Collaboration
Government

How can Geospatial Data be used to Strengthen Routine Immunization in the States of Bauchi and Sokoto, Nigeria?

Immunization coverage rates in Nigeria are among the lowest and most inequitable in the world. 33% DPT3 coverage nationally Percent of children fully immunized by first birthday: 2% Sokoto | 14% Bauchi

Challenges for Routine Immunization (RI):
1. Weak demand due to immunizations not being a priority among caregivers
2. Shortage of vaccines and supplies
3. Poor quality health information system data that makes it difficult to generate population estimates for microplanning

How can geospatial data be used to strengthen RI planning?
Objective:
Determine how Nigerian states can use GIS to produce more accurate primary health care (PHC) facility catchment area maps and population estimates

What data are needed to produce a health facility map for RI microplanning?
• name of health facility
• settlements in the catchment area
• target populations for the settlements
• landmarks (rivers, hills, important landmarks like markets, churches, schools, boreholes)
• distance from the settlement to the health facility

Steps to Produce GIS Maps for RI
Step 1: Information gathering—dataset identification, and reconciliation
Step 2: Field data collection and reconciliation
Step 3: Geospatial data processing and analysis
Step 4: Map production and validation

Implementation Experience
Users found the electronic maps that reflected their current understanding of the health facility catchment area easy to use
Lessons learned:
• Map iconography should be culturally relevant
• People used to reading hand-drawn maps need time to learn how to “read” GIS maps
• Lack of a Master Facility List with unique identifiers limits potential

Upgrading from hand-drawn maps to GIS:
Key differences
• More accurate population estimates
• Better distance estimates
• Updated databases
• More realistic physical features
• Other key structures mapped (e.g., schools)
• New settlements identified that were not on hand-drawn maps
• More accurate catchment area maps
• More accurate location of settlements

What does this mean for health workers and health managers?
• Improved microplanning
• More equitable service provision through targeted outreach and mobile sites
• Knowledge of missing communities and ability to target community engagement strategies
• Ability to plan travel time more accurately
• Visibility of opportunities for integration and collaboration with schools and other outreach activities
• Improved health facility microplans
• More realistic budgets
• Better allocation of resources
• Improved planning and conduct of supervision and mentoring
• Last mile vaccine and logistics distribution
• Appropriate human resource distribution
• Improved health plans overall

Conclusions & Recommendations
• Using satellite imagery to generate more accurate population estimates and settlement listings enables an RI program to overcome the limitations of outdated census data, extend its reach, improve geographical equity, maximize efficiencies and improve accountability.
• Open data sources for GIS data are becoming more widely available and can be an option for increasing the use of spatial analysis for health planning.
• Establishing a list of health facilities providing services with a unique identifier can ensure more accurate source data and robustness of the health system.
• Putting GIS tools in the hands of health workers and decision makers works and leads to new norms for planning, increased access to RI services, and better outcomes.

For more information, please visit: www.mcsprogram.org
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