eHealth AFRICA

Geographic Information Systems

and the Push for Stronger Polio Campaign Accountability in Kwara State

A CASE STUDY

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Background

In every polio campaign, the goal is simple but urgent: reach every eligible child with life-saving vaccines. In Kwara State, achieving that goal is not always straightforward. Children may live in remote or hard-to-access settlements, move with families whose livelihoods depend on farming or pastoral activities, or become difficult to reach when insecurity limits access to certain communities. Recent analysis of insecurity in Kwara points to escalating attacks around border and forest communities, particularly in parts of Kwara North, where terrain, limited accessibility, and distance from security stations can increase community vulnerability and delay response.

The geography and population structure of the state make this challenge even more complex. Kwara State has 16 Local Government Areas (LGAs), about 193 wards, and more than 11,000 settlements that vaccination teams must reach during polio campaigns. It has a dynamic population that includes farming communities and other nomadic groups, as well as diverse linguistic and cultural groups across Kwara North, Kwara South, and Kwara Central. These fluid dynamic impacts on the availability of caregivers and their eligible children during vaccination campaigns. By extension, it also affects how vaccination teams plan their movements and how supervisors confirm that assigned settlements have actually been reached.

Against this backdrop, the Geospatial Tracking System was deployed to help make the last mile visible. By supporting real-time monitoring of vaccination team movement, identifying missed or inaccessible settlements, and strengthening evidence-based decision-making, GTS became an important tool to support Kwara State, improve accountability, and reduce the risk of eligible children being missed during polio immunization campaigns.

Immunization Access and Campaign Monitoring Challenges in Kwara State

Reaching every eligible child during polio campaigns in Kwara State has been difficult due to the state's large, dispersed settlement structure, diverse population groups, mobility patterns, and security realities. Although campaign teams work with microplans and master lists of settlements, these tools do not always reflect the full complexity of where people live, how they move, and whether teams can safely access every community during implementation.

Some of the key barriers that have limited immunization reach in Kwara State include:

- **Large and dispersed settlement structure:** Kwara has many settlements spread across different LGAs and wards, making it difficult for supervisors and state teams to physically monitor all vaccination teams during campaign implementation.
- **Mobile and nomadic populations:** Some communities, including Fulani groups and farming populations, are not always available in one fixed location. Children and caregivers may be at farms, in transit, or temporarily away from their usual settlements during vaccination activities.
- **Insecurity and inaccessible communities:** Security concerns in some areas affect team movement and may prevent vaccinators from reaching assigned settlements. In some cases, communities become inaccessible during implementation, leaving eligible children at risk of being missed.
- **Migration and population displacement:** Population movement increases the risk of missing children. Some families may move from their original settlements, while vaccination teams may encounter displaced families outside the locations originally planned for the campaign.
- **Difficulty validating actual coverage:** Without strong visibility into team movement and household visits, it is difficult to confirm whether settlements were fully reached, partially covered, or missed during implementation.

Before the deployment of the Geospatial Tracking System (GTS), polio campaign monitoring in Kwara relied heavily on manual reporting, physical supervision, and trust in field teams. Vaccination teams were assigned to settlements and expected to move from household to household, but supervisors could not be everywhere at the same time to verify whether teams reached the right locations or completed their assigned work. This created gaps in accountability, coverage validation, and real-time decision-making.

The major gaps with vaccination campaigns before the deployment of Geographic Information Systems included:

- **Limited real-time visibility:** Campaign managers had limited ability to see where vaccination teams were during implementation or confirm whether they had visited assigned settlements.
- **Dependence on manual reporting:** Paper-based tools and verbal updates made it difficult to independently verify whether reported coverage reflected actual field activity.
- **Weak evidence for decision-making:** Without geospatial data, it was difficult to identify missed or poorly covered settlements early enough to guide mop-up planning and team redeployment.
- **Risk of missed children:** Children could be missed when teams did not reach households, when families were away, when settlements were inaccessible, or when population movement was not reflected in campaign plans.
- **Delayed corrective action:** Missed settlements or incomplete coverage were not always visible during implementation, limiting the ability of the state and partners to respond quickly before the campaign ended.

Objectives of deploying GTS in Kwara State

The Geospatial Tracking System was deployed in Kwara State by eHealth Africa to strengthen visibility, accountability, and evidence-based decision-making during polio immunization campaigns. GTS was therefore introduced to provide geospatial evidence of team movement and support real-time monitoring of campaign implementation.

The deployment aims to support the state in validating settlement coverage, identifying missed or poorly covered areas, and making timely decisions on mop-up activities or targeted follow-up. By tracking vaccination teams as they moved through communities, the system provided campaign managers with clearer information on where teams had been, where gaps remained, and where additional action was needed to ensure eligible children were not missed. In this way, GTS served as both a monitoring tool and a decision-support system for improving the quality and accountability of polio vaccination campaigns in Kwara State.

Approach to Implementation

The Geospatial Tracking System was introduced in Kwara State in June 2025 to strengthen monitoring and accountability during polio vaccination campaigns. Kwara was selected because the state had recorded poliovirus cases, making it crucial to enhance the quality of campaign implementation and ensure that all eligible children were reached. The deployment also aligned with the broader national requirement to use technology-based evidence to validate polio campaign activities and confirm that vaccination teams reached the settlements assigned to them.

— Stakeholder Engagement and System Alignment

The deployment began with engagement between eHealth Africa and the Kwara State team to align on campaign planning, team structure, and the use of GIS for field monitoring. The state's immunization structure covers 16 LGAs, about 193 wards, and thousands of settlements, making it difficult for supervisors and state-level teams to physically monitor all vaccination t eams during implementation. GTS was introduced to provide a clearer view of field activity and support daily campaign review and decision-making.

— Settlement Validation and Geospatial Readiness

A major part of the approach was settlement validation. Before deployment, the initial campaign list contained **14,280 settlements,** of which **3,086 did not have geo-coordinates.** Although **11,194 settlements** had geo-coordinates, not all of these coordinates were accurate enough for effective geospatial tracking. This made validation necessary to ensure that GTS could support reliable team tracking, settlement coverage analysis, and campaign decision-making.

eHealth Africa worked with state, LGA, ward, and settlement-level stakeholders

to validate the settlement list, confirm naming conventions, remove duplicates, and account for migrated settlements, inaccessible settlements due to insecurity, and other factors. Following this validation process, the list was refined to **12,636 settlements.** Through continued validation and data collection, **11,660 settlements** had geo-coordinates by April 2026, leaving **976 settlements** still without geo-coordinates.

— Capacity Building and Device Preparation

Before implementation, eHealth Africa supported training across multiple levels, including state, LGA, ward, and vaccination team levels. Vaccination teams were trained on how the GTS-enabled devices would be used during campaign activities, while supervisors and other stakeholders were oriented on how tracking data would support monitoring, review, and corrective action. Mobile devices were prepared with the GTS application and assigned to vaccination teams during morning deployment.

— Field Deployment and Daily Tracking

During campaign implementation, vaccination teams moved from house to house with GTS-enabled devices. As teams conducted vaccination activities, the application passively collected movement tracks, helping to show whether teams reached assigned settlements and spent sufficient time at households. At the end of each day, devices were retrieved, and data were uploaded to the GTS server for analysis. The system generated information on valid tracks, invalid tracks, settlement coverage, missed settlements, and areas requiring follow-up.

— Daily Review and Evidence-Based Decision-Making

The uploaded GTS data was utilised during evening review meetings at local, national, and subnational levels. These engagements helped campaign teams identify settlements that were fully covered, partially covered, or missed. Where gaps were identified, the state and partners used the evidence to plan mop-up activities, revisit missed settlements, and extend implementation where necessary. For instance, during one of the campaign rounds, evidence from the GTS dashboard revealed that additional time was needed after day four, leading to a decision to conduct two extra days of follow-up to reach remaining missed or poorly covered settlements.

Key Outcomes and Impact

— Improved Settlement Visibility and Geographic Accuracy

At the start of implementation, Kwara State's campaign list contained 14,280 settlements, of which 3,086 had no geo-coordinates. Although the remaining settlements had geo-coordinates, some were inaccurate and required validation before they could support reliable tracking. Through GTS-supported settlement validation, duplicate checks, and review of migrated or inaccessible settlements, the list was refined to **12,636 settlements.** By April 2026, **11,660 settlements** had been geo-referenced and made trackable, leaving **976 settlements** without geo-coordinates. This improved settlement visibility, campaign planning, and the accuracy of geospatial monitoring.

— Increased Settlement Coverage

Settlement coverage improved from about 69% during the first GTS-supported campaign activity in June 2025 to about 95% by day five of the current campaign round. This showed improved team movement, better visibility of field activities, and stronger tracking of assigned settlements.

— Improved Reach to Eligible Children

By the evening review of day four, Kwara State had vaccinated more than 726,000 children. This exceeded the estimated target of about 700,000 children, showing improved reach during campaign implementation. GTS provided geo-evidence to support the validation of team movement and vaccination activity.

— Better Identification of Missed and Poorly Covered Settlements

The deployment of GTS helped identify settlements that were fully covered, partially covered, or missed during implementation. Daily tracking data supported decisions on mop-up activities and targeted follow-up.

— Potential Reduction in Vaccine Wastage

Vaccine wastage reduced from over 10% in a previous campaign round to about 9% during the current campaign period. This suggests a potential

reduction of at least 1 percent, linked to improved tracking, field accountability, and more careful use of vaccines.

— **Enhanced Accountability and Evidence-Based Decision-Making**

GTS data was used during daily review meetings to guide decisions on team movement, missed settlements, and mop-up planning. This reduced reliance on manual reporting and strengthened confidence in campaign results. The system helped state and partner teams make faster, evidence-based decisions during implementation.

Lessons Learnt

— **Settlement Data Must Be Continuously Updated**

GTS works best when settlement lists and geo-coordinates are accurate and complete. The Kwara experience showed that settlement validation cannot be treated as a one-time activity, especially in areas affected by migration, insecurity, population movement, or changing settlement patterns. Continuous updating of settlement data is essential for accurate planning, tracking, and follow-up.

— **Real-Time Data Improves Campaign Decision-Making**

The use of GTS showed that timely tracking data can help campaign managers make better decisions while implementation is still ongoing. By identifying

missed, partially covered, or poorly covered settlements early, the state and partners were able to plan mop-up activities and send teams back to areas where eligible children may have been missed. However, this also showed that real-time decision-making depends on timely data upload, especially from distant wards and hard-to-reach locations.

— Digital Tracking Strengthens Accountability

GTS improved accountability by providing evidence of team movement and settlement coverage. The system helped reduce dependence on verbal reports or paper-based claims and gave supervisors a clearer way to confirm whether vaccination teams reached assigned locations.

— Security Realities Must Be Built Into Campaign Planning

The campaign showed that insecurity can directly affect team movement and settlement coverage. Some security-compromised settlements may be identified and mapped, but remain inaccessible unless proper security arrangements are in place. This reinforces the need to integrate security mapping, gatekeeper feedback, and access planning into campaign preparation and daily review processes.

— Strong State Ownership Improves Implementation

The campaign benefited from active participation and ownership by the state team. Consistent involvement in supervision, review meetings, and decision-making helped ensure that GTS data was not only generated, but also used to improve campaign outcomes.

— Operational Readiness Is Critical for Digital Tools

Digital tools require strong field support to work effectively. Network availability, power supply, device readiness, upload processes, workspace, printing support, and trained personnel all affect how quickly tracking data can be reviewed and used. The Kwara experience showed that technology-enabled campaigns require both digital systems and the operational infrastructure to support them.

— Context-Specific Adaptation Is Necessary

Kwara's terrain, long travel distances, weekend work patterns, security realities, and absence of a permanent operational base required adaptation during implementation. The experience showed that deployment timelines, training plans, data upload arrangements, and field coordination structures must be tailored to the realities of each state.

Recommendations

— Strengthen Security Coordination for Hard-to-Reach Settlements

Future campaigns should include early mapping of security-compromised settlements and stronger coordination with security personnel, gatekeepers, community leaders, and state actors. This will help determine which areas can be safely accessed, which locations require special security arrangements, and which settlements should be flagged early for alternative strategies.

— Establish Decentralised Data Upload Points

To reduce delays in data transmission from distant wards, future campaigns should consider setting up decentralised upload points closer to large or hard-to-reach LGAs. This could include designated upload hubs or trained ward-level support personnel to help ensure that GTS data is synced and reviewed on time.

— Improve Device, Power, and Work Tool Readiness

Pre-deployment checks should be strengthened to ensure that phones, laptops, chargers, power banks, and internet support tools are functional before field activities begin. Backup power options, such as generators or solar-powered charging solutions, should also be considered for LGAs with poor power supply.

— Adapt Deployment Timelines to State Context

Deployment timelines should reflect the specific realities of each state. For Kwara, long travel distances, weekend work patterns, and the absence of a permanent operational base mean that teams may require earlier deployment, more preparation time, and flexible scheduling before campaign implementation begins.

— Clarify Roles Across Digital Tools

Where multiple digital tools are used during the same campaign, roles and escalation pathways should be clearly defined before implementation begins. This will help distinguish GTS-related responsibilities from other app-related technical issues and ensure that field teams know where to direct challenges that fall outside their scope.

Conclusion

The deployment of GTS in Kwara State demonstrates how digital tracking can strengthen the quality, accountability, and responsiveness of polio immunization campaigns. In a state with diverse populations, dispersed settlements, mobile communities, and security-compromised areas, reaching every eligible child requires more than planned vaccination routes. It requires real-time visibility into where teams are going, which settlements are being reached, and where children may still be missed.

By supporting settlement validation, team tracking, daily data review, and evidence-based mop-up planning, GTS has helped Kwara State move from assumption-based reporting to more reliable, data-driven campaign management. The system has improved the state's ability to identify missed and poorly covered settlements, guide teams back to unreached areas, and make faster decisions during implementation. It has also strengthened confidence in campaign data and reinforced the importance of accountability in last-mile immunization delivery.

While challenges remain, particularly around insecurity, delayed data uploads, connectivity, power supply, and the coordination of multiple digital tools, the Kwara experience shows that geospatial tracking can play a critical role in closing immunization gaps. With continued investment in settlement data, operational readiness, state ownership, and field team support, GTS can further strengthen polio eradication efforts and help ensure that even children in the most difficult-to-reach communities are seen, reached, and protected.

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