help improve future implementation

The platforms used in the CCU had an excellent capacity for storing data. Still, some records in each province were saved with problems, which impacted data integrity:

Active records: In **DHIS2**, records saved as unfinished, which may have errors, and are thus excluded from dashboard visualizations.

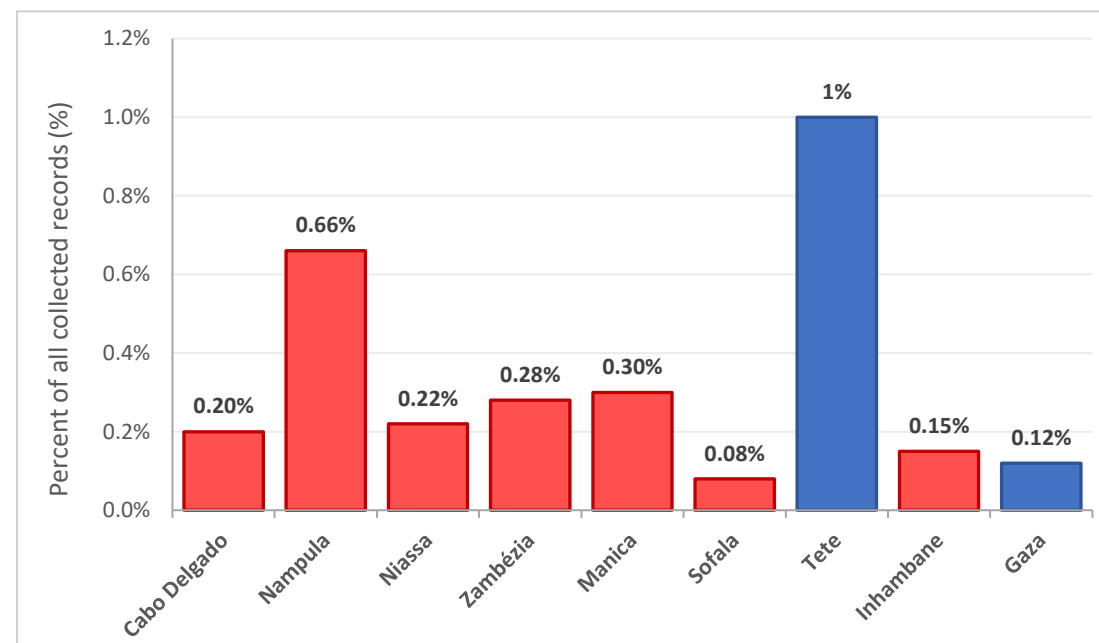
Incomplete records: In **Salama**, records in which there was no data on the number of nets distributed.

Initially, many of these records stemmed from the use of an unpatched version of DHIS2. Throughout the campaign, workers had to manage these records to ensure data quality, and a specific DQ indicator had to be added to data review forums.

The graph on the right shows the percentage of problematic records, compared to the total number of household records, by the end of the campaign.

As you prepare to operationalize a digitized campaign, consider:

1. Platform-specific QC indicators
2. Extensive field validation
3. Existence of version specs & bugs



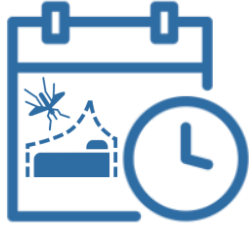
The active DHIS2 records are shown in red, the incomplete SALAMA records in blue.



Moving forward: The Road Ahead for Campaign Digitization in Mozambique



Next steps in ITN Campaign M&E



Formal evaluation of digitization

Assessment of access, ownership and use of ITNs to evaluate coverage after distribution.

A spatial analysis will assess whether any missed populations can be identified.

Surveys taking place in selected districts of **Zambezia and Sofala** provinces, to validate coverage.



Digital Platform Evaluation (DHIS2, SALAMA)

Seek to evaluate the experience and perception of end users and campaign leadership in relation to both implemented platforms.

Feedback can then be given to developers to improve tools.

Key informant interviews conducted in late 2023 in **Gaza and Inhambane**; currently summarizing findings.



Digital Platform Evaluation: Initial Findings

The survey of users found that...

89 %

Had a good or excellent experience with the digital tools.

97 %

Found digital tools easy or very easy to use.

91 %

Visualized dashboards to verify campaign results.

94 %

Trusted or highly trusted the digital platforms.

While both platforms received positive feedback, results showed a stronger user preference for **DIGIT/SALAMA** regarding ease of use, system performance and user acceptance. **However, users reported desires to improve its data visualization.**



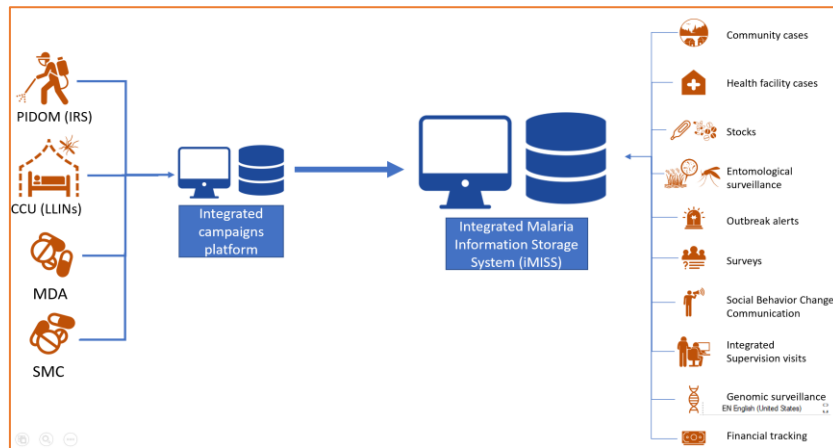
**Digital Platform
Evaluation
(DHIS2, SALAMA)**

Seek to evaluate the experience and perception of end users and campaign leadership in relation to both implemented platforms.

Feedback can then be given to developers to improve tools.

Key informant interviews conducted in late 2023 in **Gaza and Inhambane**; currently summarizing findings.

Next steps in Mozambique's Campaign Digitisation



MoH's vision is to embrace this next chapter of innovation, collaboration and use the same platforms to deliver many campaigns

- ✓ Strengthen and sustain the capacity of NMCP, DIS, DTIC and others the steward of digital health tools;
- ✓ Engage other departments: NTD and Epi to use the same platform
- ✓ NMCP: Integrate digitisation on SMC and IRS campaigns



Digital Platform

Using the same platform to deliver many campaigns will help us:

- ✓ Minimise delays in accessing combined data
- ✓ Avoid duplication of effort and missed opportunities
- ✓ Reusability of infrastructure
- ✓ Simultaneous campaigns across multiple diseases
- ✓ Leverage past data
- ✓ Avoid inconsistent capacity-building for staff and end users
- ✓ Harmonize coordination across procurements and implementations



Acknowledgements





OBRIGADO!



**DEIXE A MALÁRIA
FORA DA REDE.**
USE UMA REDE MOSQUITEIRA TRATADA.

