

A heatmap of the African continent showing the distribution of active cases. The map uses a color scale from light yellow to dark red, with higher concentrations of cases in the central and eastern parts of the continent, particularly in the Great Lakes region and parts of East Africa. The map is overlaid with a grid of latitude and longitude lines.

Data-driven active-case finding.

@REGA Institute, Leuven, 14 Nov 2019

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Systematic screening for active tuberculosis:

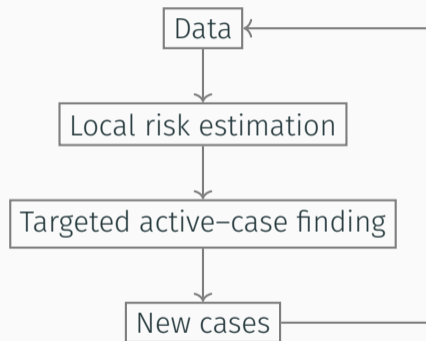
- Door to door survey
- High number of CHW
- High cost per case



WHO: in areas with more than 1% of incidence.

Use the available open data

- Use available data
- Complement local knowledge
- Lower the cost
- Learn from the past cases



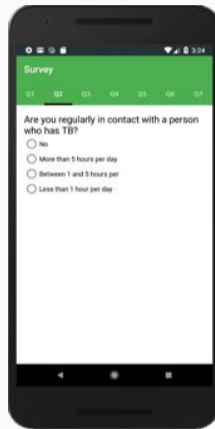
Ingredient 1: A survey

Survey Score

A personal risk estimation based on:

- General and Pulmonary **Symptoms**
- **Contacts** and Contact Environment
- Previous **Treatment** and Outcome

The person is invited to a lab test based on the output score.



Lab test used is Ziehl-Neelsen microscopy.

Ingredient 2: Data

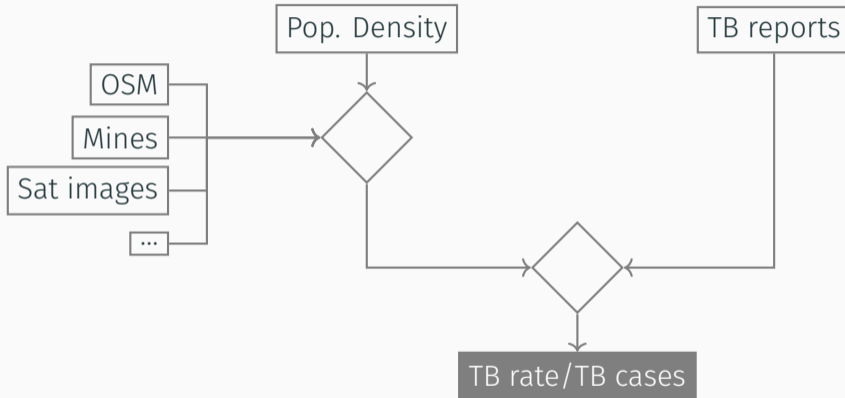
Open data

- Population density (Worldpop, ~ 100 m)
- Urban and populated areas (Openstreetmap)
- Mine camps (IPIS research project)
- Health facility locations (Global Healthsites Mapping Project)
- Urban agglomerations (ARCGis satellite imagery)

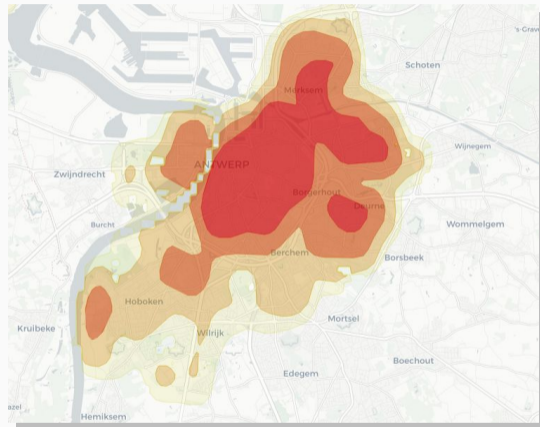
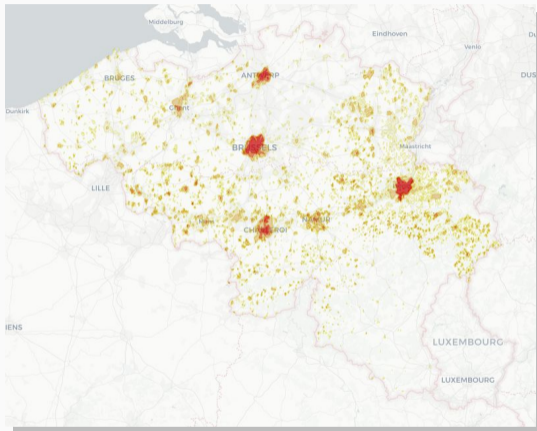
Closed Data

- TB reports (Local health system)

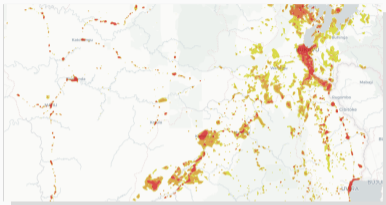
Data integration: estimation of TB incidence



The risk map: Belgium

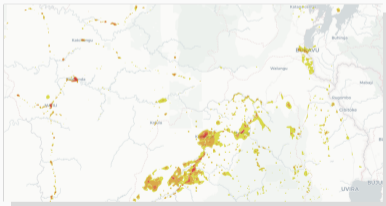


TB Cases



High number of cases reflects (often) highly populated places.

TB Rate

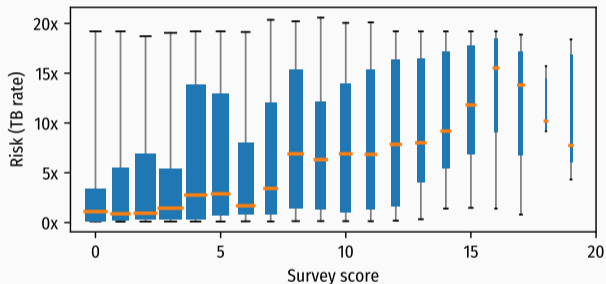


High incidence rate highlight the location of high TB burden areas.

Preliminary results

- surveys: 13,990
- CHW: 35
- sent to lab: 531
- new tb cases: 46

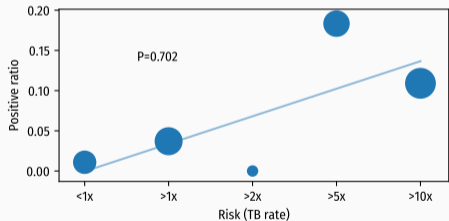
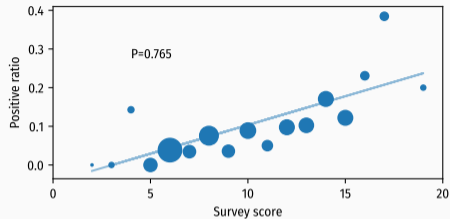
Two Proxies: Risk and score



The survey scores correlate with the risk (TB rate).

This confirms the agreement between the risk (TB rate) and the collected surveys.

Correlation with lab tests



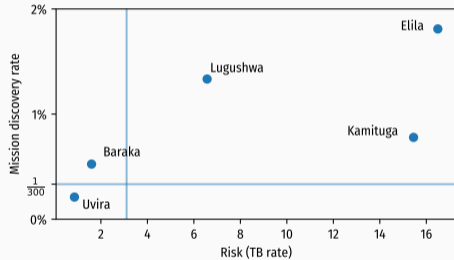
Lab test used is Ziehl-Neelsen microscopy.

Feedback from labs

Check if both risk (TB rate) and survey score predict new cases.

Positive ratio within lab results.

Mission discovery rate



Discovery rate from each mission

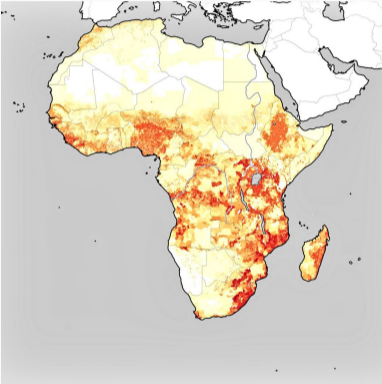
Ratio of positive cases within screened population.

We are still waiting for lab results from other missions.

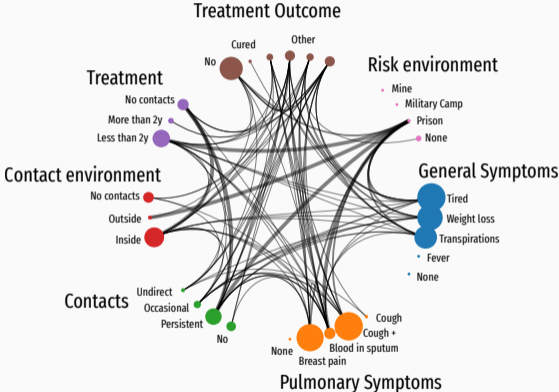
Conclusions

Future Work

Extend the area of interest



Use the outcome to improve risk map and survey



Questions?

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