AKROS

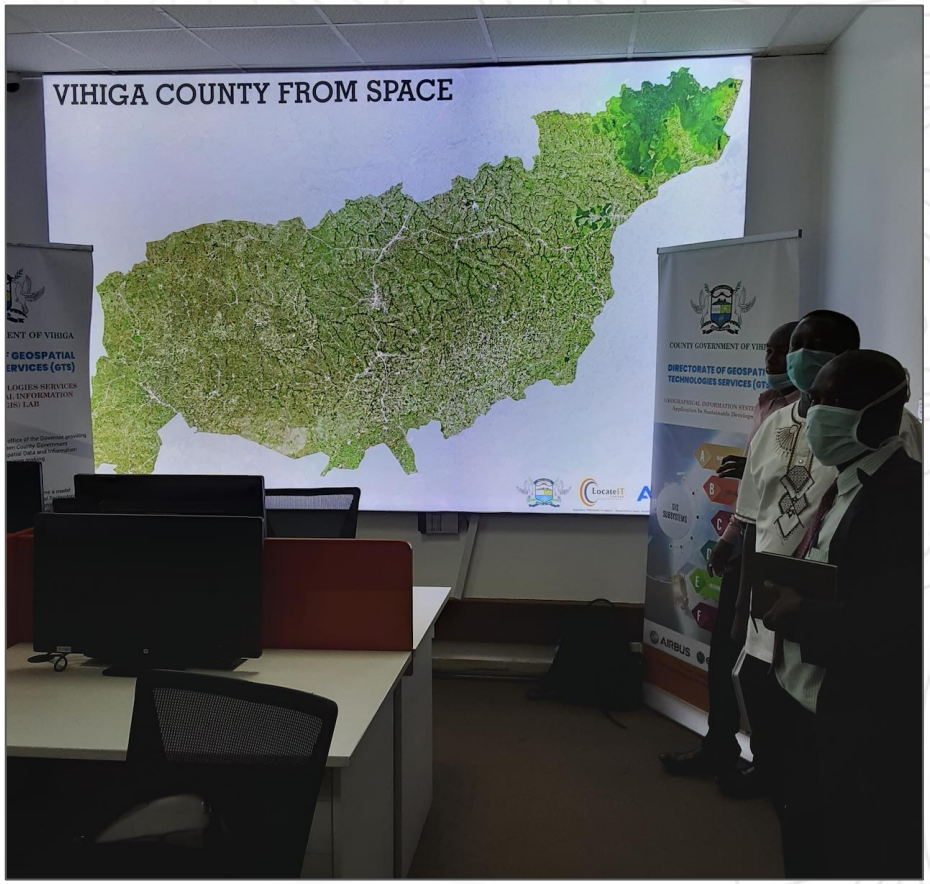
Geoenabling microplanning and delivery of health campaigns:

Sharing multi-country experiences

Akros supports countries to move from policy to practice
→ *Geo-enabling planning & delivery*

- **Supporting Ministries to integrate high-res maps**
- **Geo-enabling routine service delivery and campaigns**
- **Tool-agnostic**
- **Integrated campaign workflows across multiple use cases**
- **Creating “End to end planning and delivery” workflows**

Thank you!



THE CHALLENGE: REACHING THE UNREACHED

"Locating rural villages and homes on the ground is challenging… to better deliver services, we need to understand where people live and verify those services have been delivered."

- District Health Officer, Zambia

1. Although reported coverage may be high, true coverage is often actually quite low.[1,2,3]
2. Planning and delivery of campaigns is often impeded by outdated or unavailable population data, and the inability to ensure services actually reach people.
3. Good news: technology is providing an opportunity to map populations and settlements using satellite imagery, microplan strategically, and improve delivery.

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DENOMINATOR CHALLENGE

- 90 houses found
- 80 / 90 = 89% “Reported” coverage
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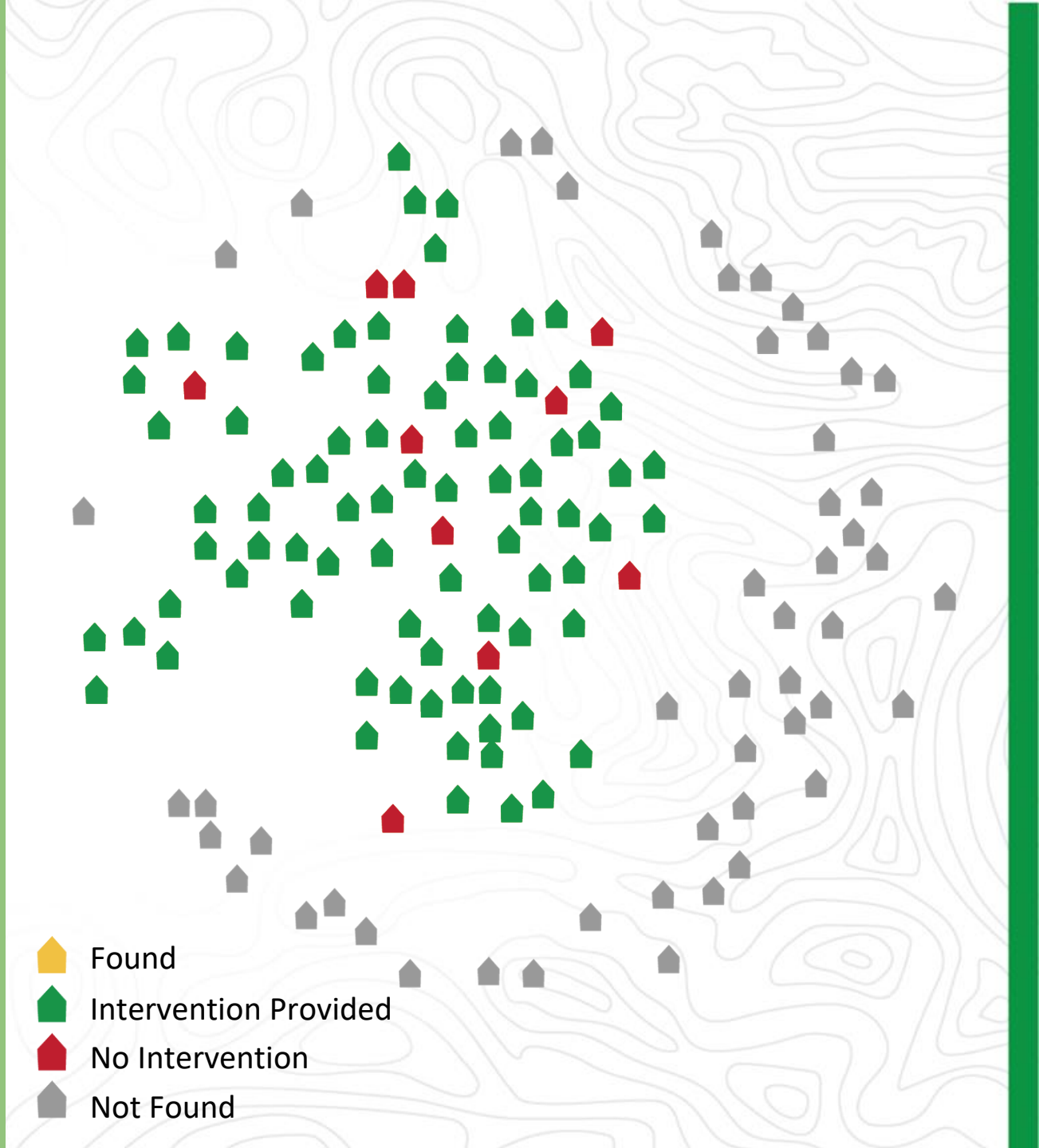
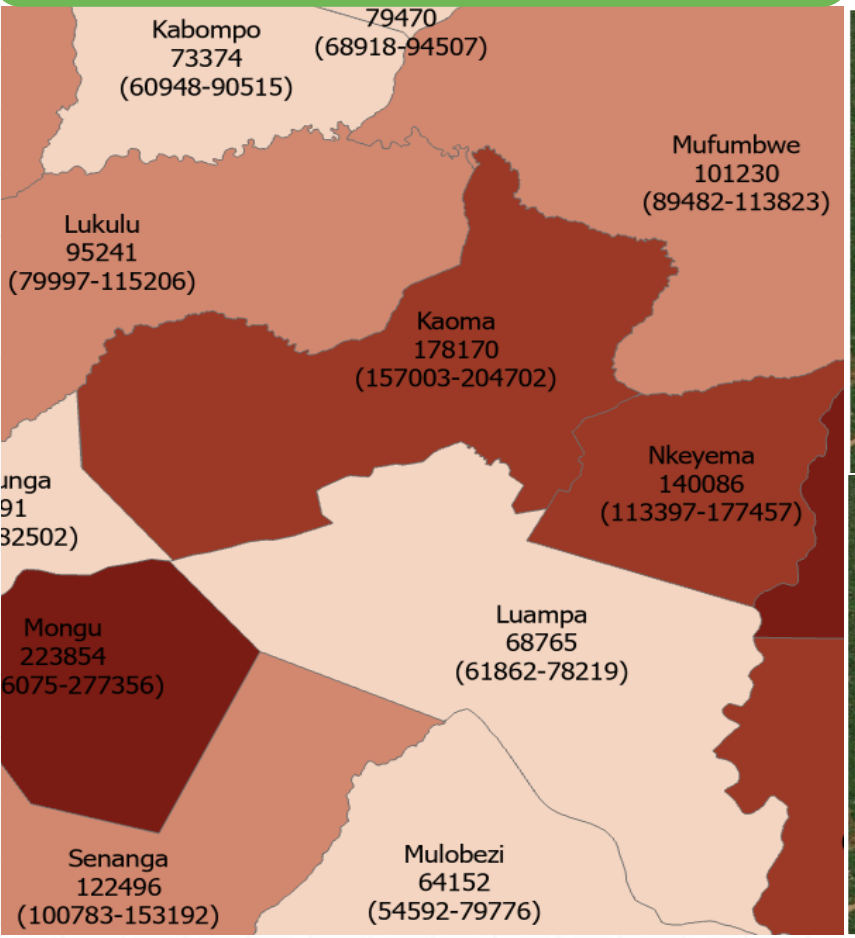


EXISTING, FREELY AVAILABLE DATASETS FOR ADMINISTRATIVE, POPULATION AND HOUSEHOLD FOOTPRINTS

Administrative units / Health units



Settlement extents

Household footprints

GRID3 POPULATION EXPLORER™ ramp Google

END TO END GEO-ENABLED CAMPAIGN PLANNING, DELIVERY AND ANALYSIS

1 MAP & MICROPLAN

Reveal
REDEFINING PRECISION

ramp
POPULATION EXPLORER™
Google

Outcome: Established denominator. Aligned strategy for HR and commodities. Paper based or digital microplanning.

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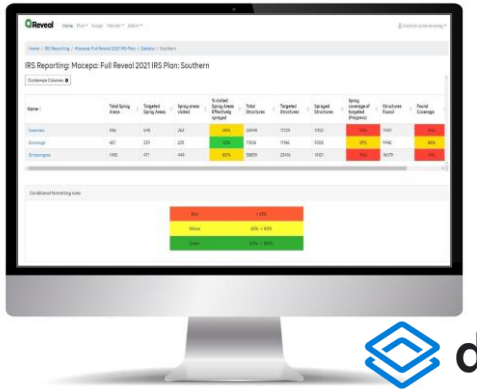

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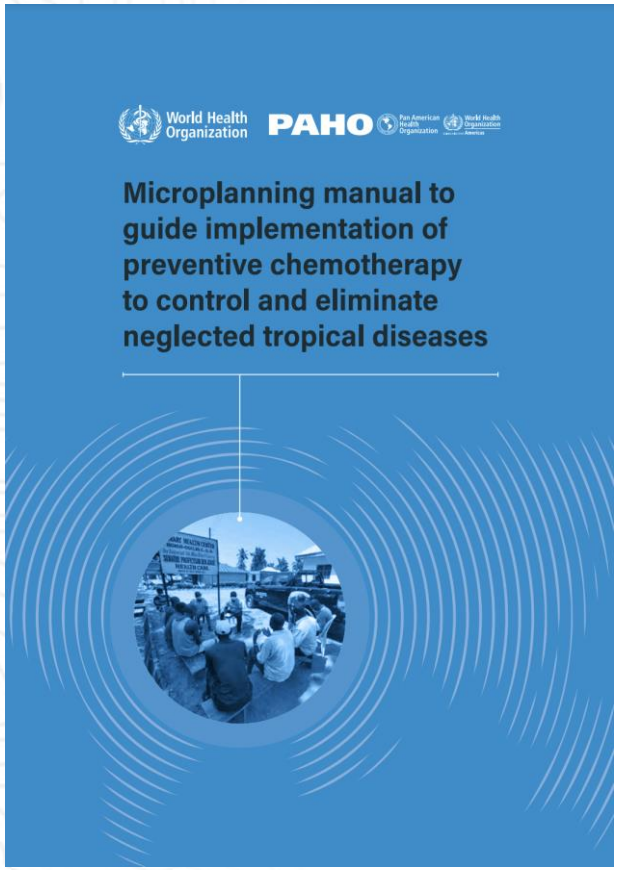

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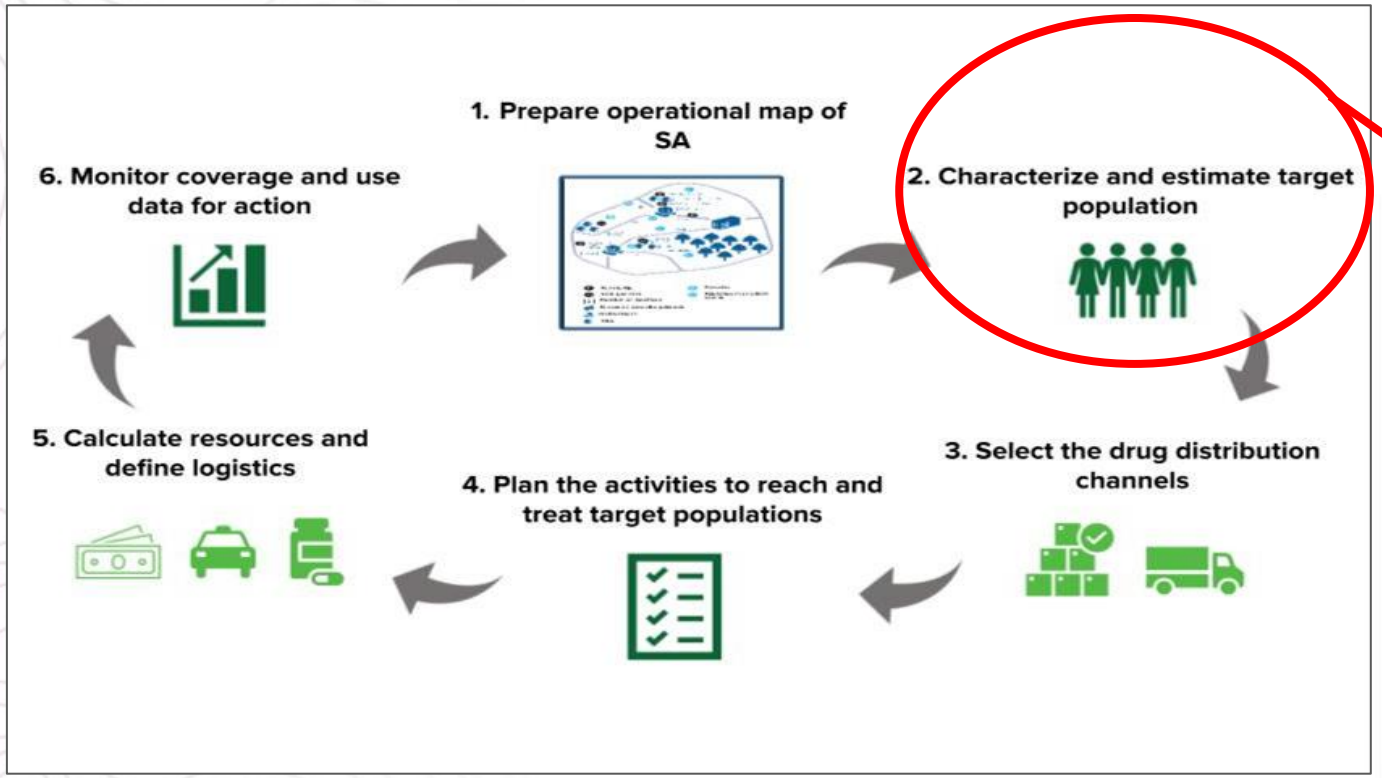
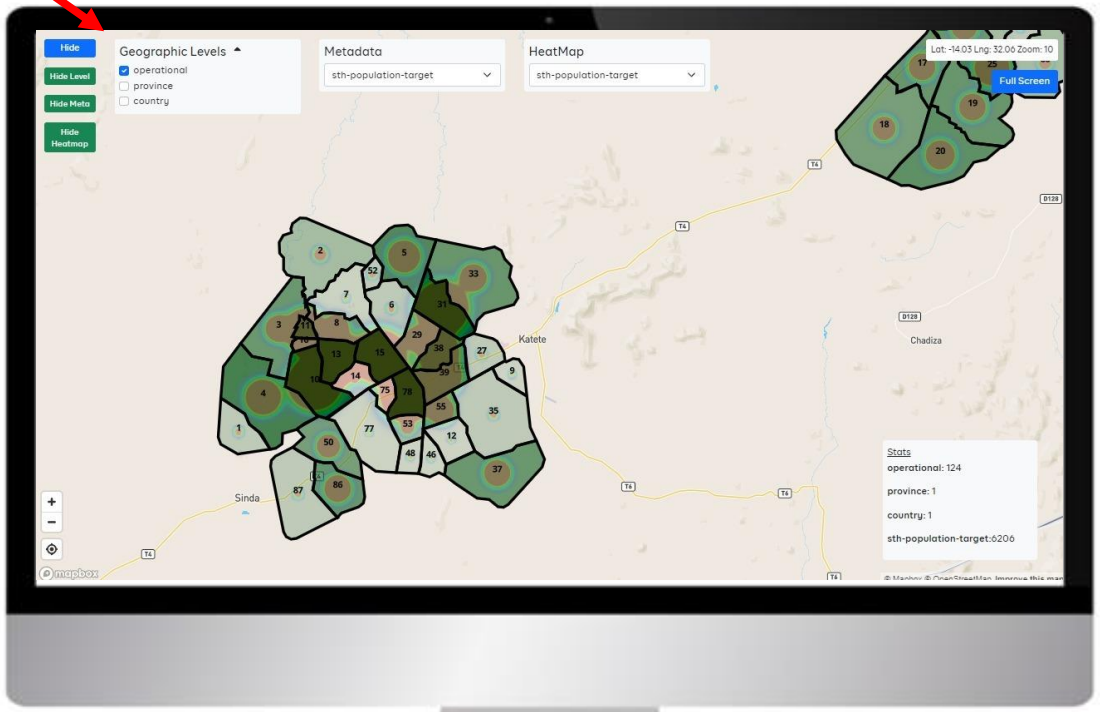


WHO 2022



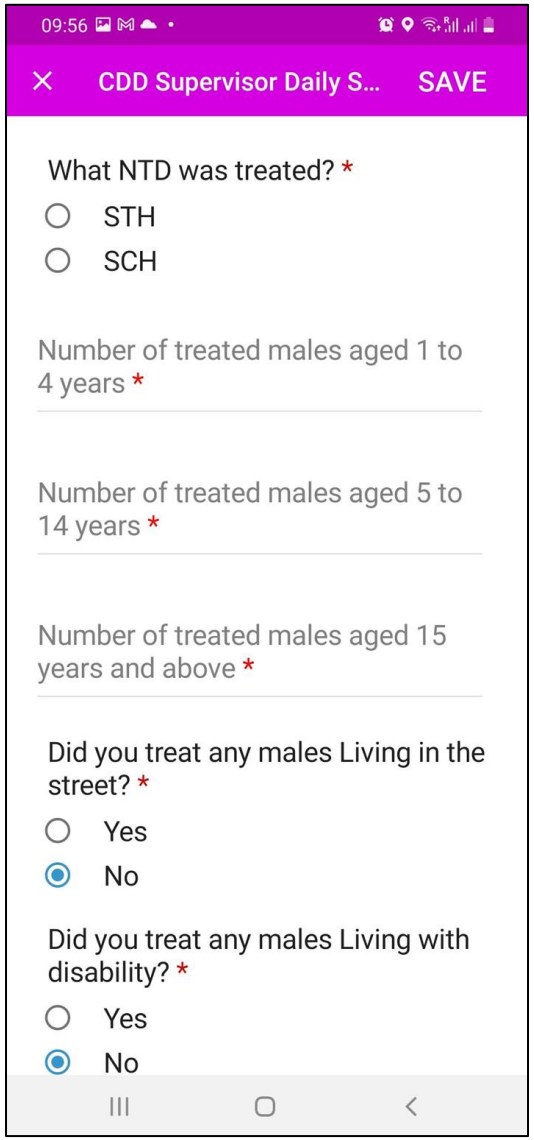
Campaign to focus on:

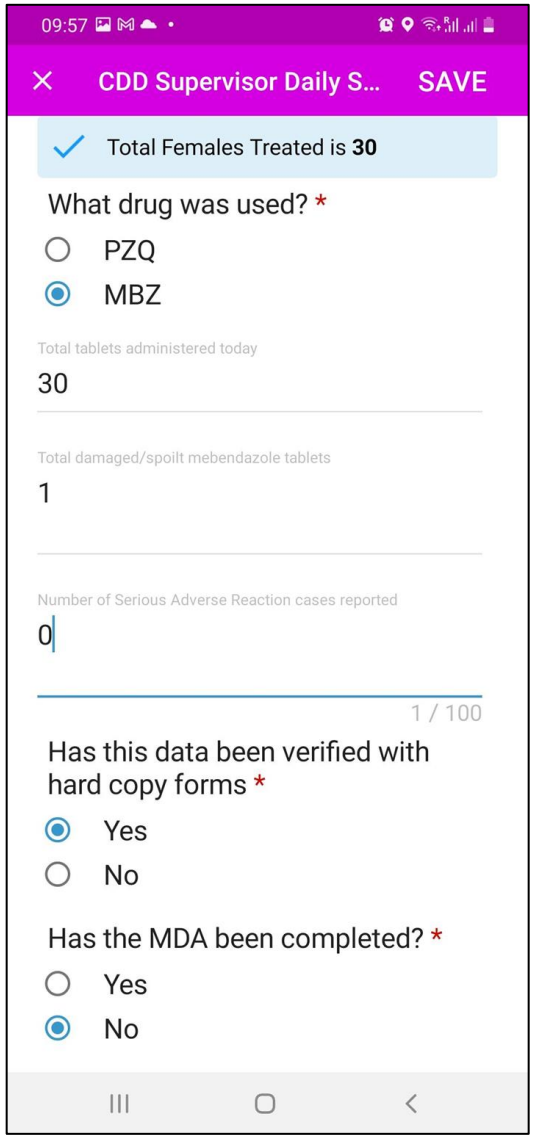
- **Number of people missing in the last MDA > 1500**
- **Endemicity**
- **Ward WASH score of 3 or less (based on the JMP sanitation ladder)**

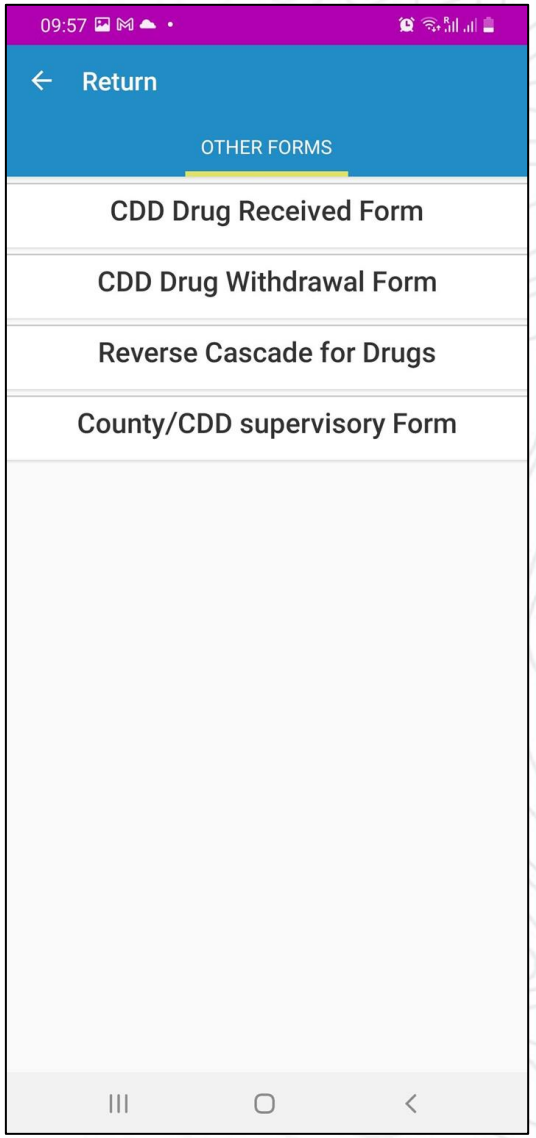
Reveal
REDEFINING PRECISION

Mobile application can be used on smartphones or tablets

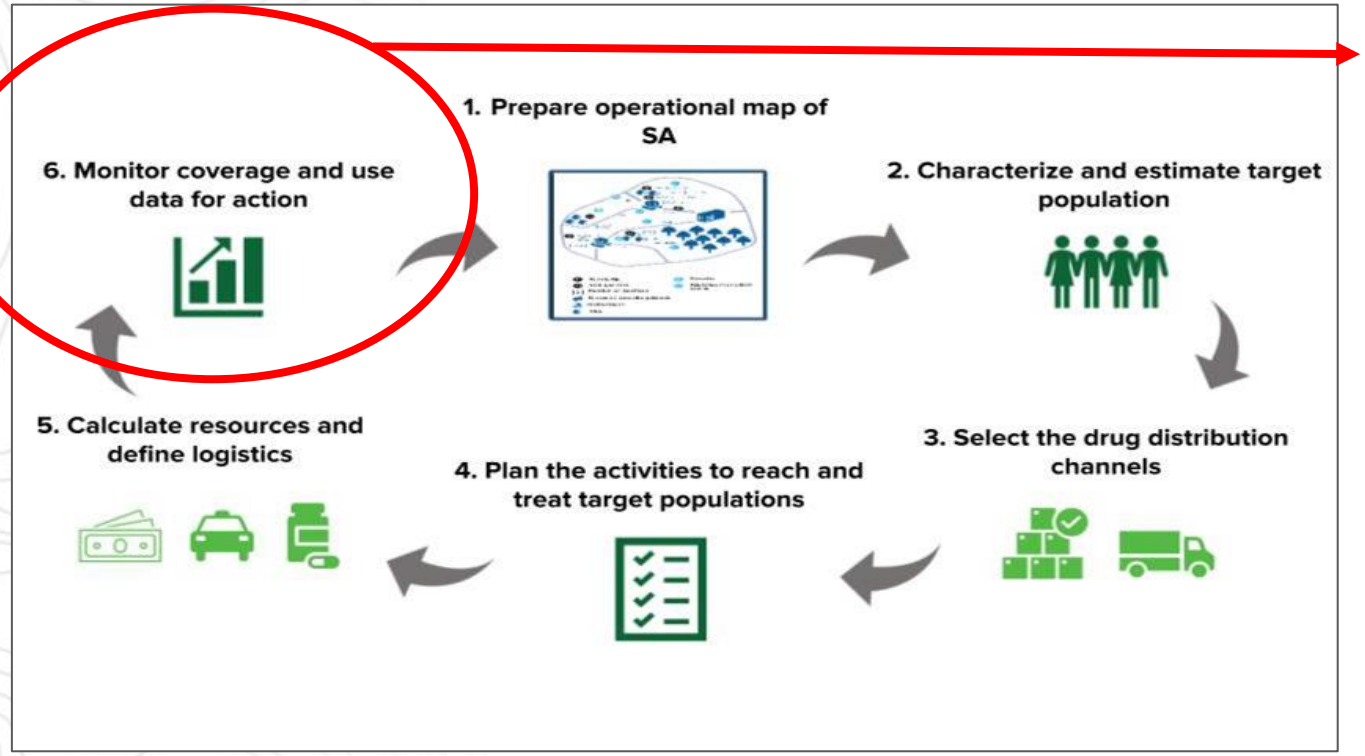
In December 2022, five sub-counties of Vihiga, Kenya implemented an integrated STH/SCH MDA campaign and used Reveal to capture and use data. 65 CDD supervisors entered aggregated data from 1,183 CDDs over the 5 day campaign. Nearly all CDD supervisors used their own mobile phones.

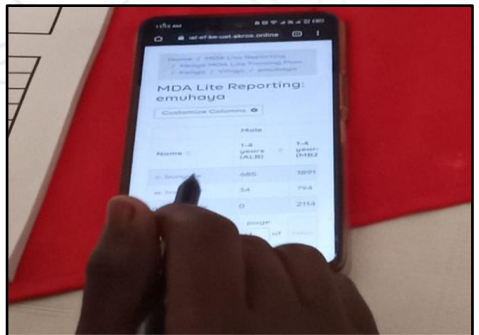


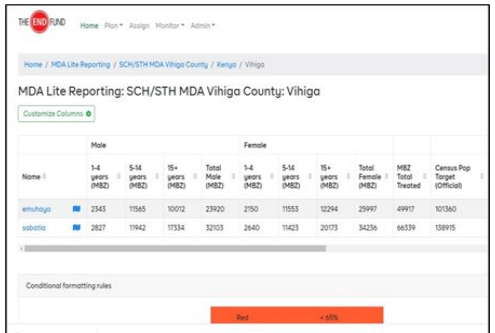


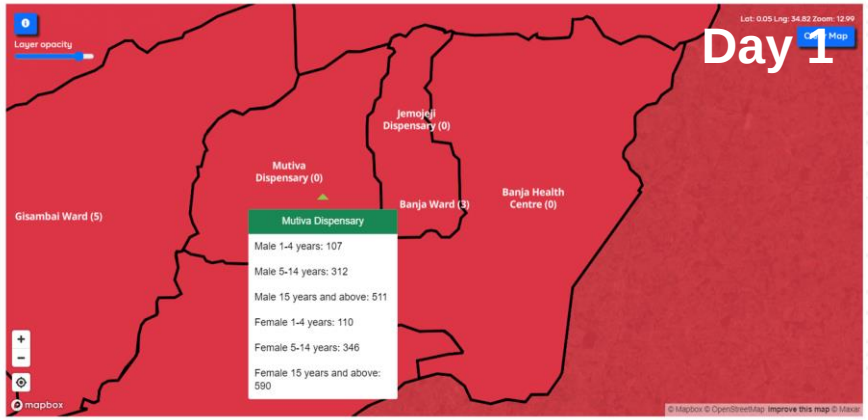


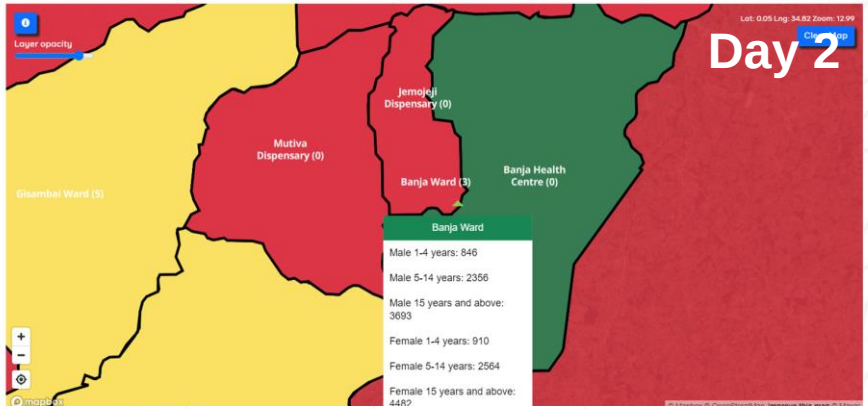
Enabled close monitoring over course of campaign

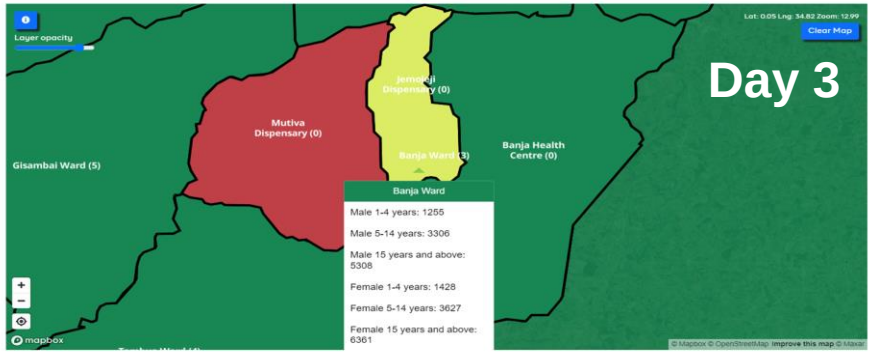












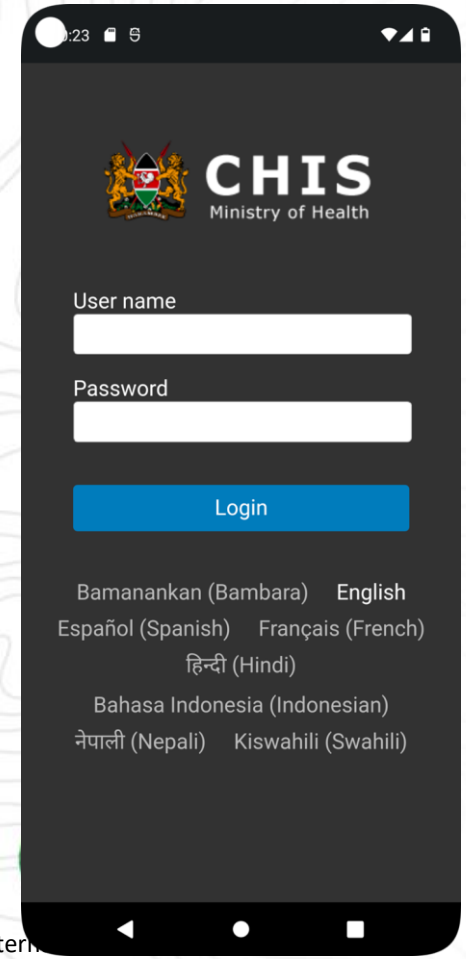
Compared to the standard planning approach, the microplanning tool and process improved planning by:

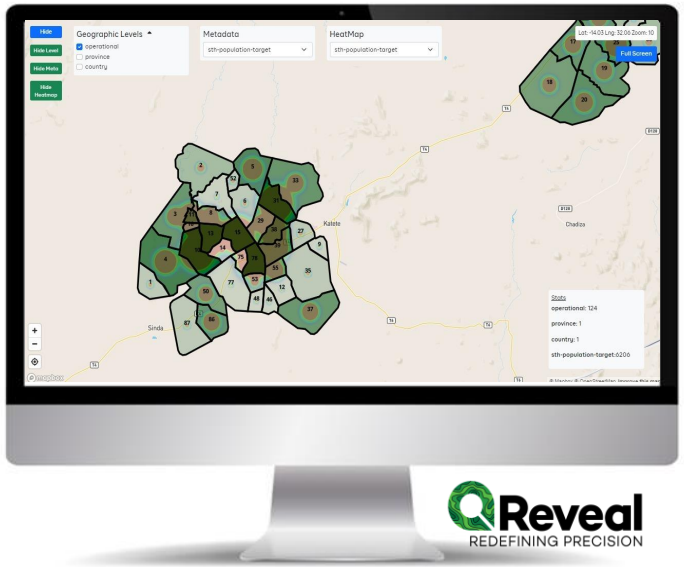
- Guiding teams through a deeper population analysis
- More efficient allocation of drug resources and HR (97% respondents)
- Improved coverage and reach of MDA (92% respondents)
- Prompting the use of previous campaign data to plan

Reveal

Next steps in Kenya: Integration of Reveal microplanning & eCHIS

- CHAI is leading the Integrated Campaign Digitization project in Kenya
- Purpose: Improve integrated health campaign effectiveness
- Microplanning features of Reveal will be added into eCHIS*





CHIS
Ministry of Health

QReveal
REDEFINING PRECISION

- Through integration, eCHIS will support geo-enabled planning of health campaigns
- Upload geospatial population data
- Planners can simulate campaign focus and identify staffing and resources required.

** Timeline: June-August 2023*

Geo-enablement actioned:

Zambia IRS & ITNs for malaria

End to end geo-enabled campaign planning, delivery and analysis

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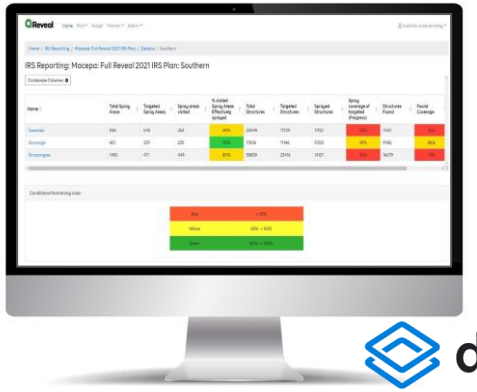

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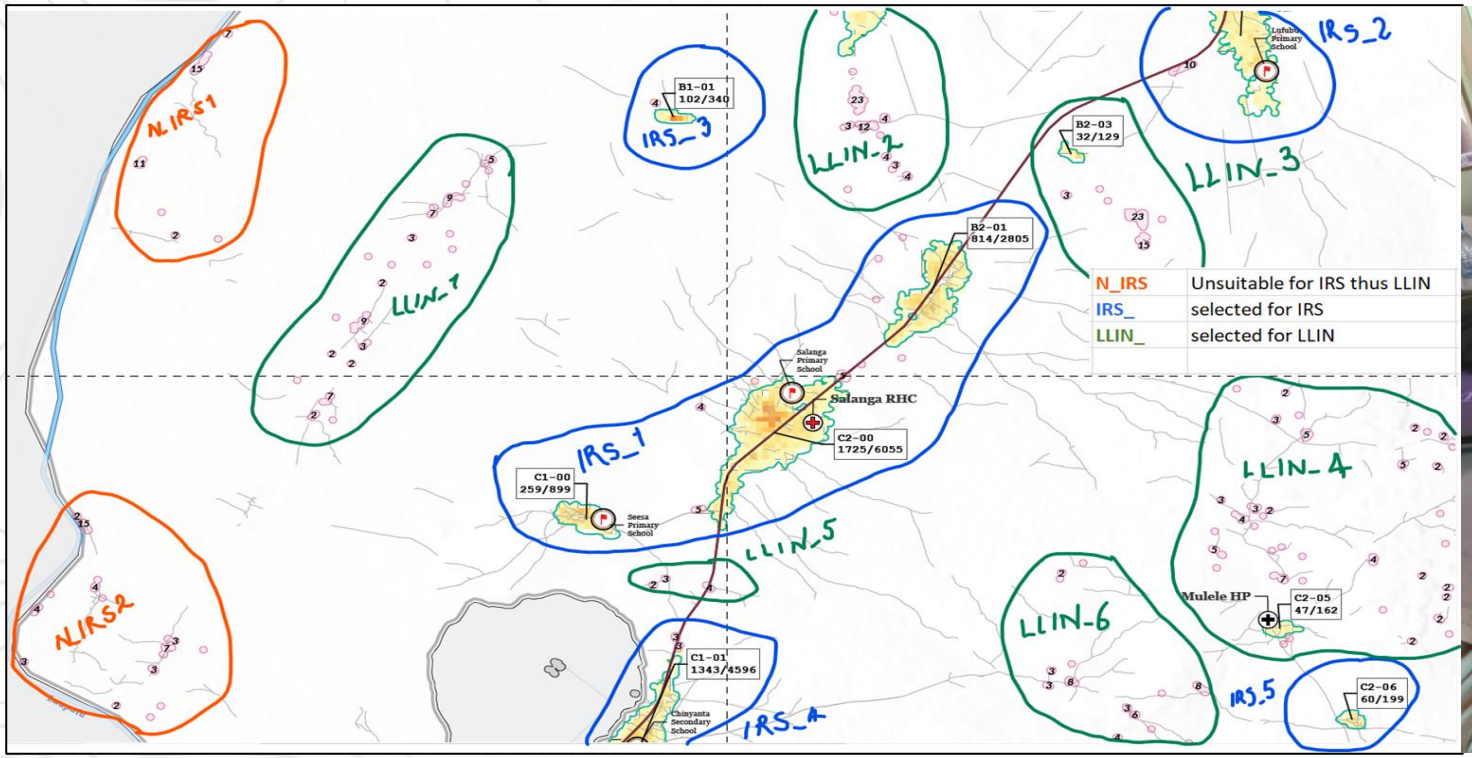
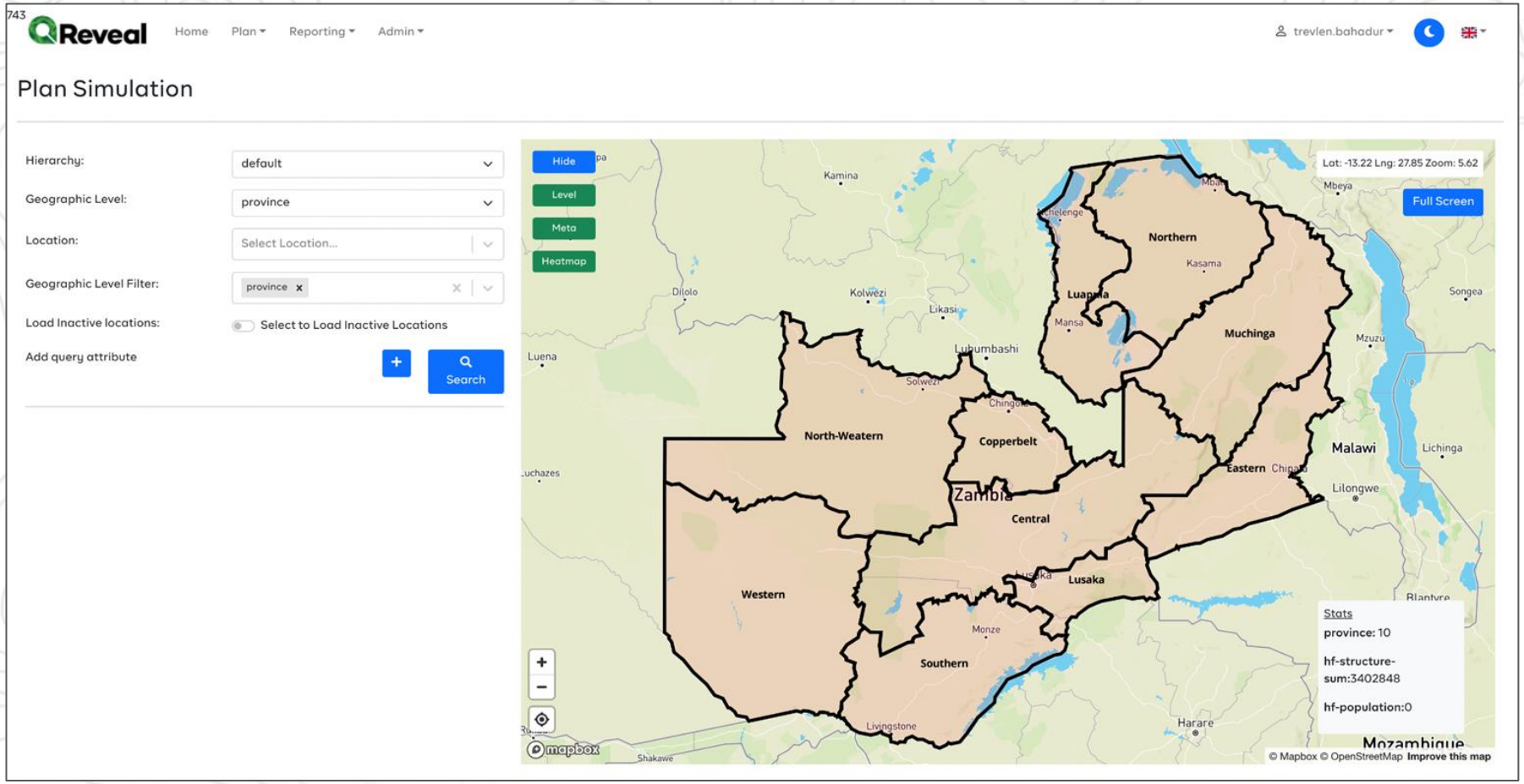
Zambia: Guided use of maps for IRS/ITN Campaign Microplanning



Population and structure count maps were created for all 116 districts in Zambia. During microplanning, District teams demarcated where they would implement IRS versus ITN interventions on these maps, ensuring sufficient resource allocation and ensuring no settlements would be missed.

IRS Trainingsincluded district and HF personnel interacting with map visualizations



Digitized plan creation

The Microplanning Module in Reveal allows you to:

- Compare campaign targeted areas to available resources (HR, drugs, nets, etc.)
- Strategize how to maximize your impact through geospatial analysis and assess various scenarios through the interface
- Disseminate the final plan to field teams for them to start data collection

QReveal Home Plan Reporting Admin derek.pollard

Assignments

Assign Plans

Assign Teams (NMEP 2022 IRS Campaign Full)

Hide Map

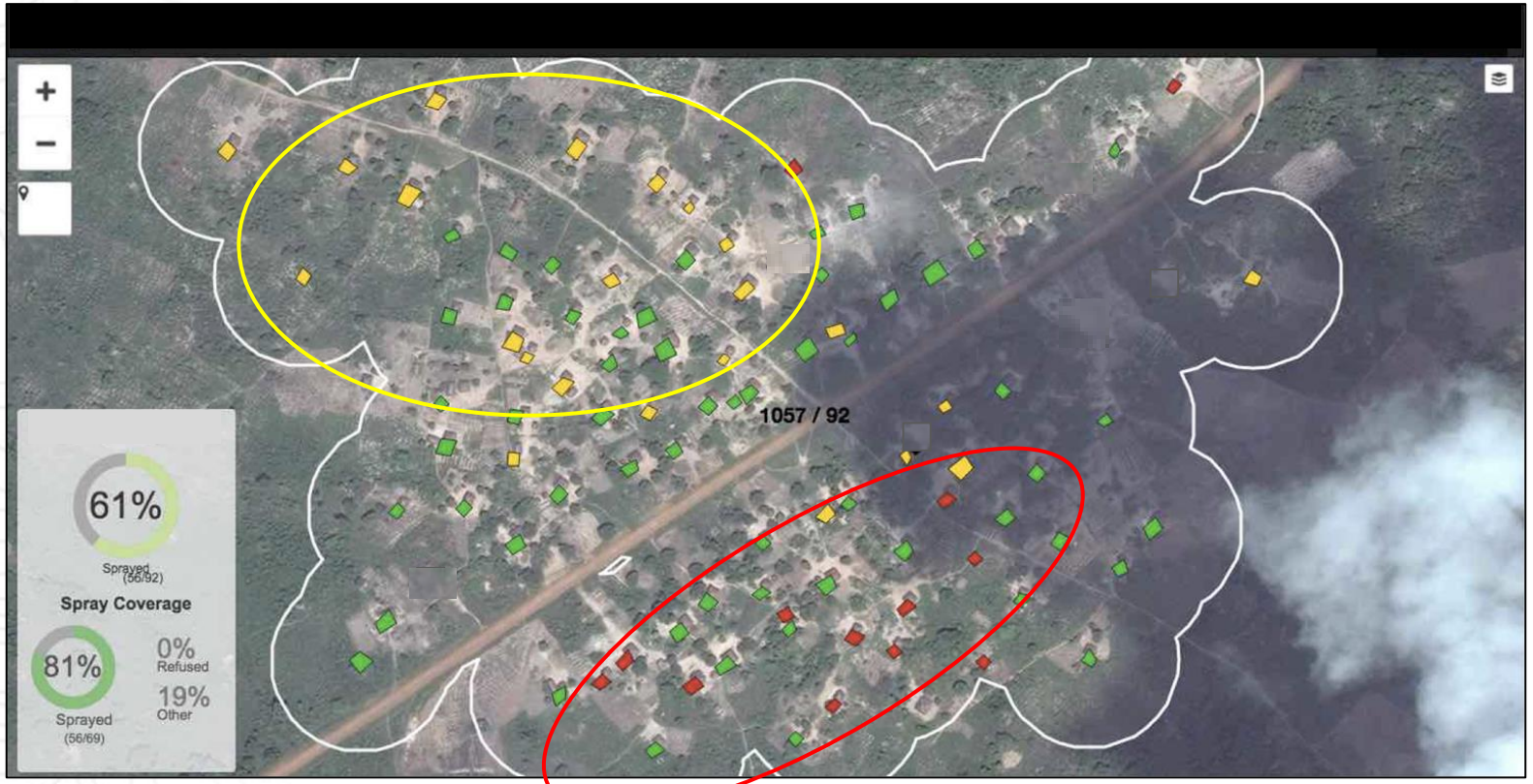
Assign Locations | Assign Teams: 6652 Save

Assign Locations | Assign Teams | Assignment Summary

	Location	Geography Level	Assign teams
>	Zambia (3)	country	Macepa Team × Chisanga Team × Siabbamba Team × Nkeyema D Team × Sinafala Team × Sompani Team × Chipepo Team × Chabbobboma Team × Gwembe Team × Munyumbwe Team × Lukonde Team × Makuyu Team × Bbondo Team × Chaamwe Team × Luumbo Team × Ntanga Team × Gulumunyanga Team × Kalelezhi Team × Nazikuye Team × Buleyamalima Team × Hamatuba Team × Kaoma D Team × Luampa D Team × Luanshya D Team × GVDC Team × Sinamalima Team × Siameja Team × Maamba hahc Team × Siansowa Team × Sikaneka Team × Kafwambila Team × Siatwinda Team × Sinazeze Team × Chiyabi Team × Sinazongwe Team × Siavonga Team ×

ENSURE NO ONE IS MISSED:

Field teams use Reveal to navigate to targets and capture data about intervention delivery, and to make data driven decisions, in the field.

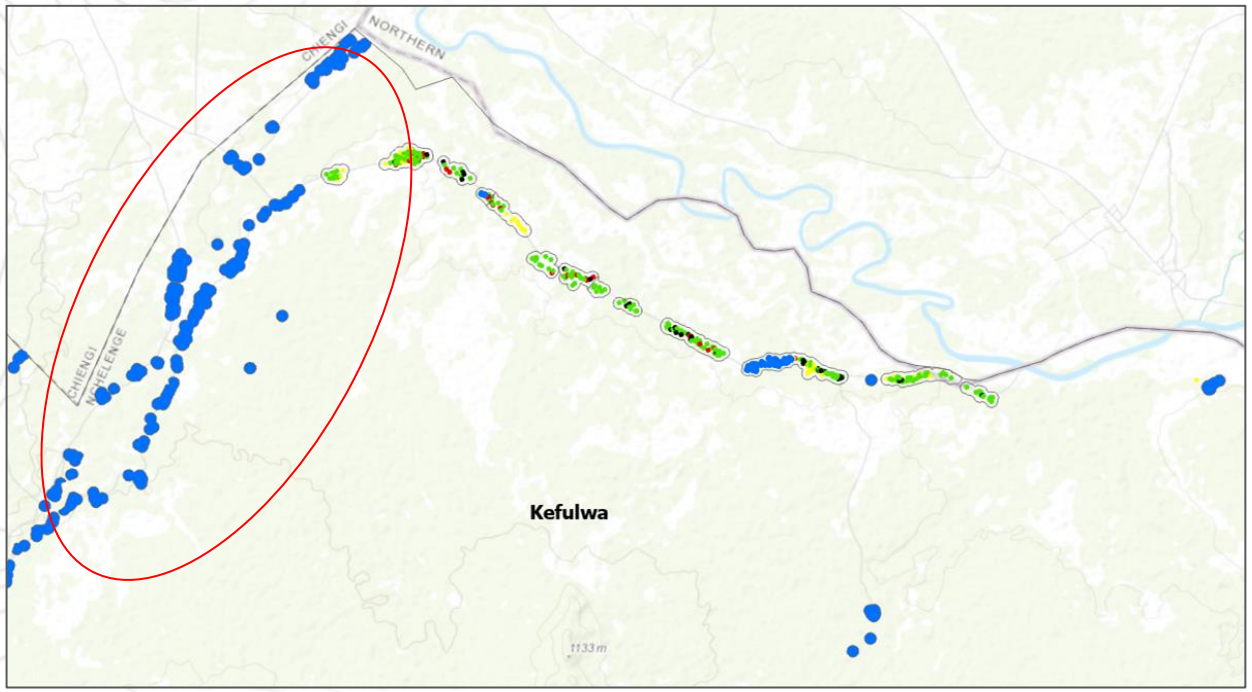


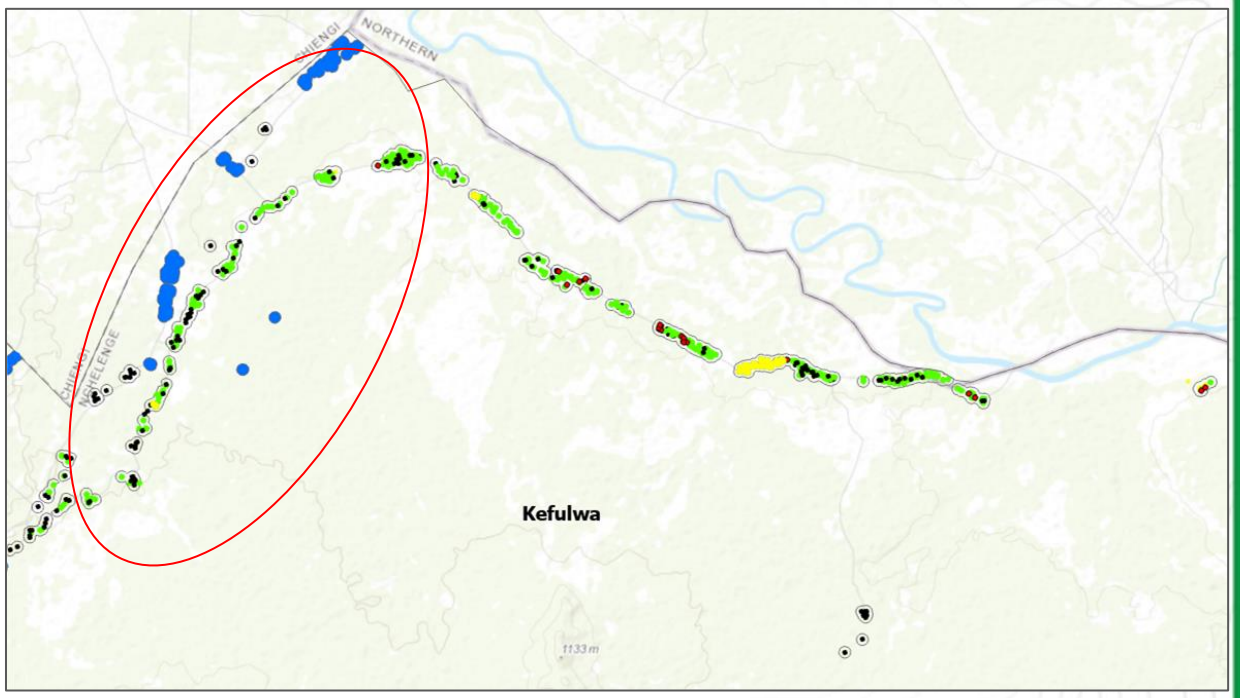
Household not yet visited
Received spray
Refused spray
Ineligible structure

Actions: direct teams to NW quadrant; provide SBC to areas south of the road

REACHING THE UNREACHED

Spray coverage in 2019 (83%) vs. 2020 (93%)





Intervention received

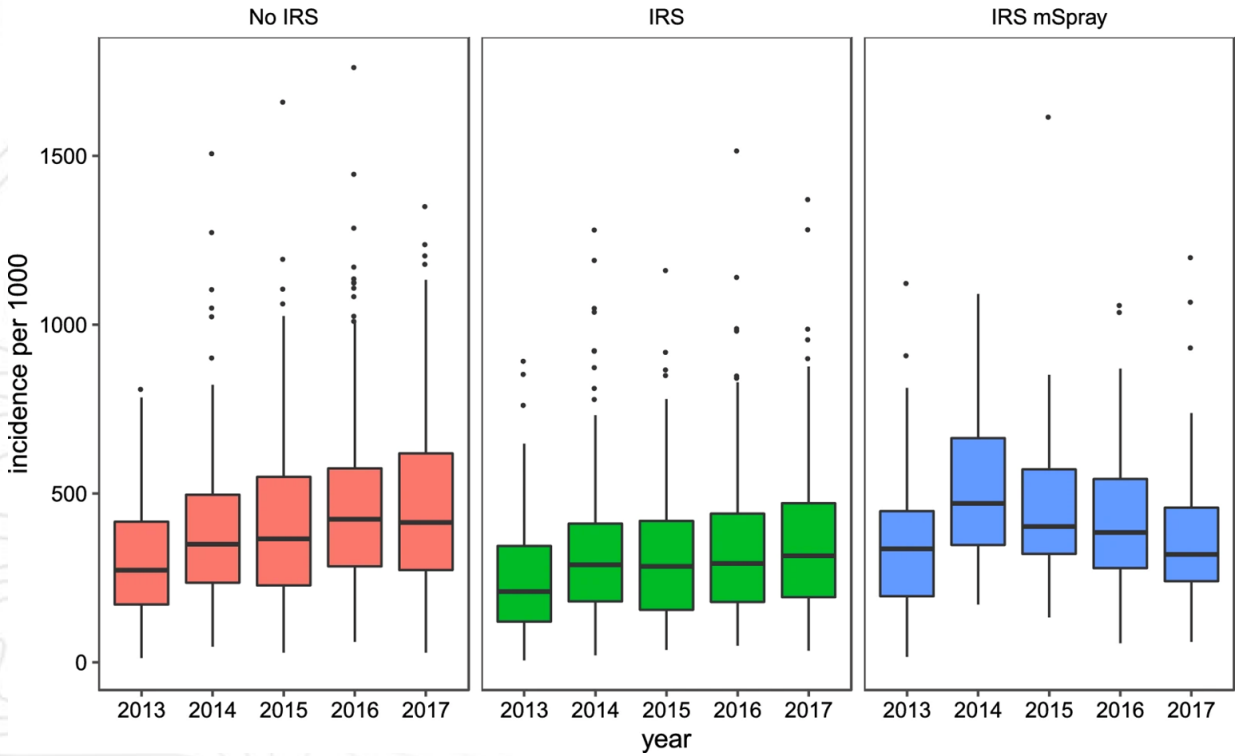
Not Reached

2019 83%

2020 93%

The map on the left shows a rural area of Kefulwa that was not reached in 2019; it was believed that there were very few structures here and all were ineligible. However, the image on the right shows results from 2020 IRS implementation where these areas were included in the spray calendar and the team was resourced to reach these areas. Some structures are ineligible (in black) but many structures in this rural, hard-to-reach, inland area are green, indicating that they were eligible and have received spray.

RETROSPECTIVE IMPACT EVALUATION



- **Keating et al (2021)** conducted a retrospective analysis of IRS operations in Luapula Province, Zambia.
- **Methods:** Random effects Poisson model, no IRS, IRS, IRS+Reveal
- **Results:** Confirmed malaria case incidence rose slightly in areas with No IRS (red); leveled out in areas receiving IRS (green), and decreased in areas receiving IRS+Reveal.
- **Conclusion:** "The use of the Reveal tool appears to improve the effectiveness of the IRS programme, possibly through improved population level coverage"
- Additional research by **Yukich et al (2019)** describe the potential **cost-effectiveness of use of Reveal through a multi-country analysis** through the nGenIRS project suggesting a significant reduction in cost per malaria case averted. [2]

1. Keating, J., Yukich, J.O., Miller, J.M. *et al.* Retrospective evaluation of the effectiveness of indoor residual spray with pirimiphos-methyl (Actellic) on malaria transmission in Zambia. *Malar J* 20, 173 (2021). https://doi.org/10.1186/s12936-021-03710-5

1. Tropical Health (Josh Yukich). Cost and cost-effectiveness of 3GIRS in sub-Saharan Africa: results of data collection and analysis in the nGenIRS project. January 2019.

What is the **Impact**, what are the Challenges and where are we Going?

1. Established microplanning practices across multiple SSA countries → spectrum of low tech to higher tech approaches
2. Over 3.6 million impacted through Reveal-related deployments alone
3. Increased health campaign coverages by 20-30%.[1]
4. Reduction in malaria incidence by 15%; Reduced cost per malaria case averted by 63% ($118 → $44).[2]

1. Larsen et al (2020). Leveraging risk maps of malaria vector abundance to guide control efforts reduces malaria incidence in Eastern Province, Zambia. Nature Scientific Reports. 10: https://www.nature.com/articles/s41598-020-66968-w
2. Center for Applied Malaria Research at Tulane University. Retrospective Evaluation of the Effectiveness of Indoor Residual Spray with Pirimiphos-Methyl (Actellic) on Malaria Transmission in Zambia. January 2017.

What is the Impact, what are the **Challenges** and where are we Going?

1. Use of digital devices in field - power outages challenging for recharging devices; managing multiple devices
2. Takes time to garner political and funding support for digital global goods
3. Population data and modeled estimates have varied accuracy -- field-based validation of datasets can inform future years
4. Additional ROI analyses are required to underscore the gains that geospatial technology can bring to make quick progress to SDG goals

What is the Impact, what are the Challenges and where are we **Going**?

1. Let's go farther together: **Integrate geospatial capability** to tools already working well insitu: *eCHIS*, DIGIT, DHIS2 → Scale
2. Integrate campaigns: reuse geospatial population data, use multi-delivery strategies
3. Extend the value chain of field data to continually build and improve global population datasets (Ramp, WorldPop, GRID3)
4. Operationalize geospatial risk models to guide precision campaign deployment to high-risk areas

We can achieve SDGs faster if we operationalize geospatial data to find and deliver health services to last mile communities and populations.

Thank you!

Anna Winters
awinters@akros.com

You are invited to join the Reveal community!
www.revealprecision.com

Source code:
Reveal source code is readily available here:
https://github.com/akrosinc

Layer opacity
1014_73 (73)
585_11 (11)
586_36 (36)
582_47 (47)
581_24 (24)
588_14 (14)
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All presenters have 20mins/15 slides (maximum) to present the proposed topics below. Please ensure that the presentations are not text heavy, use images where possible and limit the amount of country context (location, geography, population, etc.) in the presentation.

- Background/context – 2 slides
- Campaign digitalization implementation experience – 3 slides
- Achievements / best practices – 2 slides
- Challenges (focus on digitalization) – 2 slides
- Lessons learned and recommendations – 4 – 5 slides

Reveal

Internal

AKROS

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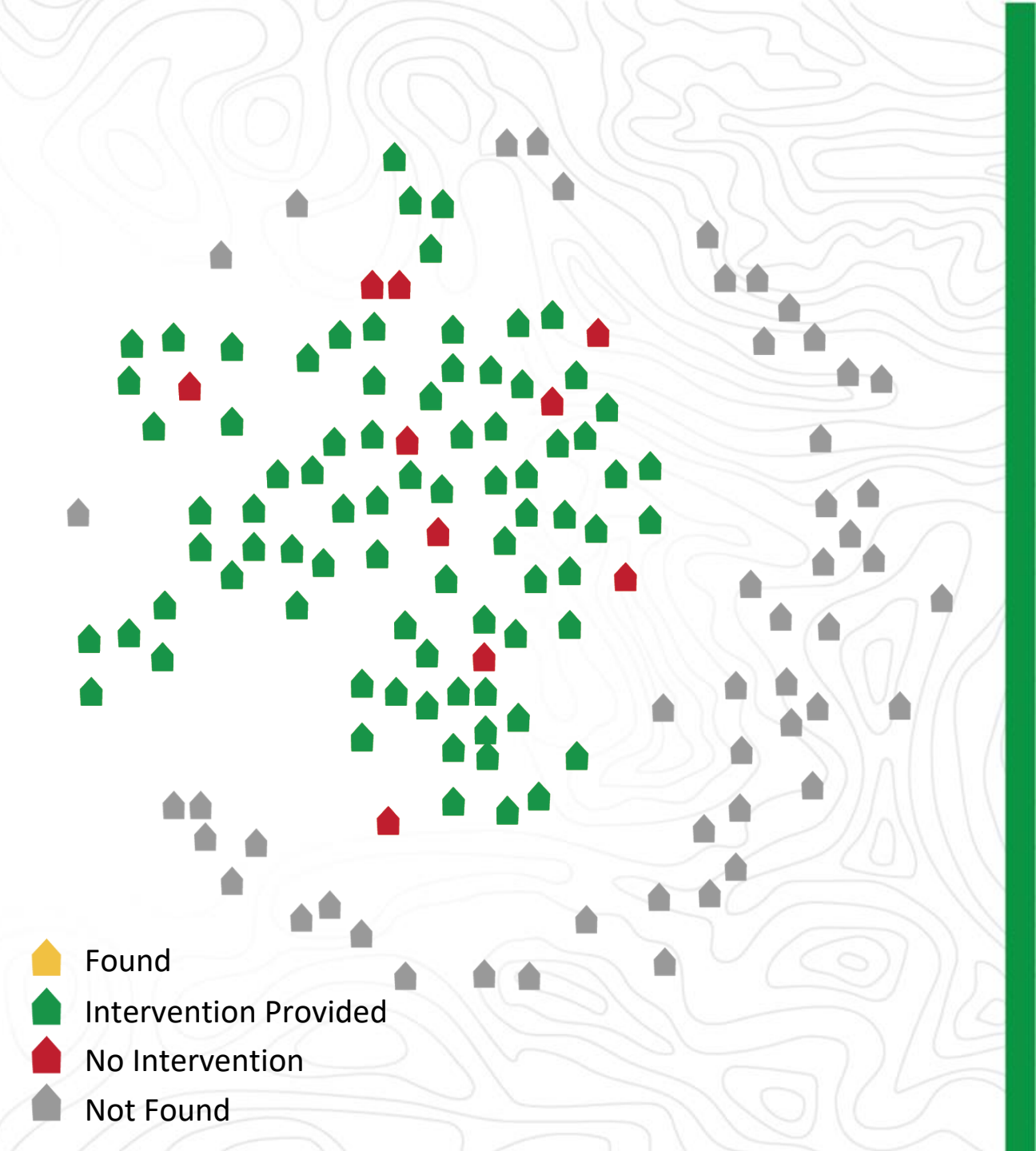

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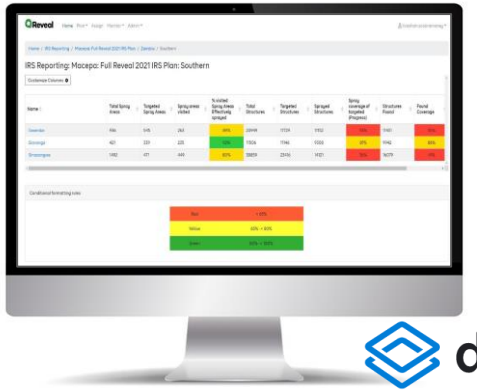

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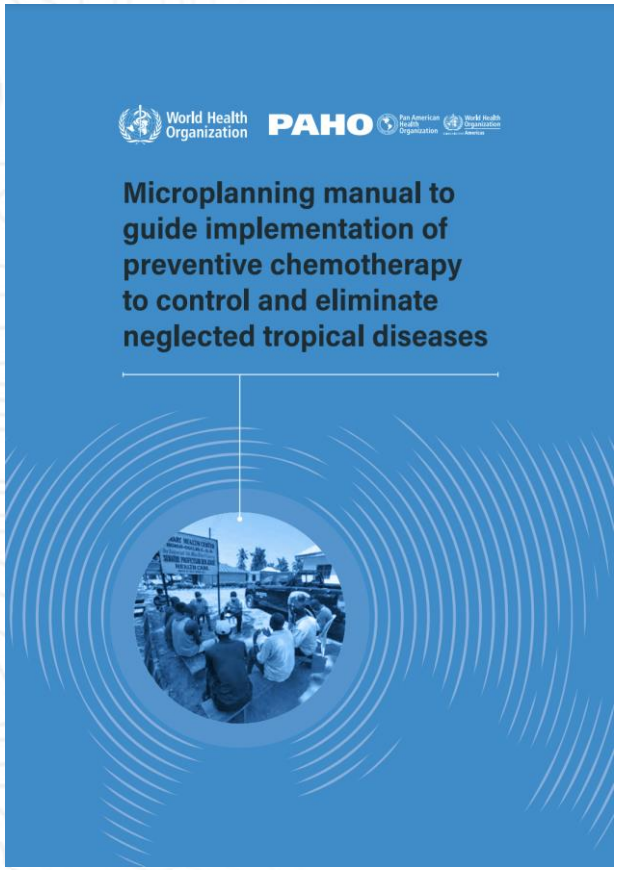
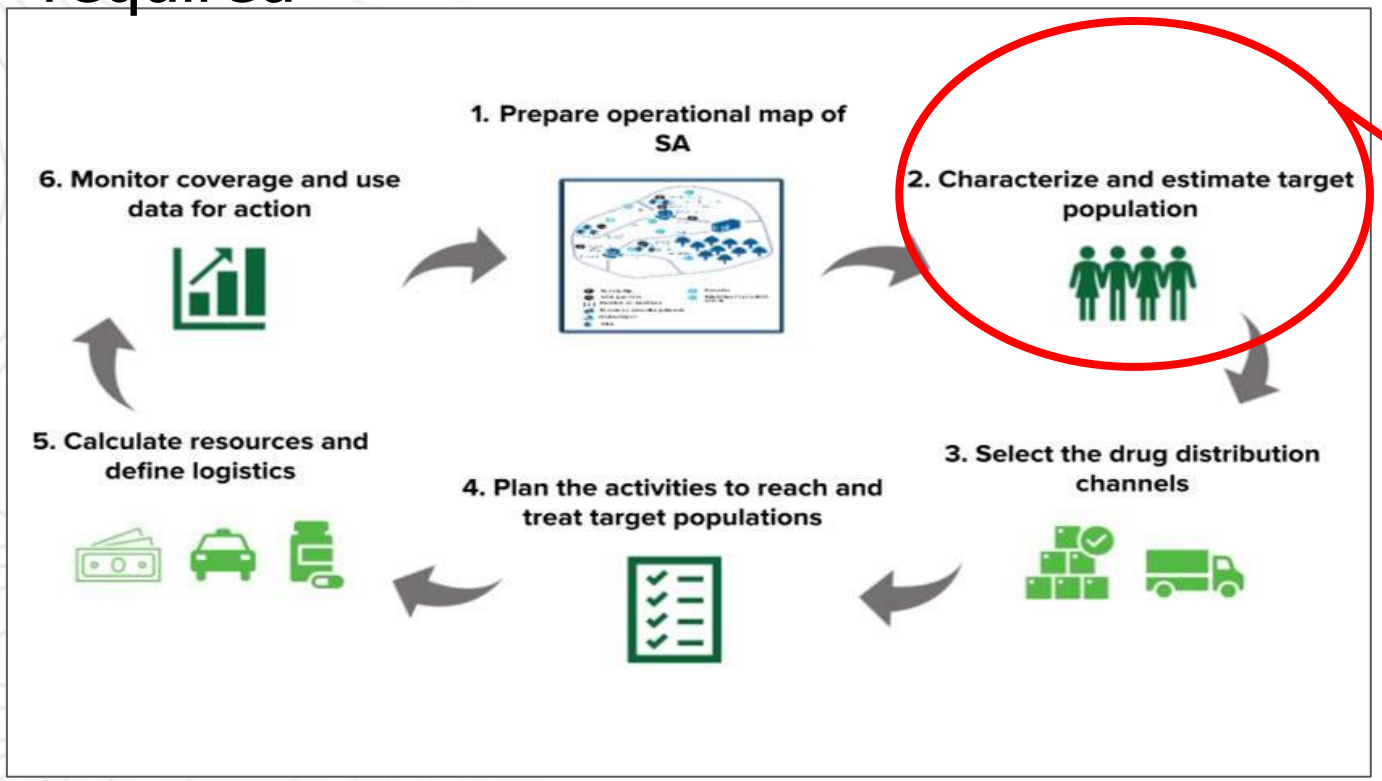
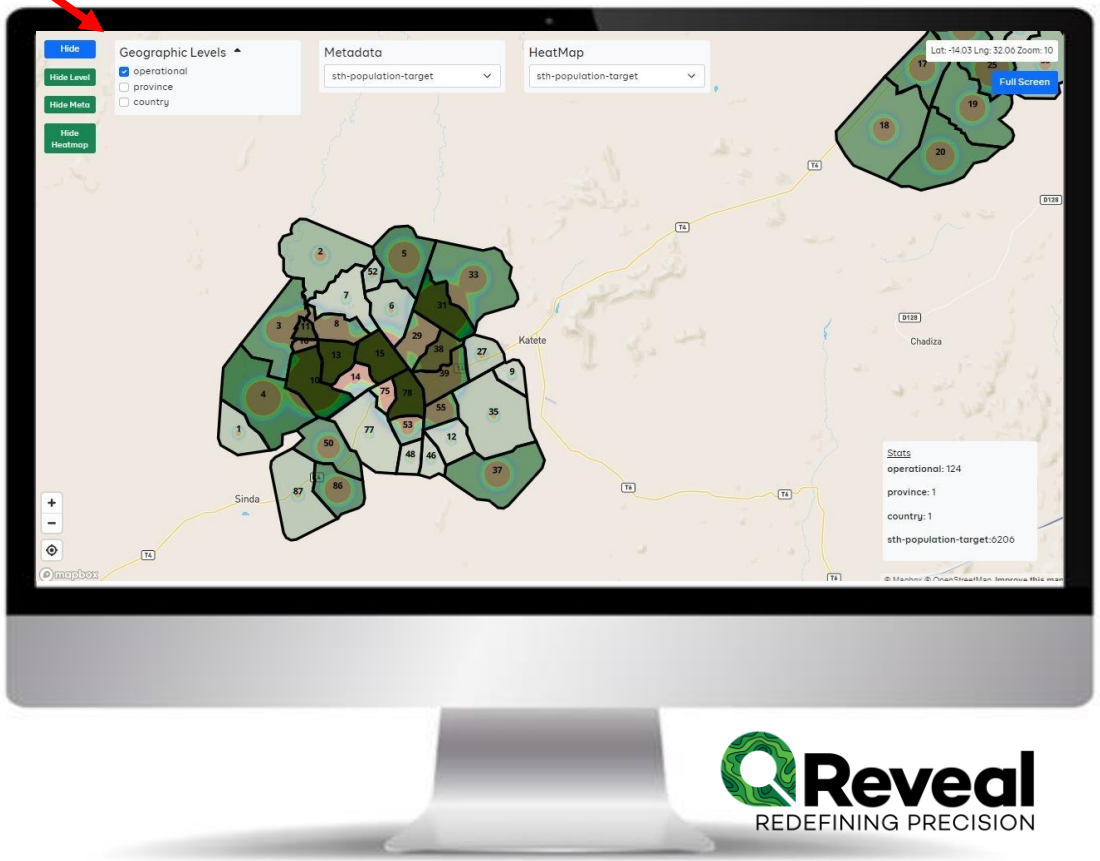


Applied Reveal's simulation and resource features to enable planners to interactively characterize and estimate the target population - and HR & drugs required



WHO 2022

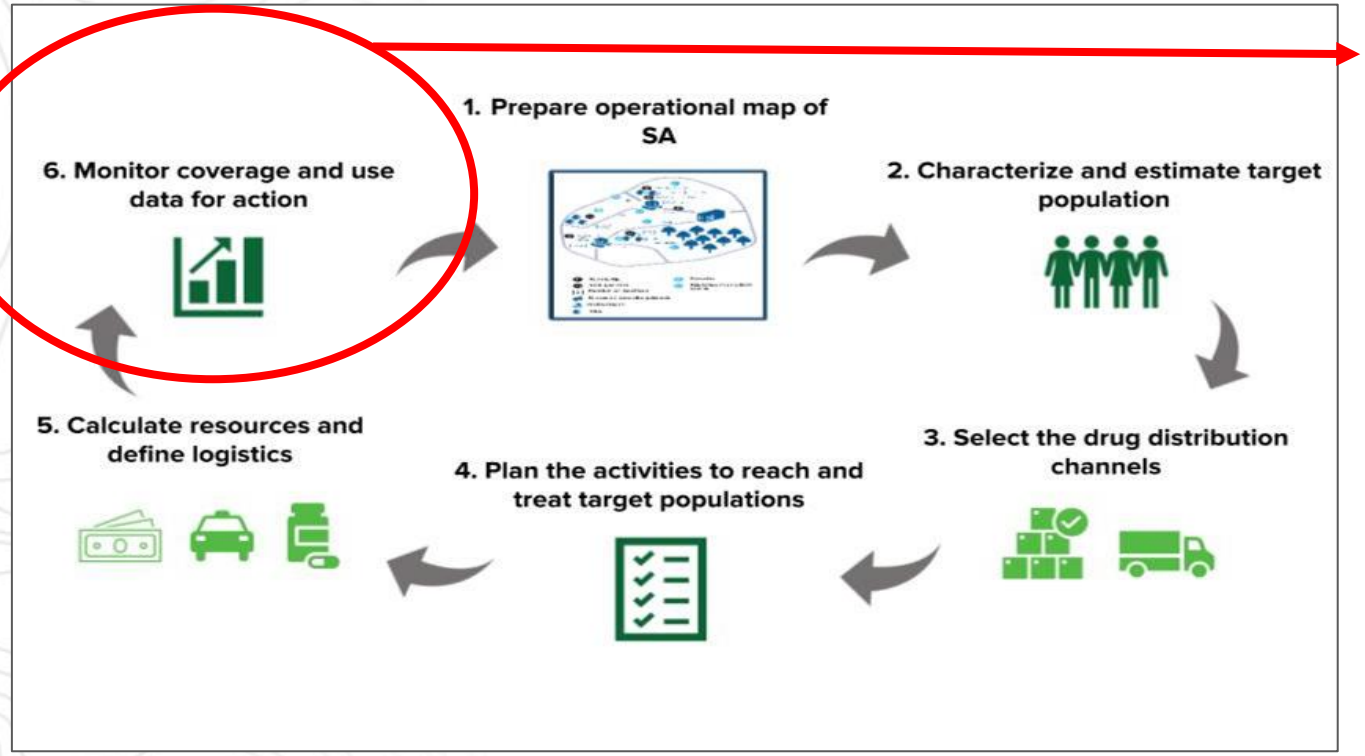


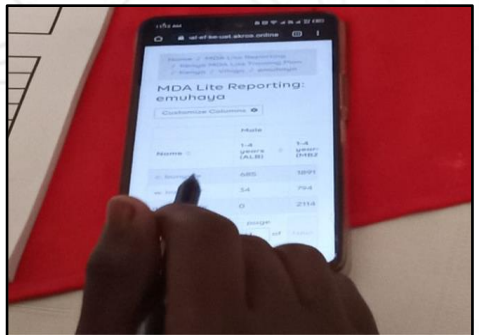
Campaign to focus on:

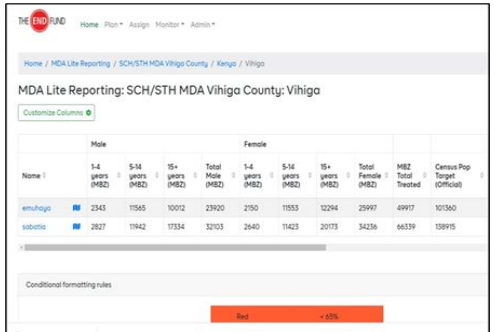
- **Number of people missing in the last MDA > 1500**
- **Endemicity**
- **Ward WASH score of 3 or less (based on the JMP sanitation ladder)**

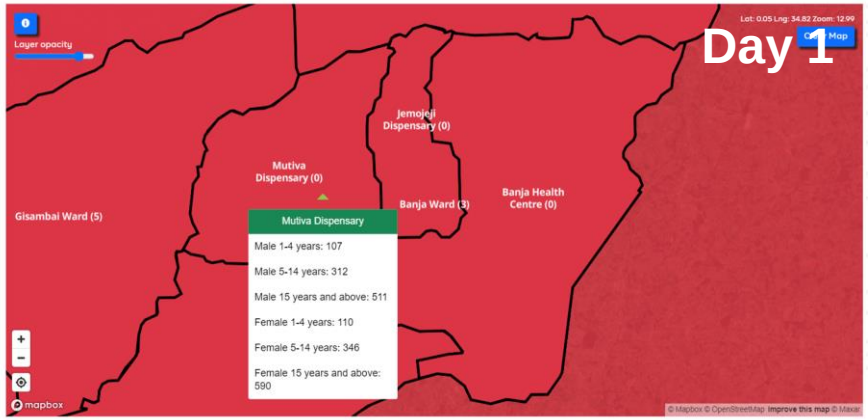
Reveal
REDEFINING PRECISION

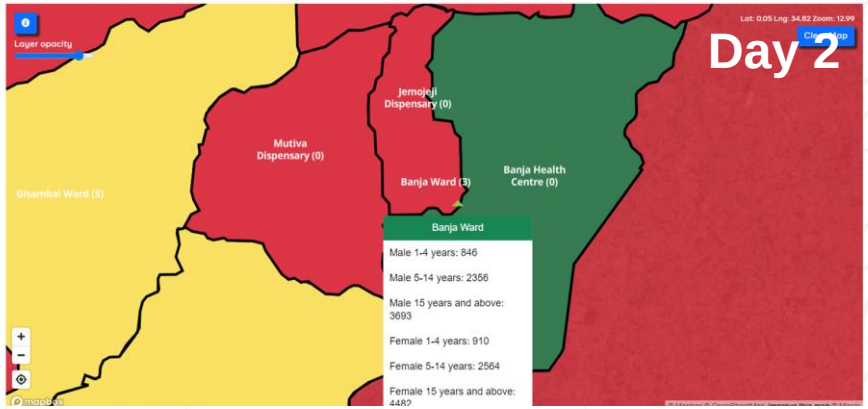
Enabled close monitoring over course of campaign

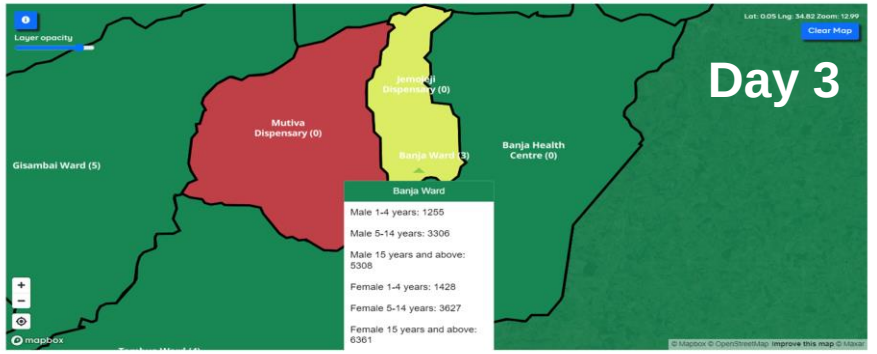












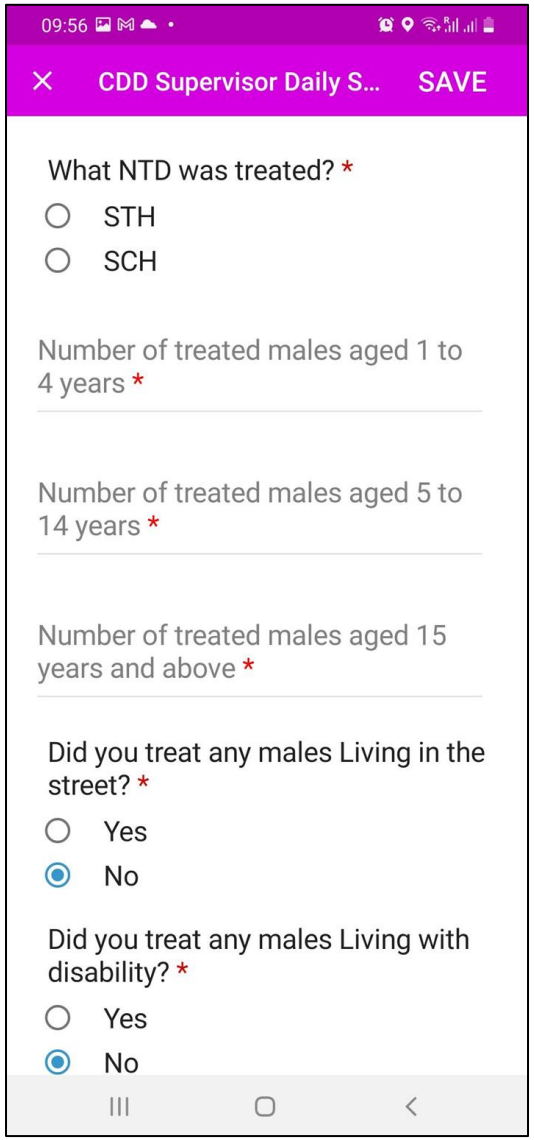
Compared to the standard planning approach, the microplanning tool and process improved planning by:

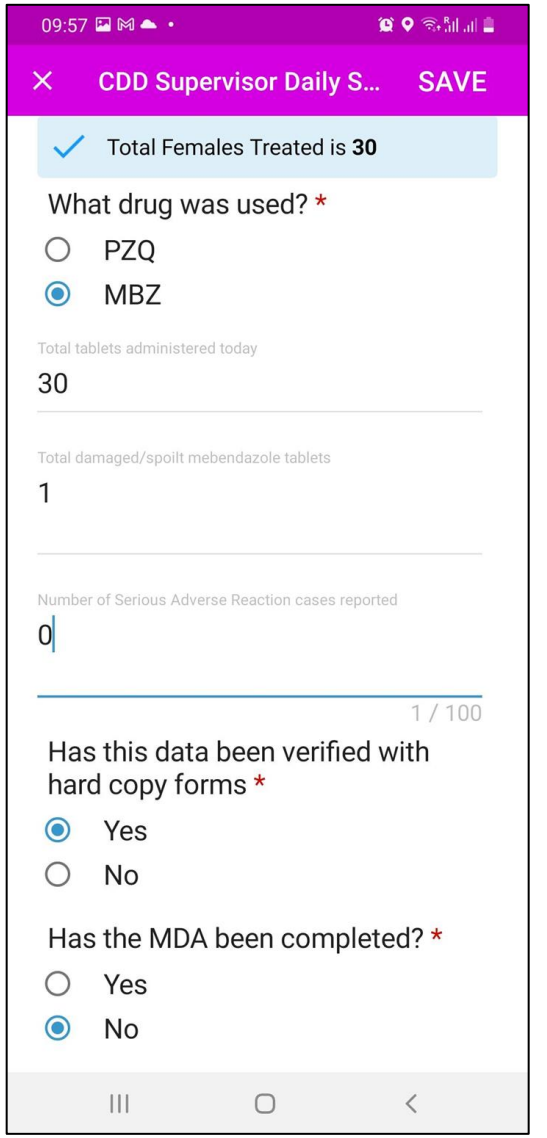
- Guiding teams through a deeper population analysis
- More efficient allocation of drug resources and HR (97% respondents)
- Improved coverage and reach of MDA (92% respondents)
- Prompting the use of previous campaign data to plan
- Providing a new process for hybrid implementation planning in line with the Breaking Transmission Strategy

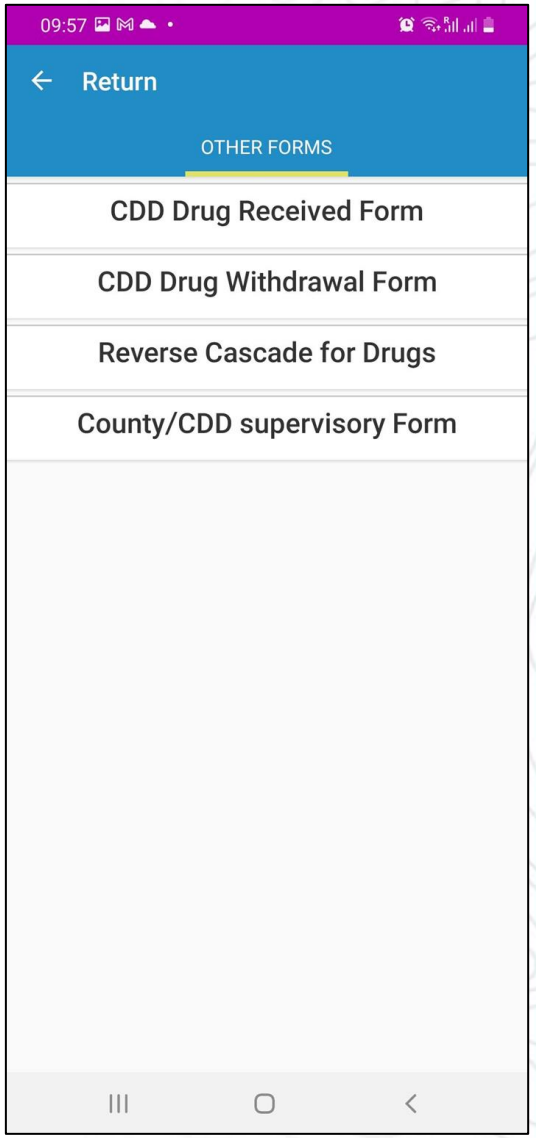
QReveal

Mobile application can be used on smartphones or tablets

In December 2022, five sub-counties of Vihiga, Kenya implemented an integrated STH/SCH MDA campaign and used Reveal to capture and use data.



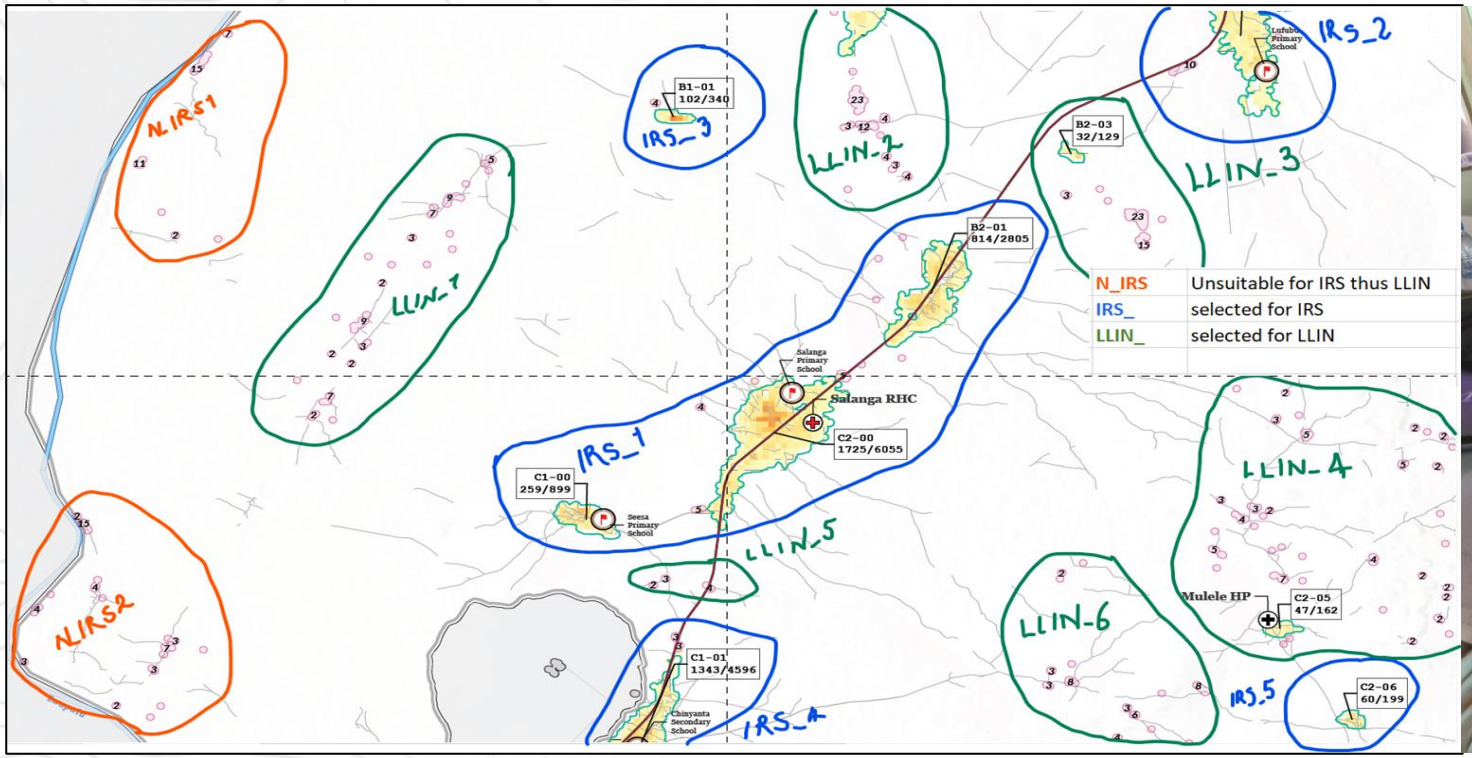




Geo-enablement actioned:

Zambia IRS & ITNs for malaria

Guided use of maps for IRS/ITN Campaign Microplanning

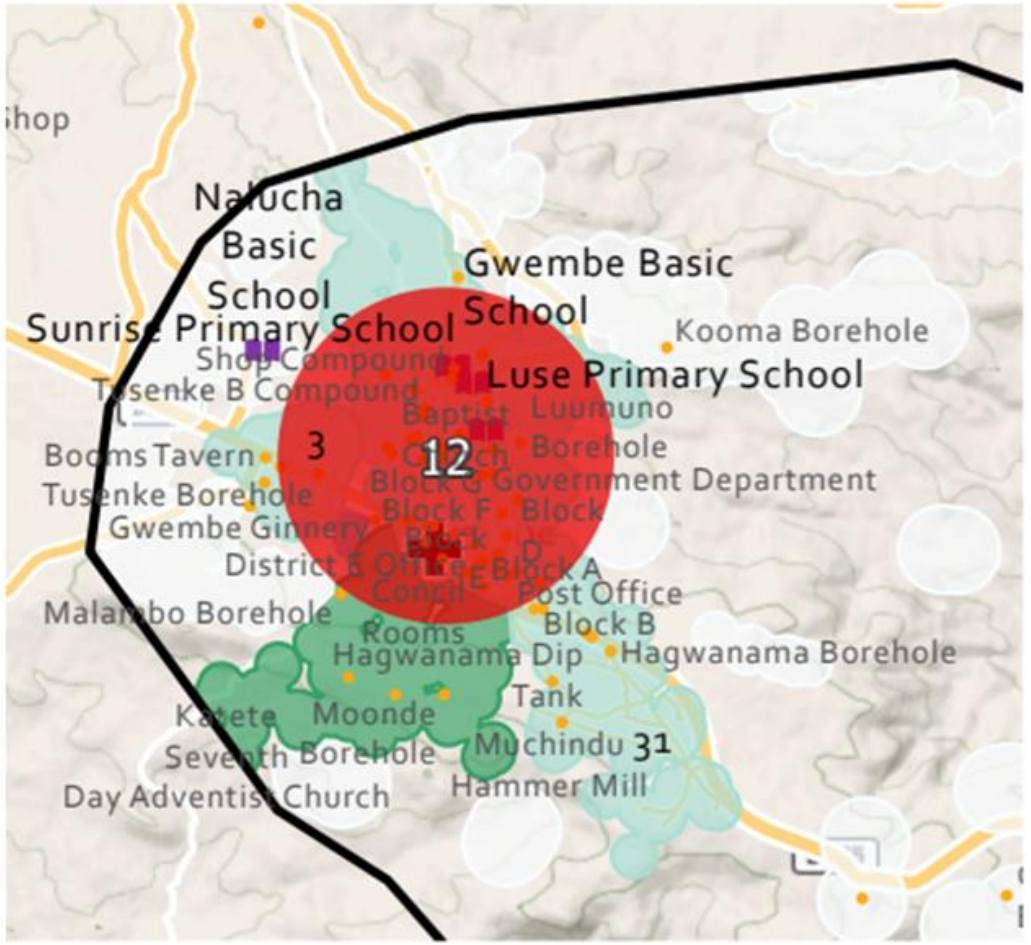


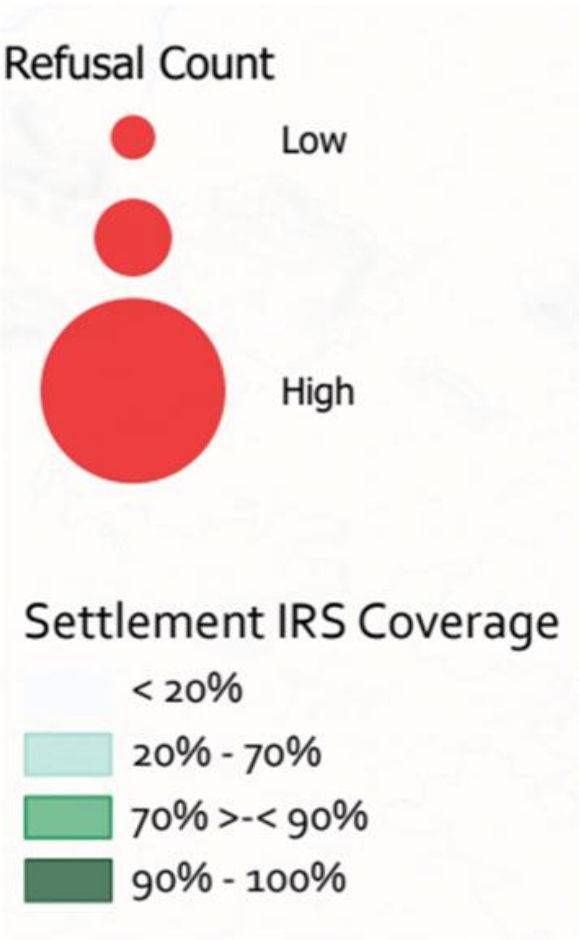
Population and structure count maps were created for all 116 districts in Zambia. During microplanning, District teams demarcated where they would implement IRS versus ITN interventions on these maps, ensuring sufficient resource allocation and ensuring no settlements would be missed.

IRS Trainings in August 2022 included district and HF personnel interacting with SBC visualization

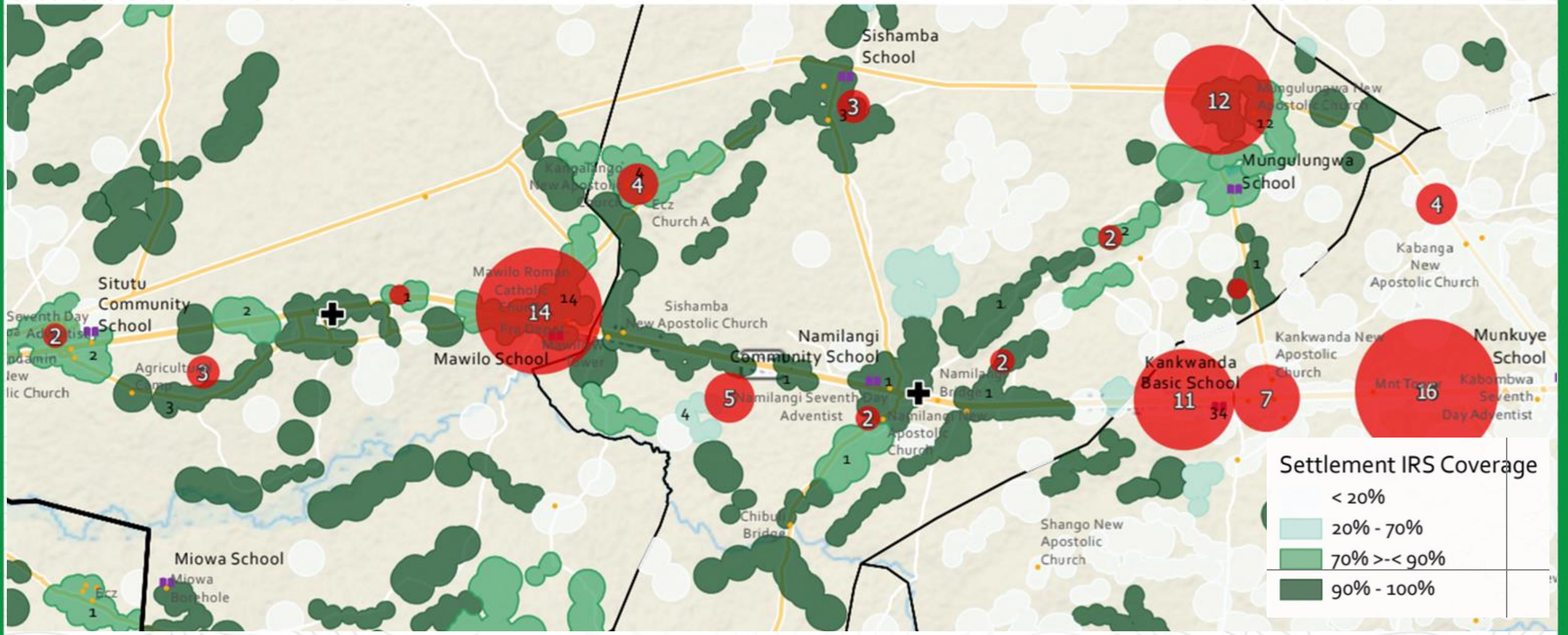
Maps show gaps - in messaging, in spray coverage - but also opportunities

- This area of Gwembe District shows coverage below 90% and relatively high refusals
- But it also identifies schools, churches and other areas that can serve as entry points around IRS and other malaria messages delivered by trusted messengers

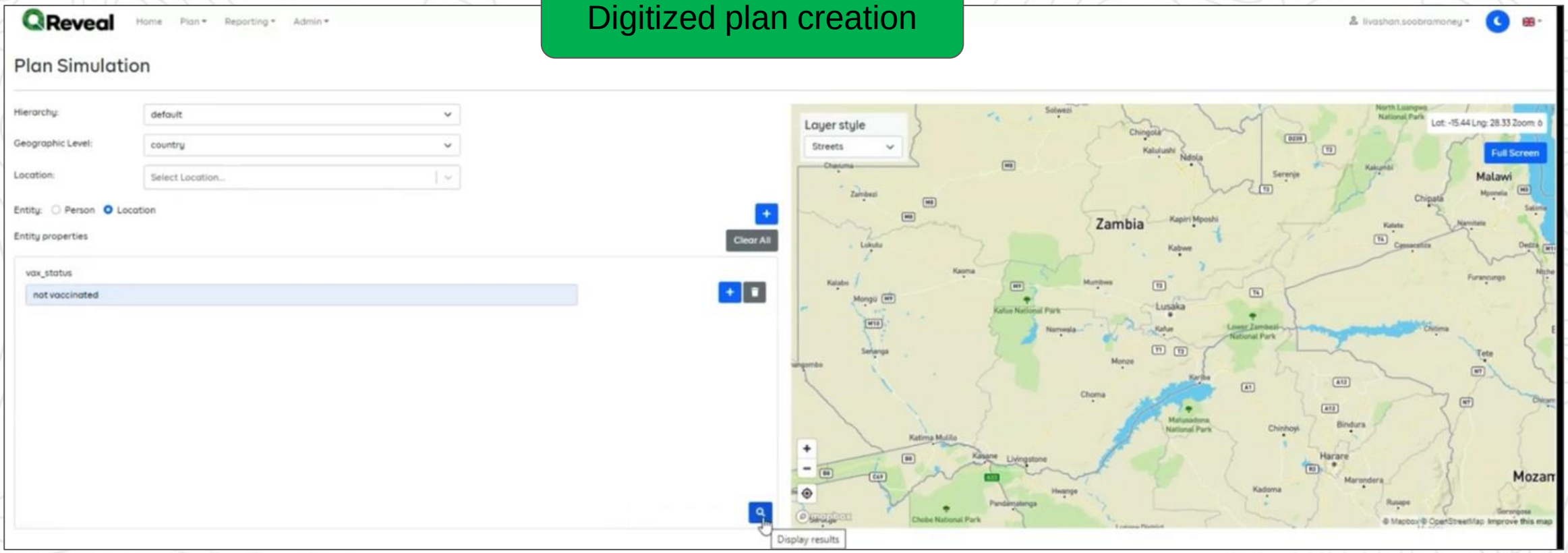




Nkeyema District, Western Province



Digitized plan creation



The ‘Plan Simulation Tool’ allows you to:

- Compare campaign targeted areas to available resources (HR, drugs, nets, etc.)
- Strategize how to maximize your impact through geospatial analysis and assess various scenarios through the interface
- Disseminate the final plan to field teams for them to start data collection

QReveal Home Plan Reporting Admin derek.pollard

Assignments

Assign Plans

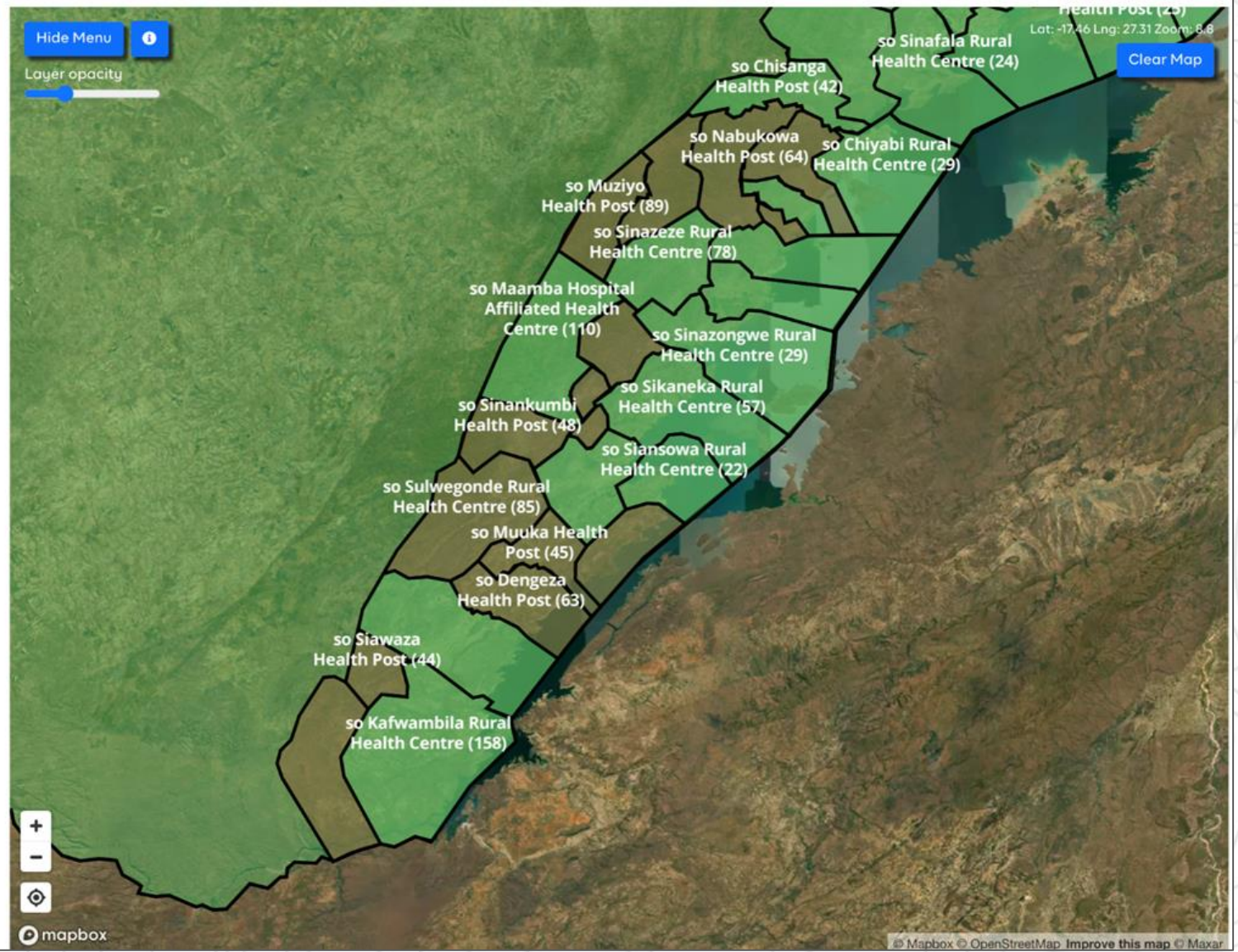
Assign Teams (NMEP 2022 IRS Campaign Full)

Hide Map

Assign Locations | Assign Teams: 6652 Save

Assign Locations Assign Teams Assignment Summary

	Location	Geography Level	Assign teams
>	Zambia (3)	country	Macepa Team × Chisanga Team × Siabbamba Team × Nkeyema D Team × Sinafala Team × Sompani Team × Chipepo Team × Chabbobboma Team × Gwembe Team × Munyumbwe Team × Lukonde Team × Makuyu Team × Bbondo Team × Chaamwe Team × Luumbo Team × Ntanga Team × Gulumunyanga Team × Kalelezhi Team × Nazikuye Team × Buleyamalima Team × Hamatuba Team × Kaoma D Team × Luampa D Team × Luanshya D Team × GVDC Team × Sinamalima Team × Siameja Team × Maamba hahc Team × Siansowa Team × Sikaneka Team × Kafwambila Team × Siatwinda Team × Sinazeze Team × Chiyabi Team × Sinazongwe Team × Siavonga Team ×



QReveal Home Plan Reporting Admin derek.pollard

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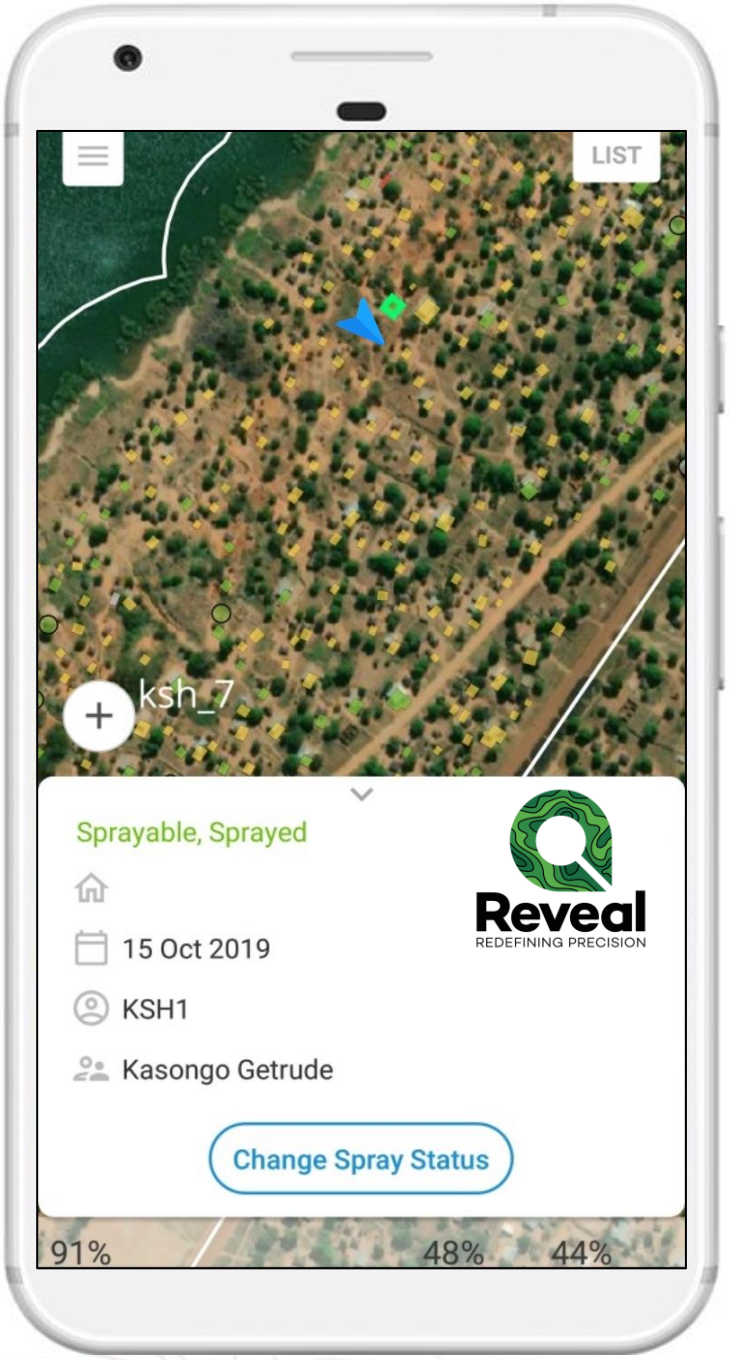
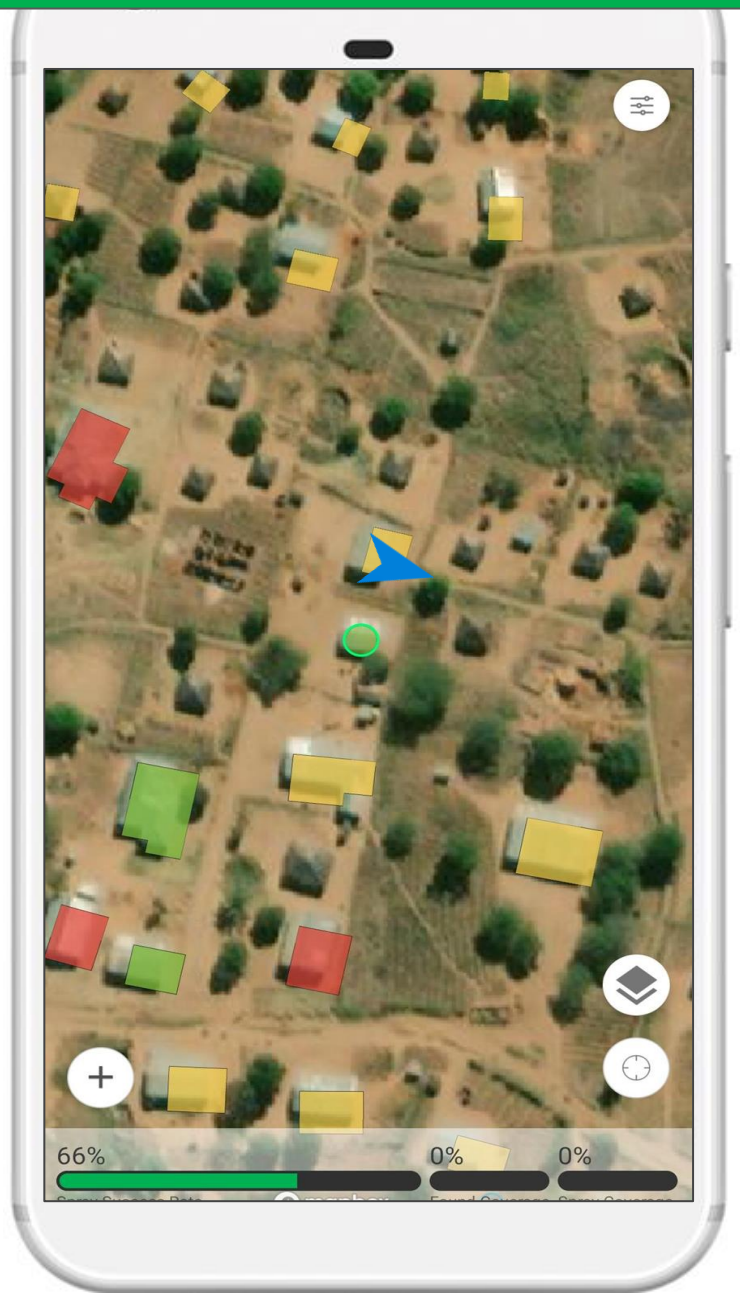
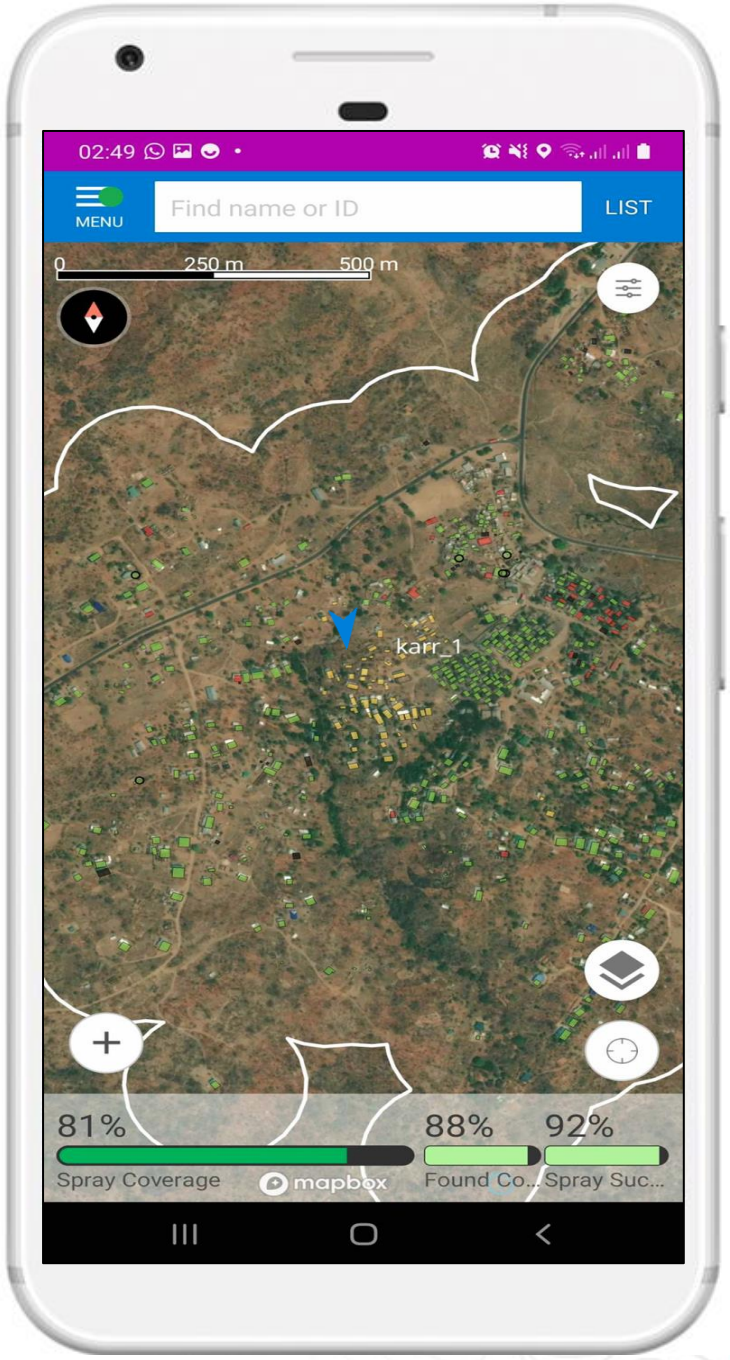
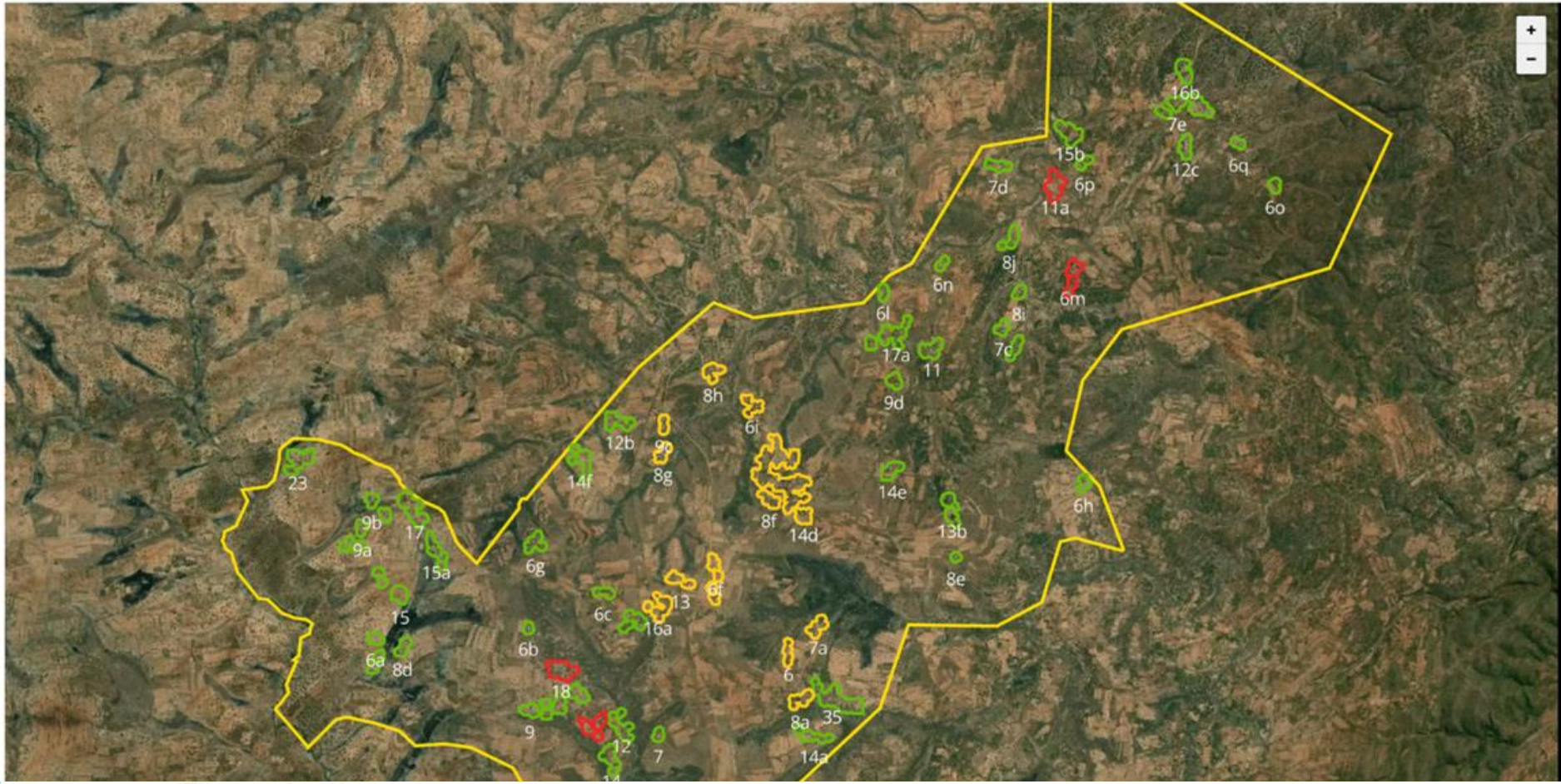
Navigate, deliver and record







Macepa IRS-Lite 2021 Plan: So Siasikabole Health Post



So Siasikabole Health Post

Legend

- Sprayed
- Not Sprayed
- Not Visited

Spray Coverage (Effectiveness)

Percent of Total Structures Sprayed

Progress: 1073 of 1429 structure(s) (75%)

Targeted Spray Coverage (Effectiveness)

Percent of Targeted Structures Sprayed

Progress: 1073 of 1429 structure(s) (75%)

Found Coverage

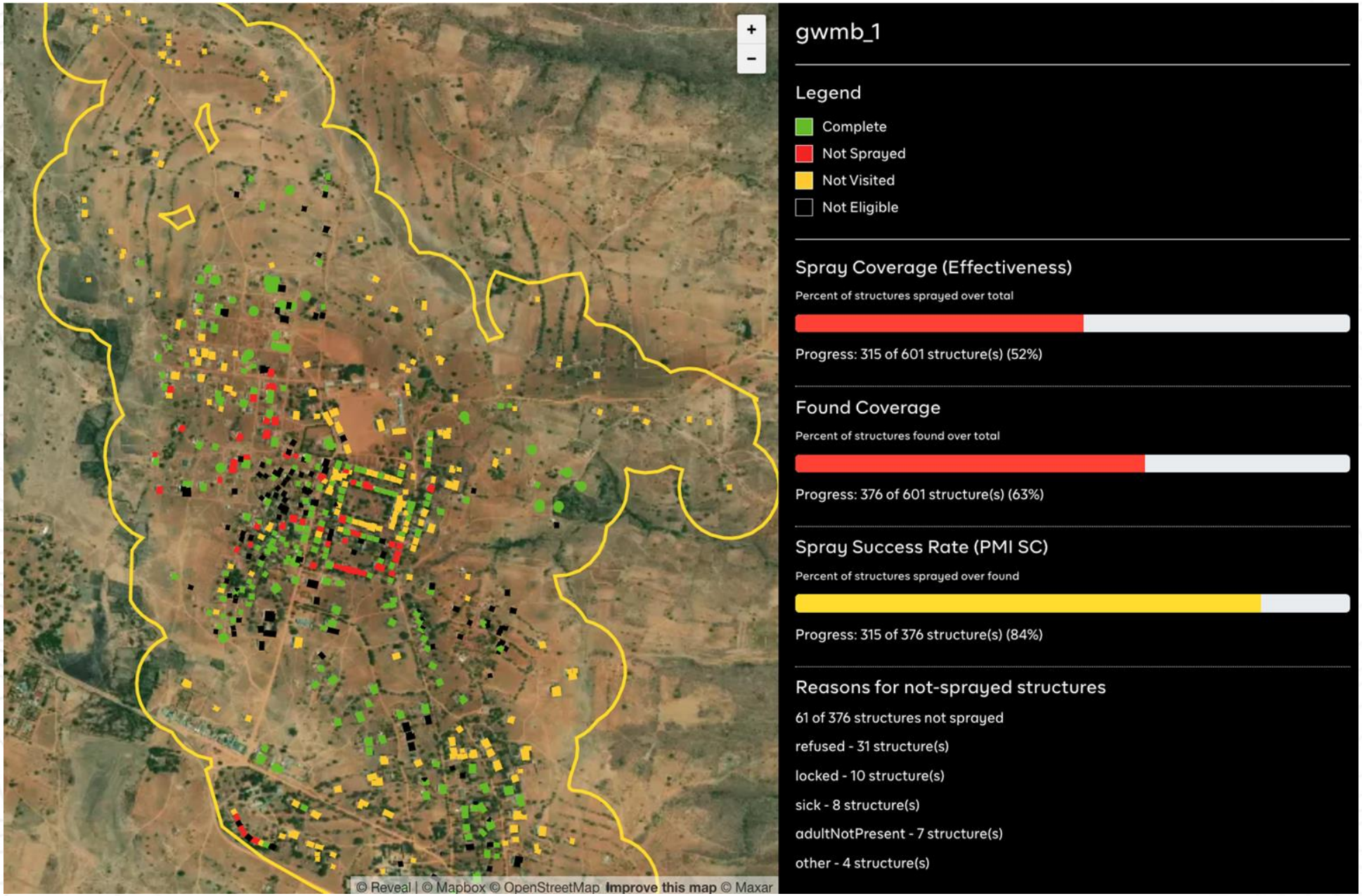
Percent of found structures over targeted

Progress: 1128 of 1429 structure(s) (75%)

Spray Success Rate (PMI SC)

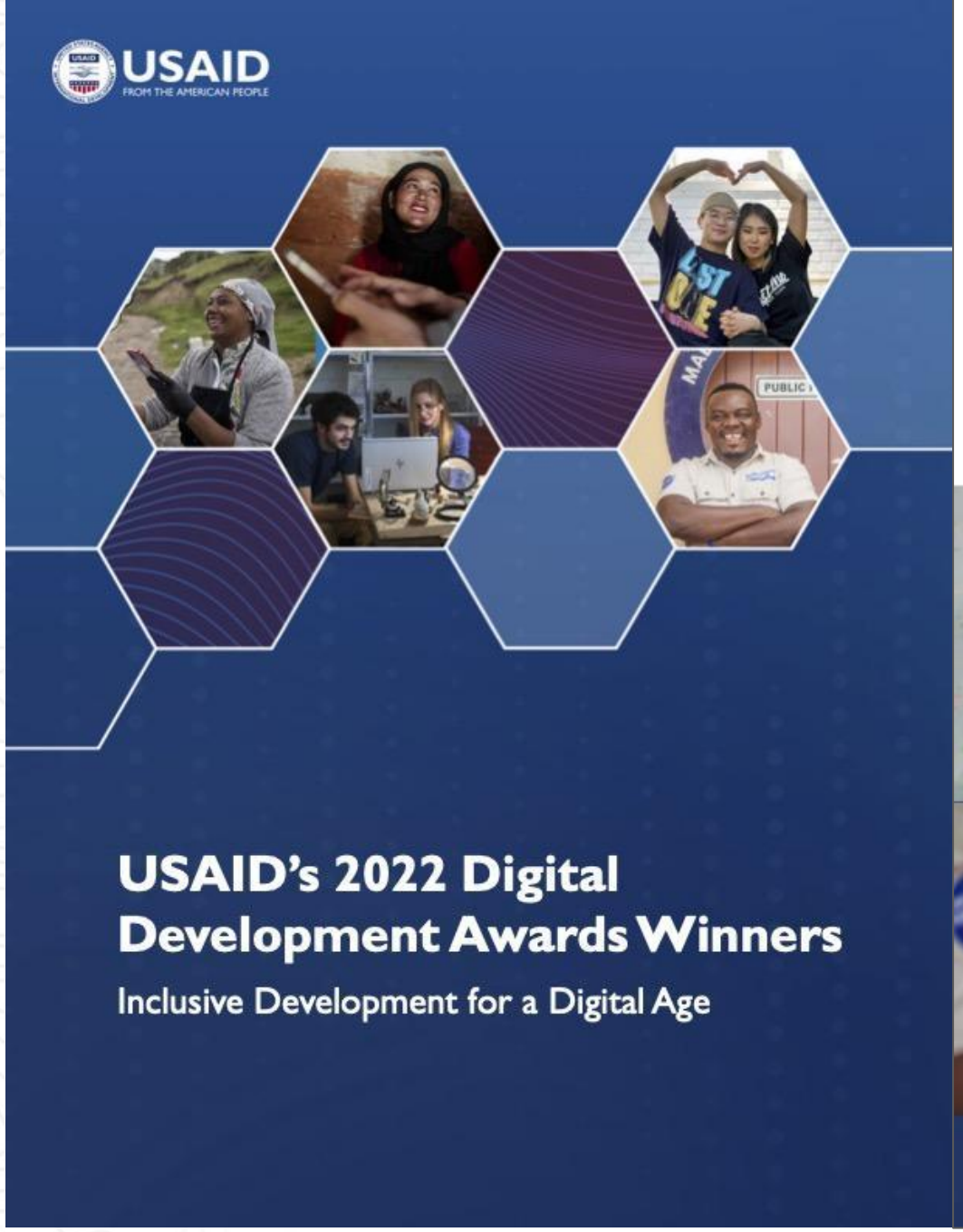
Percent of structures sprayed over found

Progress: 1073 of 1128 structure(s) (95%)


+
−
© Reveal | © Mapbox © OpenStreetMap Improve this map © Maxar
gwmb_1
Legend
Complete
Not Sprayed
Not Visited
Not Eligible
Spray Coverage (Effectiveness)
Percent of structures sprayed over total
Progress: 315 of 601 structure(s) (52%)
Found Coverage
Percent of structures found over total
Progress: 376 of 601 structure(s) (63%)
Spray Success Rate (PMI SC)
Percent of structures sprayed over found
Progress: 315 of 376 structure(s) (84%)
Reasons for not-sprayed structures
61 of 376 structures not sprayed
refused - 31 structure(s)
locked - 10 structure(s)
sick - 8 structure(s)
adultNotPresent - 7 structure(s)
other - 4 structure(s)

ENSURE NO ONE IS MISSED

- Received spray
- Household not yet visited
- Refused intervention
- Ineligible structure



Jerry, a Malaria Elimination Officer with the Zambian local government, has helped spearhead the Indoor Residual Campaign being enforced by PMI VectorLink in Katete District. PMI VectorLink partnered with a local subcontractor, Akros, to develop digitized, detailed maps of the local districts. Thanks to these maps, Jerry and his team are better able to plot malaria outbreaks and plan protective efforts for sprayers to disinfect houses in the district. Additionally, the sprayers are key partners in responding to community questions and concerns about the spraying campaigns.

"We engage the local traditional leadership and have community dialogue meetings, and eventually the community was willing to have their houses sprayed." -Jerry

To learn more about Jerry and the work of PMI Vectorlink Zambia, read USAID's press release on the 2022 Digital Development Awards.

Above photos provided by Chipema Chinyama for USAID

https://www.usaid.gov/digital-development/digis

981_13 (14)
987_25 (28)
983_7 (8)
973_14 (14)
976_42 (47)
972_36 (36)
Received spray
Household not yet visited
Refused intervention
Ineligible structure

Layer opacity
1014_73 (73)
585_11 (11)
586_36 (36)
582_47 (47)
581_24 (24)
588_14 (14)
Received spray
Household not yet visited
Refused intervention
Ineligible structure

Insights from Luanshya experience

CHALLENGES

- Phone batteries sometimes drain before finishing field data collection:
  - We have deployed two extra data collectors to conduct backlog entries.
- High refusals and lockouts:
  - Luanshya is more urban than other districts, resulting in high refusals and lockouts. However, during mop ups the health promotion team use the maps on the Reveal app to show them exactly which structures were not sprayed and why? This saves a lot of time.

BENEFITS

- We get to know the true number of habitable structures on the ground by being able to remove and add structures during field delivery
  - Looking forward to using this field verified data on the 2023 planning maps as the satellite and head count numbers used on the 2022 maps were not very accurate
- Dividing the health facility into smaller operational areas allows for easy systematic deployment
- During mop ups, it is very easy to locate structures that did not get sprayed in the first pass

What is the **Impact**, what are the Challenges and where are we Going?

1. Established microplanning practices across multiple SSA countries → spectrum of low tech to higher tech approaches
2. Over 3.6 million impacted through Reveal-related deployments alone
3. Increased health campaign coverages by 20-30%.[1]
4. Reduction in malaria incidence by 15%; Reduced cost per malaria case averted by 63% ($118 → $44).[2]

1. Larsen et al (2020). Leveraging risk maps of malaria vector abundance to guide control efforts reduces malaria incidence in Eastern Province, Zambia. Nature Scientific Reports. 10: https://www.nature.com/articles/s41598-020-66968-w
2. Center for Applied Malaria Research at Tulane University. Retrospective Evaluation of the Effectiveness of Indoor Residual Spray with Pirimiphos-Methyl (Actellic) on Malaria Transmission in Zambia. January 2017.

What is the Impact, what are the **Challenges** and where are we Going?

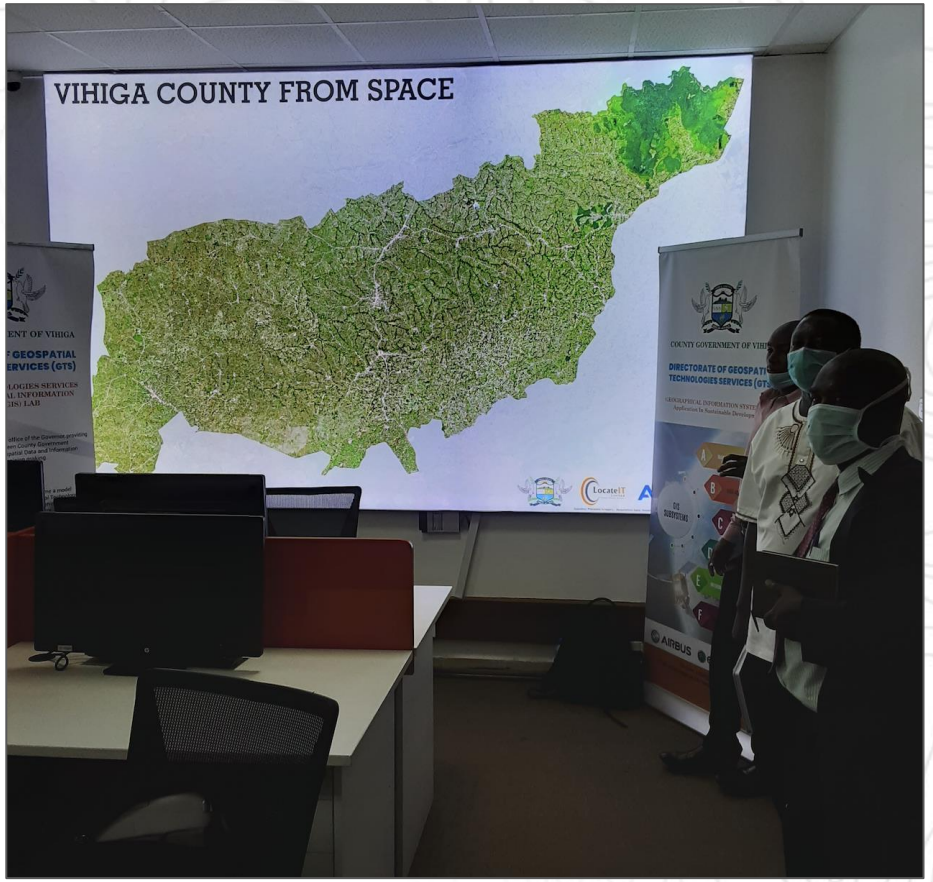
1. Use of digital devices in field - power outages challenging for recharging devices; managing multiple devices
2. Takes time to garner political and funding support for digital global goods
3. Population data and modeled estimates have varied accuracy -- field-based validation of datasets can inform future years
4. Additional ROI analyses are required to underscore the gains that geospatial technology can bring to make quick progress to SDG goals

What is the Impact, what are the Challenges and where are we **Going**?

1. Let's go farther together: Integrate geospatial capability to tools already working well insitu: eCHIS, DIGIT, DHIS2 → Scale
2. Integrate campaigns: reuse geospatial population data, use multi-delivery strategies
3. Extend the value chain of field data to continually build and improve global population datasets (Ramp, WorldPop, GRID3)
4. Operationalize geospatial risk models to guide precision campaign deployment to high-risk areas

We can achieve SDGs faster if we operationalize geospatial data to find and deliver health services to last mile communities and populations.

awinters@akros.com

Thank you!

Link to learn more:
https://lnkd.in/gjhXNUjg
www.akros.com