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DATA-DRIVEN TB ACTIVE-CASE FINDING IN SOUTH KIVU (DRC)

Leveraging innovative predictive and surveillance reporting software applications.

Mauro Faccin, 23 Oct 2020

3 MILLION OF TB CASES ARE MISSING

Although TB is curable, late detection causes suffering and economic hardship, and sustains the continued transmission of the disease to others.

- WHO recommends Active Case Finding in populations where **disease incidence is above 1%** per year.
- Conventional approach of looking for cases in prisons, mines camps have seen results but **not enough** to tackle the burden of the problem.

WHO RECOMMENDS A.C.F. WITH 1% INCIDENCE RATE

OUR SOLUTION:

A DATA-DRIVEN RESOURCE-EFFICIENT APPROACH FOR ACTIVE CASE FINDING

TWO-FOLD DATA-DRIVEN APPROACH

I. Data-driven hot-spot detection:

- Uses available open data and local health systems incidence reports
- **Predict incidence rates** of local communities in area of interest
- **Focus on high-burden** sub-regions (where incidence is higher than 1%)

II. Digital survey:

- **Triage** approach; refer to lab only the highest-risk
- **Fast screenings**, and reliable data
- **Real-time** feedback
- Simple interaction with CHW

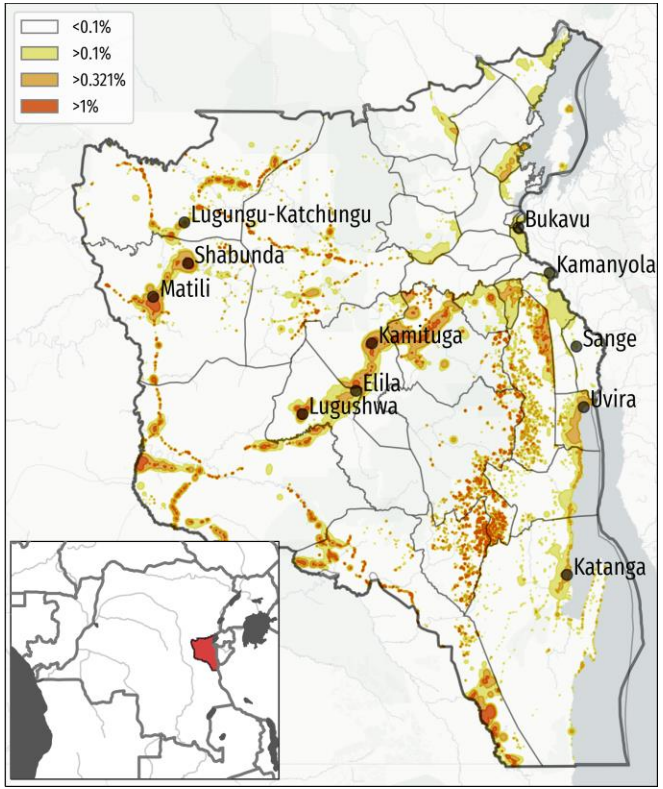
DATA-DRIVEN HOT-SPOT DETECTION

Predict **local** tuberculosis incidence rates:

- **Available data** (Worldpop, OSM, mines camps, health facilities etc.)
- **Annual TB reports** from the local health system

We identified 11 locations (5 high-risk) in South-Kivu (DRC). 13841 screenings, 1153 lab tests*, 112 positive cases.

*Ziehl-Neelsen microscopy test



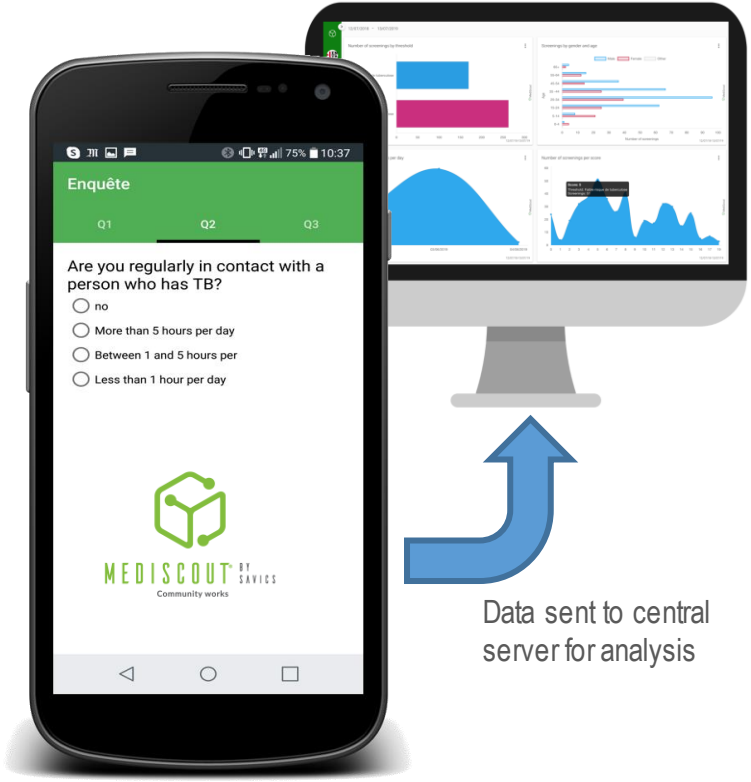
South Kivu (DRC) hot-spot prediction map

MOBILE SURVEY - MEDISCOUT©

The questionnaire include questions on three different aspects with weighted answers and automated scoring:

Symptoms | Environment | Exposure

Data (location, score, answer stack) is collected in real-time on a central server, analysed, and presented on a dashboard for decision insights.



RESULTS:

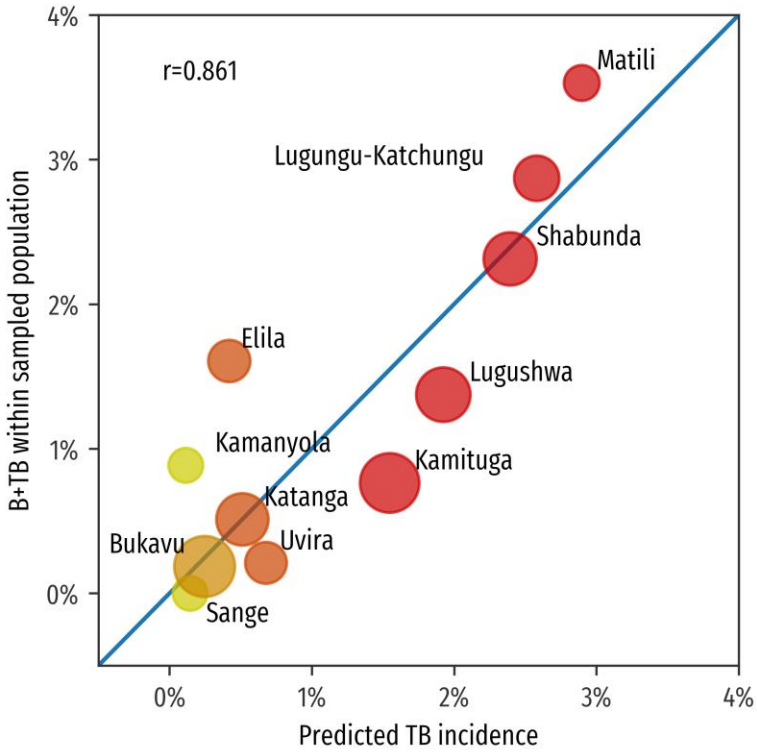
CONTROLLED PILOT TEST IN SOUTH- KIVU (DRC)

PILOT TEST IN SOUTH KIVU

- 13,481 screenings performed by 25 community health workers (CHWs)
- The approach increased the number of found missing cases in those communities. More than 10X more cases found with the approach.
- The mobile app **increased efficiency of CHWs**. CHWs screened 3x as many patients compared to before MediScout©

RESULTS I
HOT-SPOT PREDICTION

- Correlation of predicted TB incidence rate with confirmed TB positivity ratio within sampled population
- Incidence rate from 0.25% in low risk regions to **1.65% in high risk regions** (on average).

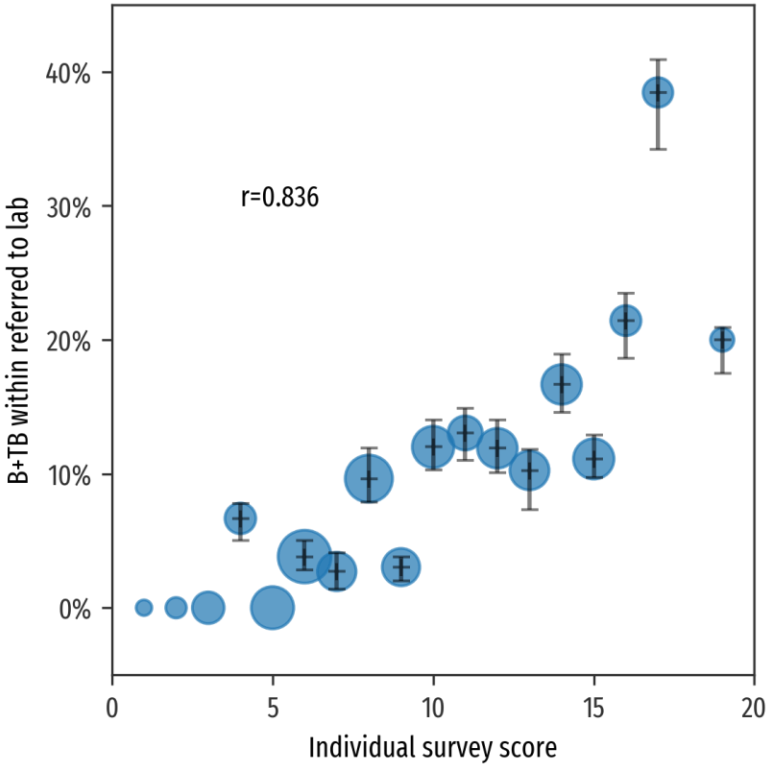


RESULTS II QUESTIONNAIRE

The questionnaire acts as an automatic triage tool:

- Confirmed TB cases were found only amongst individuals with highest score in the questionnaire.
- More than **11% B+TB positivity within lab tests** found in high-risk locations.

Mobile technology assures fast surveys, automatic individualized TB risk scoring, and data safety.

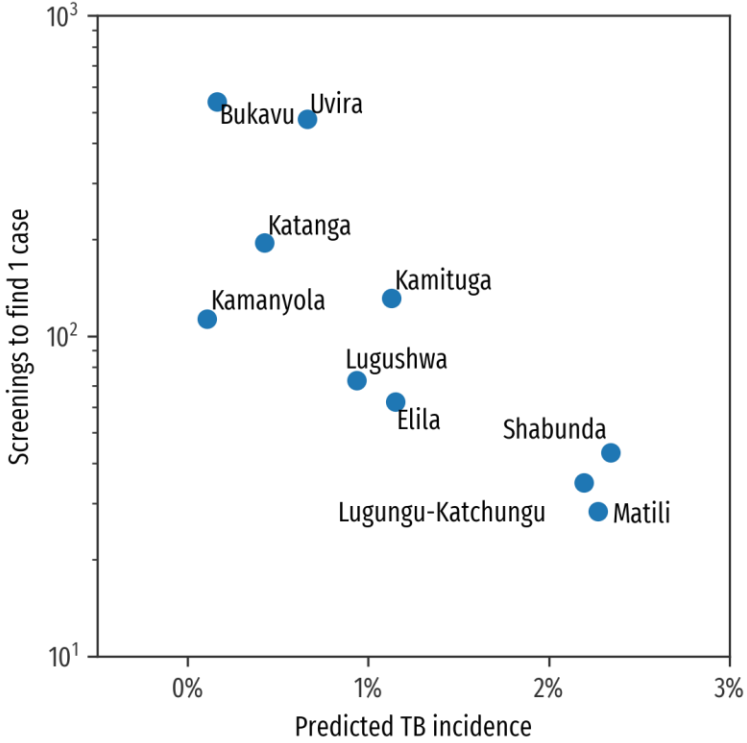


RESULTS III
EFFICIENCY

The approach is **resource efficient** allowing for focused efforts on high-risk areas with a mobile-based triage.

In high-risk locations:

- Less than **50 screenings** to find 1 case
- Less than **9 lab tests** to find 1 case



ACKNOWLEDGEMENTS

- Dr. Olivier Rusumba @ALTB
- Fairouz Boutachkourt @UCLouvain
- Oussema Smaoui @savics
- Julie Vanvolsem @savics
- Dr. Birembano @DRC
- Dr. Kabuayi @union.DRC
- Md. Kaswa @DRC
- Prof. André @KULeuven

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Funding entity: innoviris .brussels we fund your future