

BED NET USE AND MISUSE: A COMPLEX, CROSS-SECTORAL PICTURE ON LAKE TANGANYIKA



LAKE TANGANYIKA
FLOATING HEALTH CLINIC

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Lake Tanganyika Floating Health Clinic/WAVE

AMP Partners Meeting 2017

LTFHC Activities re: Malaria Control

- LTFHC conducted a bed net distribution in 2010 in Moba Territory, DRC
- “Gold standard” distribution:
 - Worked with ministries of health zonal offices
 - Household registration
 - Training of and distribution through locals
 - Educational program included explicit discussion around bed net fishing, including law, ecology and potential impact on communities

LTFHC Activities re: Malaria Control

- Four months later, returned to health areas:
 - Did not find obvious widespread bed net fishing (with the exception of one health area)
- **However, feedback from recipients:**
 - Expressed discomfort from heat; inability to sleep
 - Type of dwellings impractical for hanging nets (no beds, 1-2 room dwellings)
 - Modification of nets to make screen curtains in windows and doorways
- Reported back to UN Special Envoy for Malaria as well as various manufacturers
 - Proposed further study + methods to address design barriers, other ways to deploy fabric that included a local livelihood concept.
 - Unable to find support



What happened in the face of increased supply?

- We began to observe widespread fishing with bed nets in all four countries
- Reported by various sources:
 - Sustained malaria prevalence
 - Growing strain on fish populations
 - Beginning see link between healthcare intervention, food- and physical security
- Prompted us to carry out hypothesis-generating study and subsequent publishing of: “Fishing with bed nets on Lake Tanganyika: a randomized survey,” 2014
- Results presented to AMP:
 - Our 196 randomized household surveys found:
 - 96% obtained nets from NGO at no cost
 - 87% of households reported fishing with bed nets
 - 64% subjectively noted declining fish supply
- Our conclusion: clear need for further study

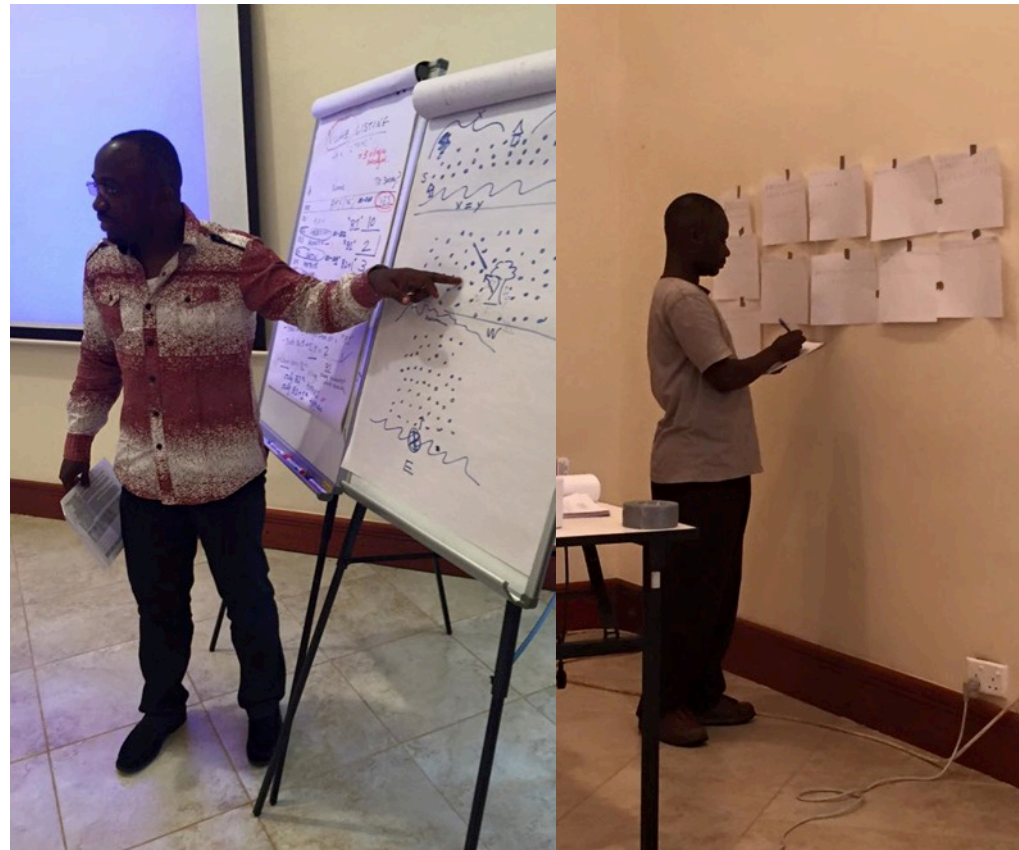


Cross Sectoral Data Collection: Partners

- LTFHC put together study group (early 2015):
 - Created survey tools for baseline study
 - Searched for alternative vector control interventions
- **Academic team**
 - University of Chicago; Behavioral Economics
 - Tufts; Development and Environmental Economics
 - Harvard; Public Policy
 - Northwestern Law School; Health and Human Rights
 - Looking into legal/institutional framework, normalizing across health and environmental policies
- **Technical/operational partners**
 - **Impl. Project** – formulation of community-led, data driven solutions in international development and stability.
 - US Civilian Military Advisory Group (**CMAG**) + 95th Civil Affairs Brigade towards a civilian-military data-sharing collaboration/**Palantir Technologies**.
- Funded by Vestergaard, Booth Social Enterprise Institute, and private LTFHC donors

Cross Sectoral Data Collection: Methodology

- Extensive communication with, and permission sought, from DRC MOHs at all levels (Provincial, Zonal, Health Area)
- **Survey tools capture multiple indicators including: malaria incidence, net use, food security, fisheries, and other socio-economic and health markers**
- **Extensive training of local Community Liason Agents (CLAs)**
 - Trained in data collection methods
 - Speak local languages and dialects



Cross Sectoral Data Collection: Methodology

- Hand collection of data
 - Geo-mapping of surveyed areas
 - Randomization
 - Series of surveys conducted with villagers, village chiefs, and other significant community members, as well as within public markets
 - Combining qualitative and quantitative data



Cross Sectoral Data Collection



Cross Sectoral Data Collection



Cross Sectoral Data Collection

- Completed all of littoral South Kivu
 - 41 villages covered, estimated total population of 392,000
- Digitization of paper forms in-process – very arduous
- Preliminary data and analysis thus far:
 - 6 of 7 littoral health areas in Uvira Urban
 - 10 of 14 littoral health areas in Nundu Health Zone
- Estimate complete analyses with partners in the spring

Indicators Covered

Household Information

- Number of households recorded on roster (Chief interview)
 - Frequency of roster updates
- Gender of household head
- Gender of respondent
- Age of household head
- Age of respondent
- Number of children under 15 per household
- Number of children under 15 attending school
- Number of children under 5 per household
- Number of adults per household
- Main source of income for respondent
- Main sources of income for household (general)
- Receipt of wage over past two weeks (household head; yes/no)
- Stated goods sold for profit over past two weeks (household head)
- Alternate sources of income over past two weeks (household head)
- Number of meals/day consumed by respondent
- Number of meals/day missed by respondent
- Number of days with missed meals by respondent in last week
- Number of days without meals by household head in last week
- Average meals consumed by children per day
- Number of meals missed by children over last week
- Number of days without meals by children over last week
- *Alternate activity to school attendance (qualitative)*

Indicators Covered

Bed Nets

- Number of nets received for free
- Time of last free bed net
- Number of nets bought
 - Price of purchased bed nets
- Presence of nets in household
 - Of which are hanging from the ceiling
- Number of children sleeping under net/hh
- Number of adults sleeping under net/hh
- Willingness to sell (francs)
 - Hypothetical
 - Real
- *Condition of net (qualitative)*
- Time of last distribution (months/years)
- *Bed net distributors
- Number of bed net recipients (households)
- Estimated cost of net (if possible to buy)
- New/used nets on market

General

- GPS Location
- Distance to nearest health center (mins walking)
- Distance to nearest market (mins walking)

Malaria/Health

- Top health problems by village
- Adult malaria cases (over past three months)
- Number of malaria cases reported to health center
- Under 5 malaria cases (over past three months)
- Number of under 5 cases reported to clinic
- Source of drinking water
- Quality of drinking water
- Type of treatment of drinking water (if any)
- Under 5 diarrhea cases over past two weeks
- Treatment sought for under 5 diarrhea cases
- Site of medical advice/treatment
- Antibiotics received for diarrhea
- Site of antibiotics treatment

Indicators Covered

Fishing

- Fish type
- Fish size
- Cost of dried fish
- Site/location of fish sales
- *Location of catch (free answer)*
- Responsible party for catch
- Net type
- Number of mosquito nets owned per household
- Number of fishing nets outside dwelling
 - Of which mosquito nets
- Frequency of meals including fresh fish (during fishing season)
- Frequency of meals including dry fish (during fishing season)
- Frequency of meals including dry fish (outside of fishing season)
- Type of fish consumed
- Frequency of fish caught + consumed by member of household (over past two months)
- Frequency of dry fish purchases over past two months (within vs. outside village)
- Price of fish purchased within village
- Type of dry fish purchased
- Number of adults fishing commercially
- Number of adults selling fish directly at the market
- Number of adults selling fish to an intermediary
- Number of adults subsistence fishing
- Household members using bed nets to fish
- Frequency bed nets are used to fish
 - Responsible party using bed net
- Fishing sites using bet nets

Indicators Covered

Security Matters

- Estimated number of refugees over past year (if any)
 - Origin of refugees
- Estimated number of IDPs over the past year (if any)
 - Origin of IDPs
- Frequency of army/police visits
 - Approval of police presence
- Estimated number of people hurt in local violence
- Qualitative indicators:
- Top security issues
- Suggested solution to security issues
- Responsible parties for security
- Reasons for local violence

Indicators Covered

Observational

- Observed shoreline fishing
 - Alone
 - Groups
 - Men/Women/Children
 - Type of fishing gear used
 - Duration of fishing
- Number of rooms in house
- Number of sleeping/living rooms
- Number of walls of biggest room
- Height/width of walls

Roof Type

Type of housing

Type of inside surface

Roof types

Ceiling material

Number of nets inside house

Number of nets outside house

Floor type

Type of running water access
(if any)

Type of toilet/latrine (if any)

Location of toilet/latrine

Site of cooking

Bed nets used for fishing (y/n)

Preliminary Results – Very first look

Household Structure (Averages from household survey):

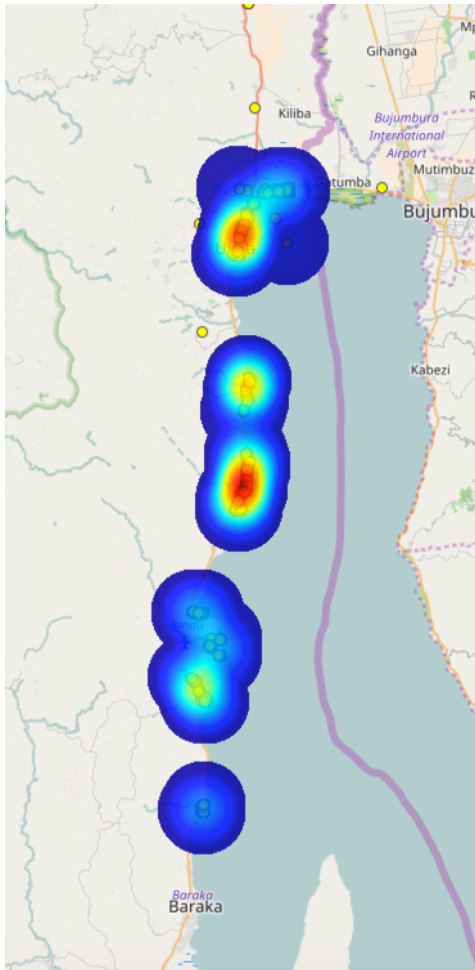
- Household Size: 8
- Adults in household: 3
- Children under 15 in household: 5
- Children under 5 in household: 2

Bed Net Distribution (took place ca. 3 months prior)

- Free nets received (per household): 4
- Nets purchased (per household): 0

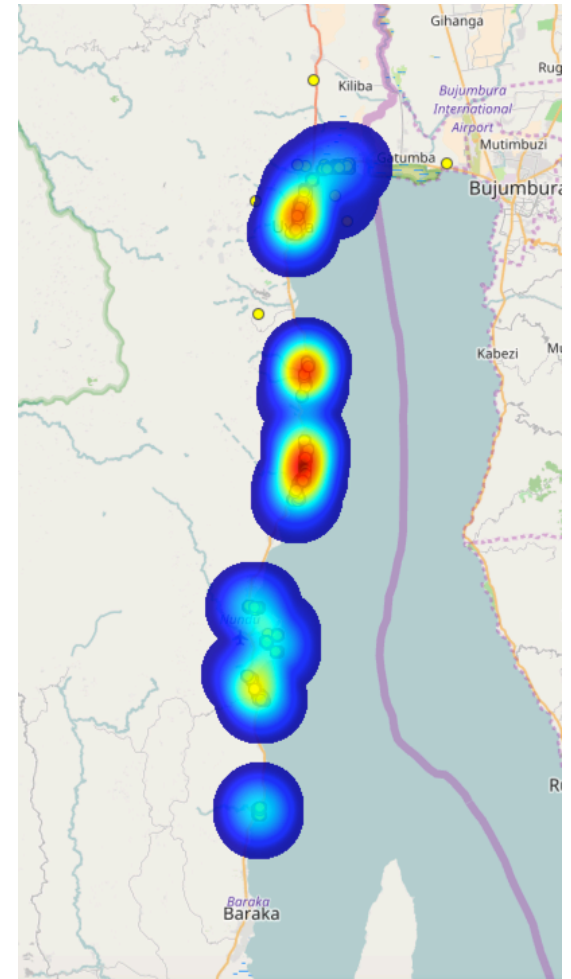
Preliminary Results:

Malaria Overview - Zone



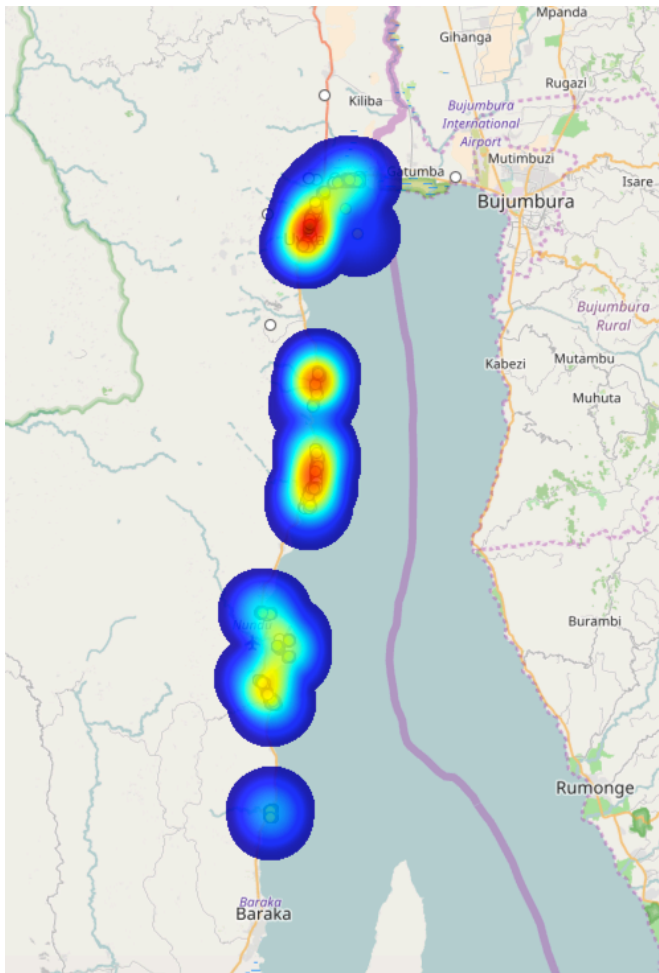
Average reported cases over past 3 months:

- Adult cases (left heat map): 2
 - Of which 53% reported to health center
- Under 5s (right heat map): 2
 - Of which 64% reported to health center



Preliminary Results:

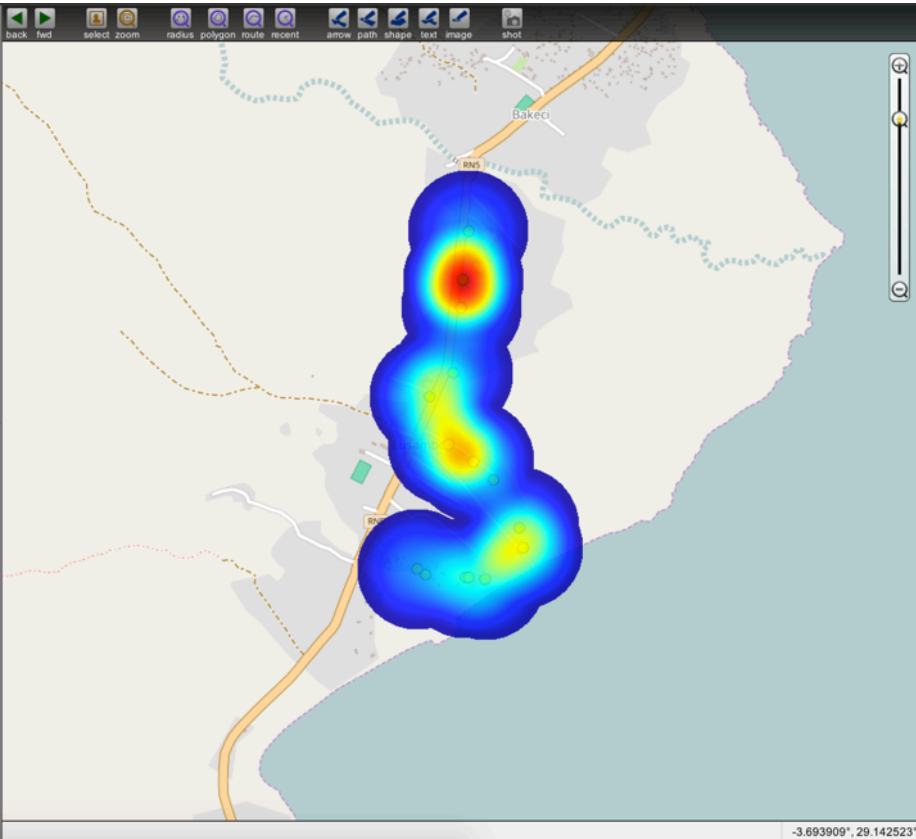
Under 5 Diarrhea Overview - Zone



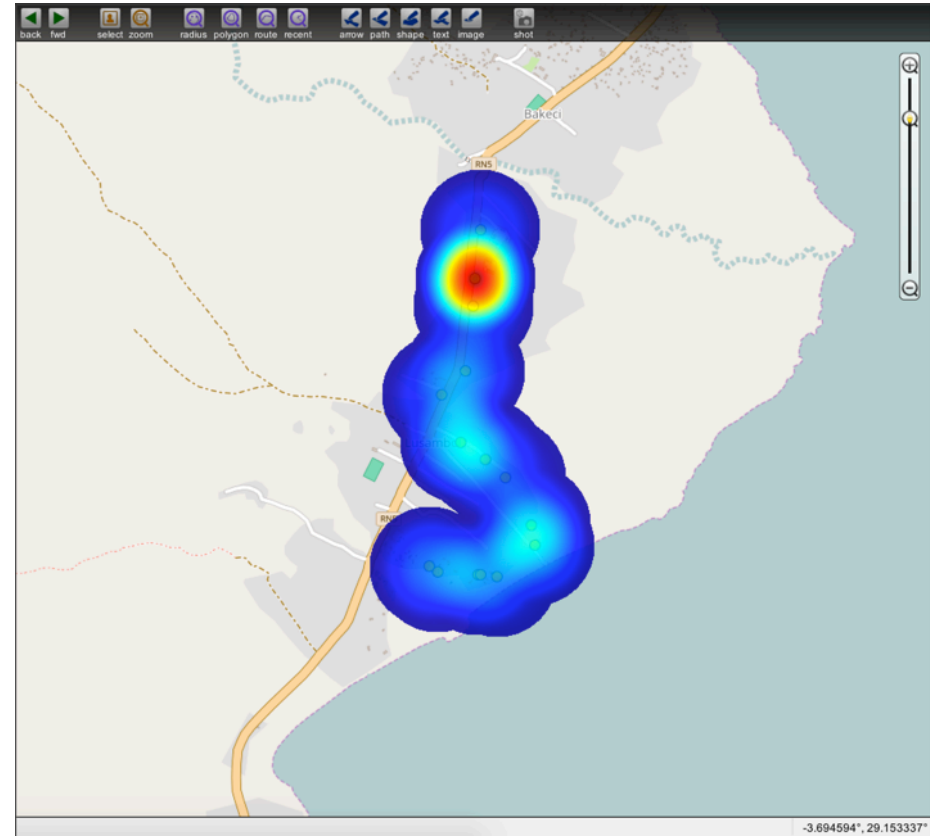
Under 5 Diarrhea (over last two weeks)

- Share of households with cases: 46%
 - Seeking treatment: 50%
 - Receiving antibiotics: 49%

Malaria Overview – Health Area (Ake)

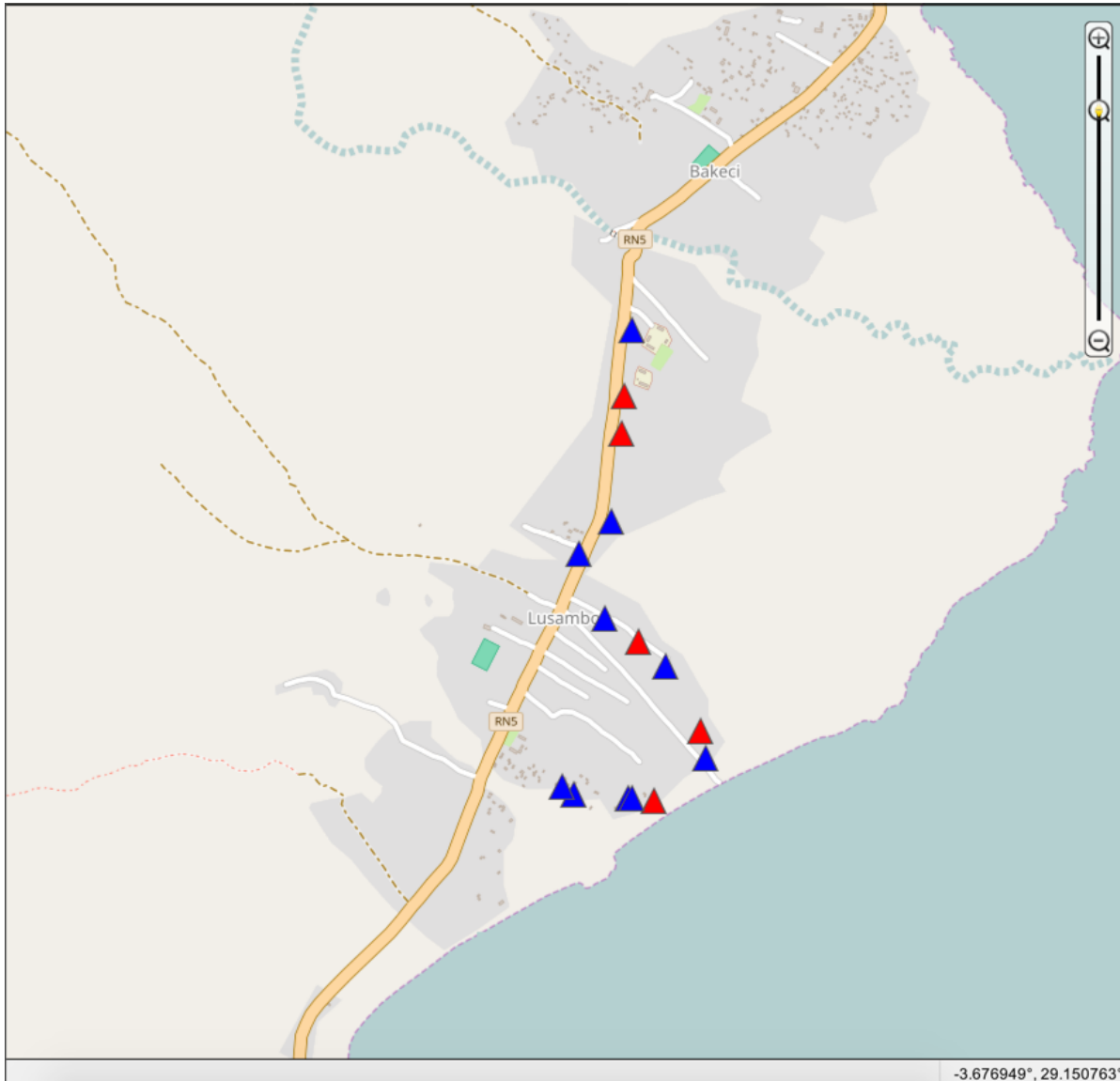


Malaria cases in children (under 5 years) in the last 3 months



Malaria cases in adults in the last 3 months

Diarrhea Overview – Health Area (Ake)

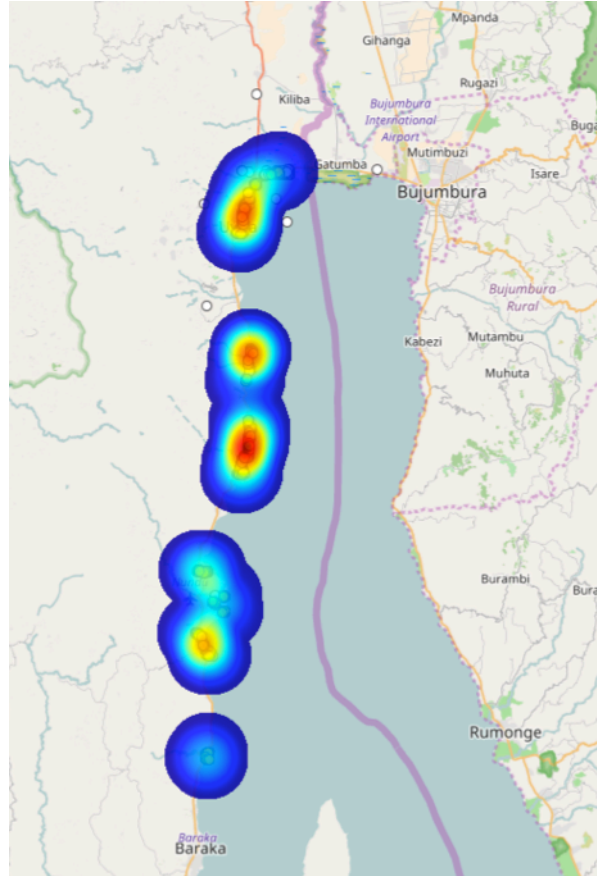


Child Diarrhea Cases:

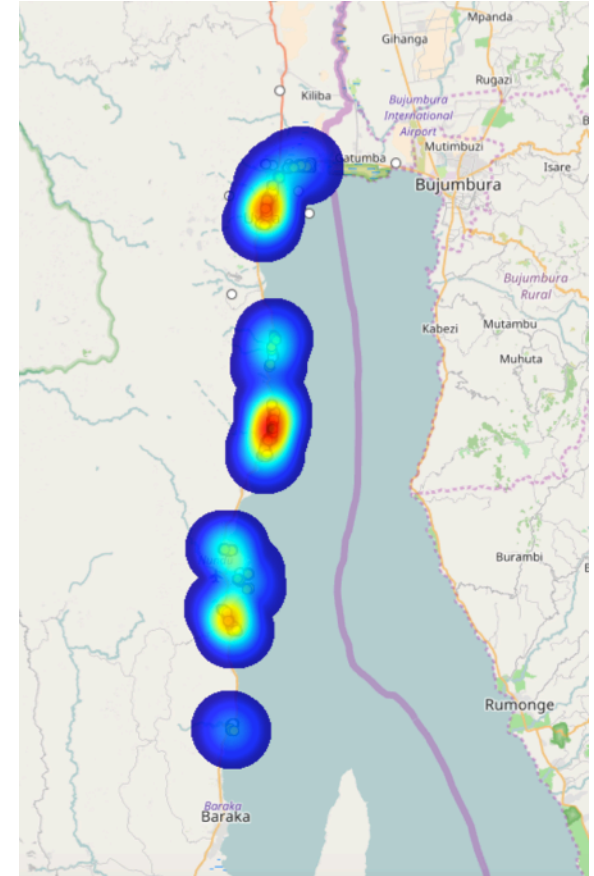
- Red triangles represent houses that have had at least one case of child diarrhea in the last 2 weeks.
- Blue houses haven't had any cases in the last two weeks.

Preliminary Results: Meal Consumption

- Average number of daily meals consumed:
 - Adults: 2
 - Under 15s: 2
- Average number of missed meals per week:
 - Adults: 2
 - Under 15s: 1
- Average number of days with no meals:
 - Adults: 1
 - Under 15s: 1



Children missing a full day of meals in the last week



Adults missing a full day of meals in the last week

Observational Data: Shoreline Fishing

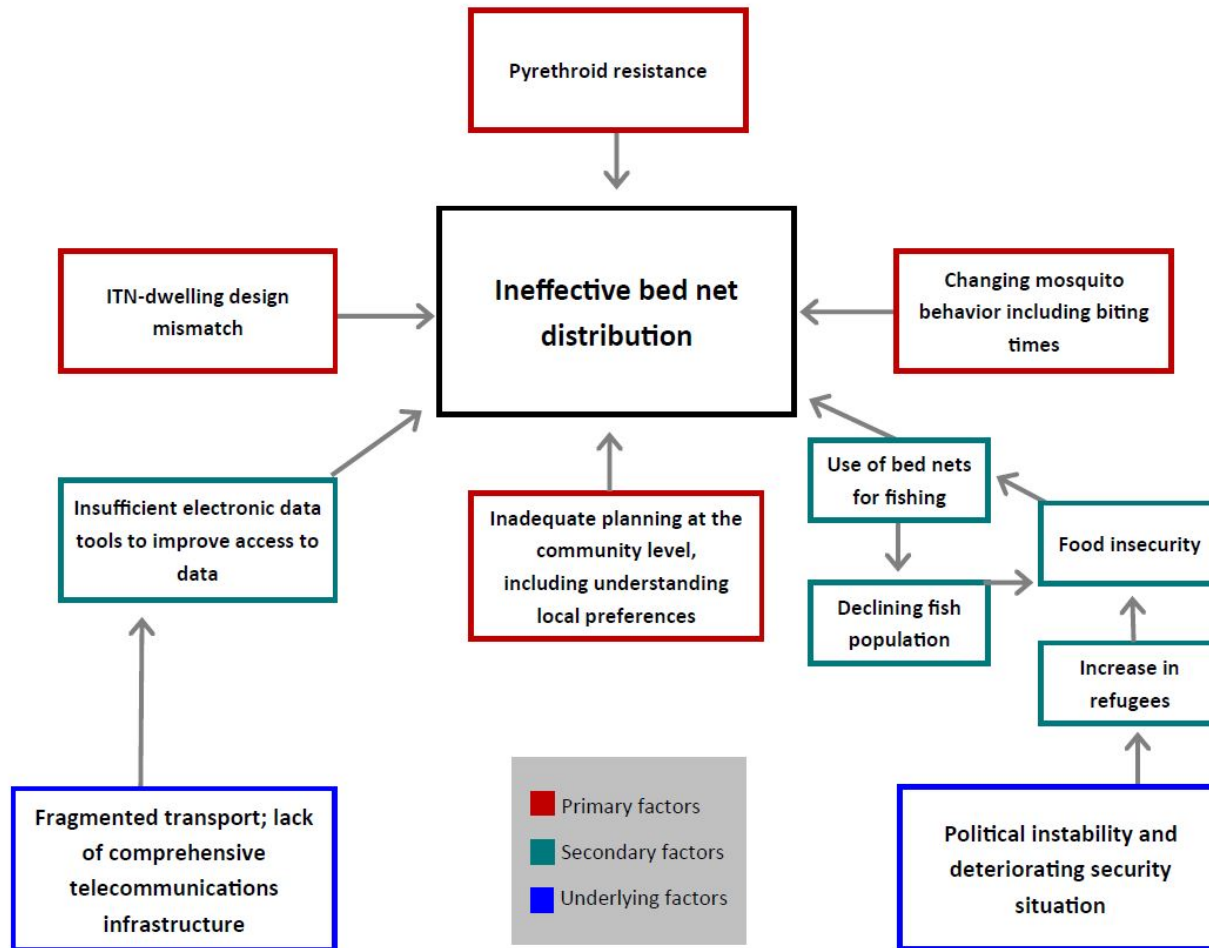
- Community Health Workers observing shoreline activities in mornings and evenings over a week
- Average fishing group size: 5
 - % using mosquito nets: 35
 - % Men: 35
 - % Women: 25
 - % Children: 40
 - % using other net types: 49
 - % Men: 87
 - % Women: 1
 - % Children: 12
 - % using alternative fishing gear (hooks): 16



First Lessons

- Not a messaging/education/compliance problem
 - Population cannot or will not use bed nets, depending on circumstances
- Per Fizi Medicin Chef du Zone: “no change in malaria cases post-GF distribution”
 - LTFHC in the process of verifying this assertion; collecting zonal office figures for 2015 and 2016 of all of the Health Areas covered in survey
- Beginning to see the relationships between food and physical security (where people cultivate is crucial), malaria incidence and intervention, the role of the fishery

First Lessons: A Flowchart of Forces



Initial analysis of security factors (from preliminary data, raw data and qualitative survey responses)

Next Steps: Funding and Research

- Fund baseline data collection for Tanganyika Province
 - Tanganyika Province has worse HDIs than South Kivu
 - Retain current class of local CLAs
 - Transition to electronic data collection, removing months of processing delay
- Fund additional, cross-sectoral research
 - Entomology (incl. mosquito behaviors)
 - Parasitology (incl. resistance and presence of multiple parasites)
 - Fishery health/ecology
 - Food security
 - Human security

Next Steps: Funding and Research

- Fund pilot deployments of alternative technology in appropriate areas
 - Water-based?
 - Ultra-rural?
 - Ultra-poor?
- Fund Monitoring and Evaluation/operational research at the loco-regional level
 - Test tailored alternative interventions for vector control, in various locations

Potential directions from cross-sectoral collaboration

- Can we continue to think of malaria as a vertical disease?
- Alongside malaria and other vector control strategies, do we deploy:
 - Nutritional interventions?
 - Agronomy projects?
 - Fisheries projects?
 - Investment in better housing?
 - Cash transfers?
 - Other?

Additional Considerations

- What role does enforcement play?
 - Catch-22 of Fisheries Departments
 - Large funding differential between health and fisheries services.
 - Lost investments
 - Eg. Do we really want to pay for net distributions and also pay to then have a significant portion of them confiscated and destroyed?
 - Rather than considering enforcement in other agencies alone, prospectively collaborate instead. Concentrate on interventions better suited to the environment
 - Wall coverings
 - Spatial repellents
 - Other innovations?

Moving Away from “Shrink the Map”

How do we generate interest in addressing the fact that high endemic countries are producing the greatest morbidity and mortality rates globally and realign research dollars/policies that are directed towards low/middle endemic countries only?