



PlanFeld: Expanding Immunisation Reach

With Digital Microplanning in Lagos State.

A CASE STUDY

www.ehealthafrica.org

#WeAreeHA
#WeAreeHA
#WeAreeHA



Background

Nigeria continues to face a significant immunisation equity challenge with the country having the unwanted award of having the highest number of zero dose children in Africa. The Nigeria [Zero-Dose Situation Analysis](#) (2021–2022) reports that approximately 18% of children aged 12–23 months are completely unvaccinated, with higher concentrations in urban informal settlements, slums, and riverine communities.

As at the beginning of 2026, over [2.2 million children](#) across urban and rural areas in Nigeria are yet to receive their first jab of vaccine. Unfortunately, Lagos State, an epicenter of social and economic activities is among the most affected due to its dense and highly mobile population. In Lagos State, Local Government Areas such as [Alimosho, Ikorodu, Kosofe, and Lagos Mainland](#) experience disproportionately high zero-dose burdens, particularly in underserved and rapidly expanding settlements. For example, Alimosho Local Government Area; the largest LGA in the state and considered as one of the largest in Nigeria, recorded over 35,000 zero-dose children in 2021.

As a densely populated location, some of the key barriers that has impacted vaccination reach include;

- **Rapid Urbanisation and Population Displacement:** Lagos is one of the fastest-growing cities globally, with a population of [between 18 and 20 million](#) and an annual growth rate of 6%. The exponential growth in the population of a complex city like Lagos state continues to demand spontaneous urbanization and requisite infrastructure.
- **Poor-quality and fragmented immunisation data:** The challenge of data storage and update has remained a major challenge which has consistently led to [discrepancies between available data](#) on ground and the one from National Demographic and Health Surveys (NDHS). This poor quality and mostly fragmented data makes it difficult or impossible to make data-driven decisions when it comes to planning and implementing vaccination campaigns. In Lagos instance,



Microplanning data was spread across multiple platforms, including Excel, paper-based tools, and Power BI, leading to inconsistencies and difficulty in maintaining a single source of truth. In addition, routine immunisation (RI) polio supplementary immunisation activities (SIA) and Non Polio supplementary immunisation systems operated using different formats and structures, making integration challenging. Data updates were also infrequent and fragmented, requiring significant effort to harmonise before they could be reliably used for planning or decision-making.

- **Limited access to hard-to-reach settlements:** The size and geographic nature of Lagos state consistently makes it difficult to ensure equal access to public health delivery. An [estimated 60-70%](#) of residents in Lagos live in informal settlements and slum communities, including hard-to-reach areas such as Makoko. In these locations, homes built on stilts over the lagoon and the absence of proper road networks greatly limit access to clean water, sanitation, and electricity.
- **Health workforce constraints:** Primary healthcare (PHC) in Nigeria consistently faces severe challenges due to significant health workforce shortages and Lagos state is not exempted from this perennial challenge. Health workforce challenges in Lagos are both critical and complex, marked by a significant shortage of personnel, unequal distribution across facilities, and high attrition rates largely driven by brain drain. As of early 2026, the state is experiencing a deficit of [more than 3,600 health workers](#), with the greatest gaps in Primary Healthcare Facilities (PHCs).
- **Community hesitancy and low demand for vaccination:** The challenge of vaccine hesitancy and low demand for live saving vaccination is a national problem irrespective of location. Across both Routine Immunisation (RI) and Supplementary Immunisation Activities (SIAs), microplanning systems in the state have historically relied on manual, fragmented, and inconsistent data sources, including Excel sheets, paper forms, and multiple digital platforms, limiting real-time visibility and decision-making.

To address these gaps, eHealth Africa, in collaboration with UNICEF, the Lagos State Primary Health Care Management Board, and relevant ministries, implemented a GIS-enabled digital microplanning system using PlanFeld across four priority LGAs. The goal was to strengthen immunisation equity especially for the Measles-Rubella Campaign by improving identification, planning, and reach of zero-dose and under-immunised populations.





Key Objectives of Digital Microplanning for Measles-Rubella Campaign in Lagos

The intervention aimed to:

- Identify and reach zero-dose and under-immunised children in priority LGAs
- Improve the accuracy and completeness of settlement-level immunisation data
- Strengthen transition to Digital Microplanning for Routine Immunisation and NPSIAs and the deployment of Geospatial Tracking Systems.
- Enhance accountability and real-time monitoring during campaigns
- Support evidence-based vaccine allocation across vaccination communities.

Approach to Implementation

Stakeholder Engagement and System Alignment

The project began with strong institutional consultations with the state ministry of health leading to project buy-in, including endorsement from the Permanent Secretary and assignment of a state focal person to ensure coordination.

Key early activities included:

- Entry meetings with state and LGA

stakeholders

- Requirements gathering across RI and NPSIA systems
- Baseline assessment design and ethical approval
- System mapping and harmonization of fragmented data sources

Baseline Assessment and Evidence Generation

eHealth Africa in partnership with the Lagos State government and support from UNICEF, conducted a baseline assessment across Alimosho, Ikorodu, Kosofe, and Lagos Mainland. The team employed a mixed-methods approach, combining key informant interviews, focus group discussions, and desk reviews. In total, 130 stakeholders involved in immunization planning and service delivery were engaged to generate comprehensive evidence for analysis. These stakeholders include State Immunization Officers, Local Government Area Immunization Officers, Ward Focal Persons, Monitoring and Evaluation Officers amongst others. The assessment identified:

- Major gaps in settlement completeness and accuracy
- Weak geospatial integration in planning systems
- Limited standardisation of microplanning workflows
- Strong readiness for digitisation among field teams

Settlement Data Harmonisation and Geospatial Validation

A major component of the intervention was the creation and validation of a unified settlement database:

- 13,465 settlement points consolidated across four LGAs
- 745 settlements identified as misaligned with ward boundaries
- Full geocoding of all settlements conducted
- Ground-truth validation with Ward Focal Persons and mobilisers

Unverified settlements were systematically collected using digital tools and preloaded survey instruments. This process ensured spatial accuracy was significantly improved, duplication was reduced, and settlements were better aligned with real-world geography, resulting in more reliable and consistent data for planning and decision-making.

Capacity Building and Digital Adoption

- A structured training of State Training of Trainers (SToT) was conducted, followed by cascade training at the LGA and ward levels to ensure broader knowledge transfer and capacity building.
- 197 stakeholders trained (State, LGA, WFPs, RI officers, data teams, partners).
- Performance improved overall, with average scores increasing from 71% to 82%, and the minimum score increasing significantly from 14% to 29%, indicating better baseline understanding across participants.
- The training focused on strengthening participants' capacity to effectively use the PlanFeld digital solution for vaccination campaigns, with emphasis on accurate validation of the Master List of Settlements in Lagos. It also covered geospatial planning workflows and the use of digital microplanning alongside geospatial tracking tools to improve accountability and ensure effective vaccination coverage.



Deployment of GIS-Enabled-PlanFeld for Digital Microplanning fo M-R Campaign

The digital microplanning and campaign implementation approach during the Measles-Rubella campaign marked a substantial improvement in both planning precision and operational efficiency. A total of 11,608 settlements were systematically mapped and geo-enabled, ensuring that even previously overlooked or hard-to-reach communities were accurately captured within the campaign framework. This comprehensive spatial mapping allowed for more inclusive and targeted service delivery.

Daily implementation plans (DIPs), supported by detailed maps, guided field teams in executing their activities with greater clarity and coordination. These plans helped streamline team movements, optimize resource allocation, and ensure that vaccination efforts were carried out according to clearly defined geographic priorities. In addition, real-time dashboards provided supervisors and program officers with up-to-date insights into campaign progress, enabling timely decision-making, rapid identification of gaps, and improved accountability at all levels.

Tracking devices further enhanced operational oversight by monitoring field team movements and verifying coverage in real time. This not only reduced the risk of missed settlements but also strengthened data reliability and transparency. Overall, the integration of digital tools into microplanning and implementation significantly improved campaign effectiveness, responsiveness, and the ability to reach underserved populations.

This demonstrated that digital tools improved data visibility and post-campaign reconciliation of coverage.

Results: Key Outcomes and Impact

1. Improved Settlement Visibility and Geographic Accuracy

- All 11,608 planned settlements geo-referenced
- Misaligned settlements corrected through validation
- Improved targeting of previously missed communities

2. Increased Coverage and Reach

- 6,690 settlements (57.63%) reached during the campaign period
- 4,918 settlements (42.37%) initially marked as missed. Of these, 3,063 were later verified as visited through triangulation of tracker and physical evidence.



3. Enhanced Accountability and Real-Time Monitoring

- Dashboards enabled daily visibility of progress across LGAs
- Supervisors monitored field activity remotely
- Tracking systems improved verification of team movement and coverage

4. Strengthened Planning Efficiency and Coordination

- Reduction in reliance on manual Excel-based merging
- Improved alignment between RI and SIA datasets
- Faster microplan generation and updates
- Better vaccine distribution planning based on verified population data

5. Increased System Readiness for Digital Transformation

- Stakeholders expressed strong readiness for Unified digital workflows
- Reduced fragmentation across tools (ODK, Kobo, eTally, Excel)
- Integration of planning, tracking, and reporting into a single system



Challenges

1. **Data Fragmentation Requires System Integration:** Multiple parallel systems created duplication and inconsistency, reinforcing the need for a unified digital microplanning platform.
2. **Connectivity Constraints Impact Field Performance:** Network instability affected real-time tracking in some locations, limiting continuous monitoring.
3. **Demolition of Houses and Relocations:** Ongoing demolition of houses and population relocations disrupted settlement mapping and required continuous updates to maintain accuracy.

Lessons Learned

1. **Demand for Digital Tools Outpaced System Capacity:** In some cases, improved planning generated demand that exceeded initial operational readiness.
2. **Settlement Data Must Be Continuously Updated:** Population movement and urban expansion require continuous geospatial updates, not periodic revisions.
3. **Training and Device Readiness Are Critical:** Gaps in training coverage and device familiarity affected early adoption among some users.

Conclusion

The implementation of PlanFeld in Lagos State represents a significant shift from fragmented, manual microplanning systems to a digitally integrated and geospatially accurate approach to immunisation planning. By combining high-resolution settlement data, capacity building, real-time tracking, and strong stakeholder coordination, the intervention enhanced the health system's capacity to identify zero-dose populations, improve visibility of campaign coverage, reduce planning inefficiencies, and support more informed, evidence-based decision-making.





— NIGERIA

4-6 Independence Road,
Kano State.

28 Osun Crescent,
Maitama, FCT, Abuja.

— Phone: +234 9093995111
Email: info@ehealthafrica.org
www.ehealthafrica.org

— U.S.A

1200 G Street NW, Suite 800,
Washington, DC 20005,
USA.

— GERMANY

Prenzlauer Allee 186,
10405 Berlin

Scan QR codes to access



eHealth
Africa's Profile



Follow us on our
social media