CASE STUDY

Linking Geospatial and Equity Trends to Improve Interventions for Diseases of Poverty

Researchers on the Cutaneous Leishmaniasis Humanitarian Project in Ethiopia partner with DevAxle Nigeria to enhance risk and needs assessment through integrated GIS and EquityTool analysis.

DevAxle

METRICS FOR MANAGEMENT

EQUITYTOOL

BACKGROUND

Cutaneous leishmaniasis (CL) causes skin lesions on exposed parts of the body, which can result in severe scarring and stigma, cause serious disability, and exacerbate the impacts of other illnesses. WHO estimates that 600,000 to 1 million new CL cases occur worldwide each year. *Leishmania* parasites are transmitted through the bites of infected female sandflies. Because at least 70 animal species, including humans, can host *Leishmania* parasites, epidemiology and control are complex. Poverty increases the risk for leishmaniasis in a number of ways, from increased environmental exposure to nutritional deficits to lack of access to effective treatments.[1]

A first phase of the Cutaneous Leishmaniasis Humanitarian Project in Ethiopia (CLH-E) was implemented in two districts (Jima Arjo and Leka Dulecha) in western Ethiopia, in 2023, deploying CL testing campaigns to reach households and collect biological samples for testing at a regional laboratory, while also building the capacity of central hospitals in the districts to carry out this type of testing. In early 2024, CLH-E began a second phase in the adjacent Shambu (more centrally located) and Horro (more peripherally located) districts. Phase 2 sought to determine whether campaigns were still needed after local hospital capacity to run confirmatory tests had been strengthened during Phase 1. Additional data collection for Phase 2 included travel distance and cost for patients, as well as financial equity of surrounding populations served.

> **This study serves as a real-life example of why development projects must measure equity via definite metrics, and those need to be practical fits for integration into intervention program monitoring tools.**
>
> **Mr. Faith Olajide, Lead, Strategy and Analytics, DevAxle, Nigeria**

CHALLENGE: IDENTIFYING GEOSPATIAL EQUITY TRENDS TO IMPROVE INTERVENTIONS FOR DISEASES OF POVERTY

With over 40 program indicators already in use, CLH-E trialed including a small set of equity indicators such as household income, to capture the equity component. While these surveys showed clear trends linking equity with both location and endemicity, the data did not clearly articulate a definite equity pattern. Requiring a validated equity metric scale, CLH-E researchers reached out to DevAxle, a Nigerian development think-tank, to explore more effective options. The DevAxle research team had been using the EquityTool to measure equity in their projects in Nigeria and suggested it as a practical option for reaching CLH-E's study goals.

The resulting collaboration, the *Compact4Impact Equity Research: Observing Geospatial Equity Trends to Establish Cutaneous Leishmaniasis Program Strategy Project (C4I)* was developed to explore whether adding the EquityTool analysis would provide more comprehensive insights on how equity and CL endemicity varied by location, by linking geospatial and equity data.

SOLUTION: LINKING EQUITY, LOCATION, AND ENDEMICITY USING GIS WITH EQUITYTOOL

The EquityTool is a simple and easy-to-use tool that allows users to measure relative wealth by comparing the wealth of respondents to the national or urban-only population of the country. It provides a short set of questions that can be incorporated into any survey platform and is free to use. The short set of questions facilitates easy, fast, and inexpensive data collection and analysis of wealth distribution. This allows for fast and accurate comparisons across programs and populations into five wealth quintiles (quintile 1 is the poorest, quintile 5 the wealthiest). EquityTool data lets users make near real-time adjustments in program delivery that increase organizational effectiveness and strengthen program outcomes.

The short EquityTool survey, which can be completed in a few minutes, measures household wealth based on coun¬try-specific questions that can be adjusted to the context. It is available for over 65 countries and survey questions are pre-translated into many local languages. Each country-specific EquityTool questionnaire identifies what percentage of respondents are in each national or urban wealth quintile, and supplies the appropriate statistical code and assessment instructions for analysis. Compatible with any data collection platform – even paper-based systems – the EquityTool requires only six to 18 questions from the DHS Wealth Index for a respondent's country, reducing the number of variables needed for accurate wealth assessment.

To determine whether using the EquityTool would enable CLH-E to produce the quality of data they required without making the survey process untenably arduous for participants or expensive to mainstream, C4I developed a field study connecting GIS, disease burden, and EquityTool data in the target population. DevAxle designed a 2-page compact mode in KoBoToolBox to make the already easy-to-use EquityTool even more functional for users in the field to implement.

Phase 1 of the CLH-E project had identified most cases of CL in the central test district at public testing points (such as garages, markets, and roadside junctions), with very few found at household points. Conversely, in more peripheral districts, many cases of CL were found at household points. Based on these findings from Phase 1 of the CLH-E work, the C4I team examined the equity status of three study groups:

A. 100 households in the central Shambu district at household point only
B. 100 households in the peripheral Horro district at household point only
C. Control sample of 50 households across both districts at household and public testing points

1 https://www.who.int/news-room/fact-sheets/detail/leishmaniasis

RESULTS: VISUALISING EQUITY METRICS ACROSS A GEOSPATIAL SPAN SHOWS A CLEAR TREND BETWEEN EQUITY AND ENDEMICITY

> **Without projects being able to map equity trends via a combination of definite metric scale and spatial data representation, making informed decisions for establishing the best inclusive project approaches may be limited.**
>
> **Mr. Faith Olajide, Lead, Strategy and Analytics, DevAxle, Nigeria**

By using the EquityTool to produce validated, locally appropriate metrics against responses from each respondent, and employing the color-gradient feature of the QGIS data representation, which analyses definite integer ranges, to visualize results, C4I researchers developed a green-yellow-red color scale gradient to visualize equity trends across the relevant geospatial span. This showed a clear trend across the sample populations: equity decreased and endemicity increased as the sample location progressed from the more central Shambu district outward to the more peripheral Horro district. Specifically:

- CL-endemicity increased outwardly from central Shambu to peripheral Horro;
- Equity score decreased outwardly from central Shambu to peripheral Horro;
- Ease of access to central campaign points decreased outwardly from central Shambu to (poorer) peripheral Horro;
- Cost of access to central campaign points increased outwardly from central Shambu to peripheral Horro;
- Felt need for maintaining campaigns even after strengthening the Shambu Hospital capacity to run confirmatory tests increased outwardly from central Shambu to peripheral Horro.

This helped to answer the original research questions while also pointing out an important weakness in a common theory of change in health access programming. Strengthening central hospitals is often considered ample to serve the surrounding populations. However, poorer populations are often the furthest away from these central points and the more affected by diseases. The C4I researchers found this to be an important implication for increasing the application of equity analysis to healthcare programming.

> **Tropical diseases are diseases of poverty. You cannot do development programming focusing on anything that has to do with poverty and not be able to measure equity.**
>
> **Mr. Faith Olajide, Lead, Strategy and Analytics, DevAxle, Nigeria**

NEXT STEPS

- As a result of these findings, CLH-E determined it was necessary to continue campaigns to reach households with CL testing services until primary healthcare centers and health posts have sufficient capacity to adequately serve peripheral populations.
- The teams have identified the EquityTool analysis as a critical research approach on all central-style health system strengthening efforts, to ascertain if campaigns will still be needed after strengthening the central hospitals' capacities.
- DevAxle also adopted the EquityTool analysis as a mandatory practice for all subsequent intervention programs with an equity component, to improve inclusion of populations with lower equity who may otherwise be unable to benefit from project outputs.

M4M can help you create data-driven insights. For more information contact partnerships@m4mgmt.org.

partnerships@m4mgmt.org www.m4mgmt.org @metrics4mgmt linkedin.com/company/m4mgmt