

Title: Advancing Maternal and Child Health in Nigeria through Geospatial Innovations

Introduction: The Geo-ST4R project aims to enhance reproductive, maternal, newborn, child health, and nutrition (RMNCHN) services in Nigeria, specifically in Kano and Kaduna states, by leveraging geo-enabled solutions to support data-driven planning. Implemented by Pathfinder, GRID3, Natview Foundation for Technology Innovation, and Data Science Nigeria with funding from the Gates Foundation, this initiative deploys two digital tools: the Geospatial Microplanning Toolkit (GMT) and the Snackable Chatbot. GMT automates geospatial microplan creation and modification, while the chatbot facilitates real-time access to microplans and commodity quantification.

Methodological Approach:

A preparatory phase was undertaken before the deployment of digital solutions, emphasizing stakeholder engagement at national and subnational levels to facilitate the co-creation of context-specific interventions. This phase also served as a learning period to explore the applications of geospatial data in RMNCHN, assess the digital capabilities of intervention states for implementing geo-enabled microplanning, and evaluate the readiness of health facilities to deliver RMNCHN services. The preparatory phase included desk reviews, digital maturity assessments, and facility readiness assessments.

Insights from these activities informed the harmonization of diverse data sources—including core geospatial data layers, human resources for health (HRH), and the Community-Based Health Management Information System (CBHMIS)—into a unified data architecture. An Artificial Intelligence (AI)-powered quality assurance system was also developed to enhance data collection processes.

Digital tools were subsequently deployed across 101 wards in eight local government areas (LGAs) in Kano and Kaduna, covering 352 health facilities. A chatbot feature was further introduced in 132 facilities in Kaduna. Preliminary quantitative and qualitative assessments guided the design of these tools, and comprehensive guidelines were developed to standardize their application.

To ensure effective utilization, 218 healthcare workers and 57 supervisors were trained on using the tools for data-driven microplanning. During the pilot phase, the Geo-Enabled Microplanning Tool (GMT) was used to update facility and settlement data, improve data accuracy, optimize outreach locations with Reach Every Ward (REW) strategies, and export microplanning tables and maps. These activities collectively enhanced health planning and service delivery at the intervention sites.

Results:

Results from the pilot indicate significant improvements in data accuracy and health planning. In Kano, 1,005 new settlements were identified, and 296 names updated, while Kaduna added 382 settlements with 325 names updated. Additionally, 106 settlements in Kano and 376 in Kaduna were categorized as hard-to-reach, facilitating targeted interventions. Healthcare facilities were expanded by 14 in Kano and 19 in Kaduna, with numerous locations and names updated across both states. Mapping of 652 outreach sites in Kano and 344 in Kaduna further optimized service coverage. These advancements have strengthened microplanning by providing facilities with refined population estimates, enabling bottom-up validation of settlements, and optimizing outreach for greater service coverage. Consequently, this data-driven approach supports more informed and effective program intervention planning.

Conclusion: These innovations provide granular insights into population distribution, healthcare accessibility, and facility mapping, enabling targeted RMNCHN interventions. The project demonstrates the transformative potential of digital solutions in improving maternal and child health outcomes across underserved communities in Nigeria.