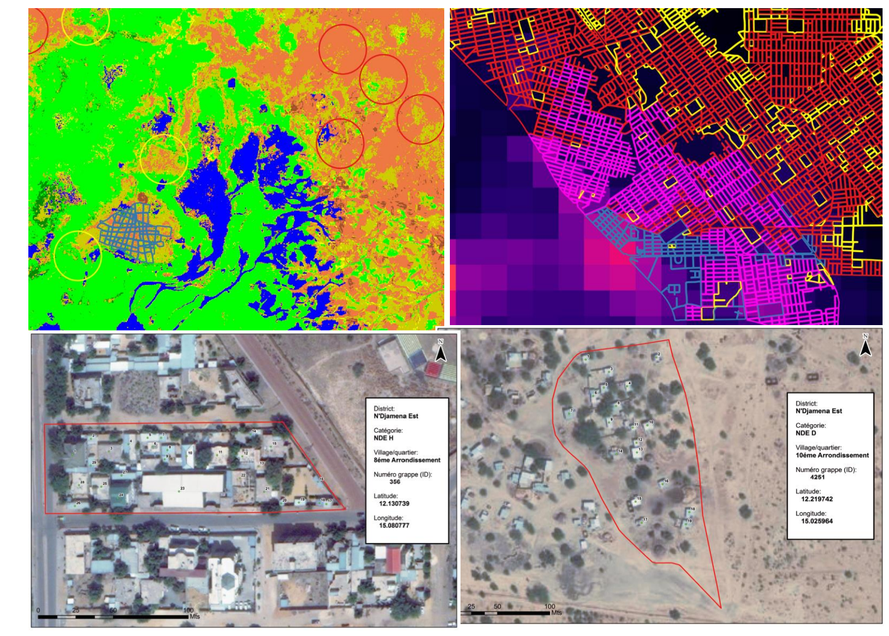
Use of satellite imagery, micro-census and administrative data to improve local population estimates

Health – pilot projects in Chad and Mozambique

PROBLEM

Issues with the denominators (target population sizes) are often mentioned among the reasons for inconsistencies of health coverage indicators.

- Local population estimates are critical for planning and delivering primary health services. A better understanding of population density, counts and movement will help health districts optimize the offering of health care services.
- Census data are a common source used by countries' health programmes. However, censuses are conducted every 10 years or so, in most countries. Unfortunately, at the local level, census data may become outdated relatively soon after the census and projections are usually not done for local administrative or health units.
- Headcounts are another technique used by health facilities to provide population estimates for catchment areas. However, headcounts are not systematic, and their quality may vary substantially.



SOLUTION

Use of innovative methods and in-country data triangulation to improve intercensal estimates of local target populations.

Satellite imagery processing

- High-resolution satellite imagery in urban settings and medium-resolution imagery in rural areas.
- Digital image processing to segment buildings and classify rooftop types
- Building features and environmental variables (land cover, vegetation index, night lights, etc.) extraction

Micro-census

- Census operations in selected clusters for the collection of demographic information, household compositions, population movement, etc.

Statistical modeling

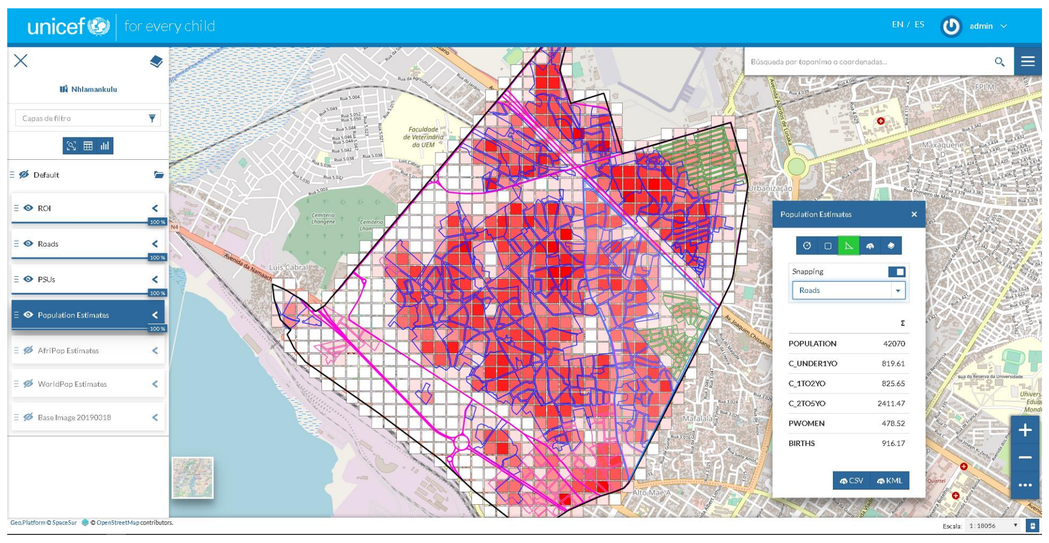
- Use of machine learning to predict population density, population counts per age cohort, pregnant women, total population.

Data triangulation

- Triangulation of the modelled estimates and administrative data to better understand discrepancies.

Final product

- The satellite imagery and the micro-census were modelled to create a gridded population map of about 100m by 100m in all piloted health districts.
- A web-based GIS platform for easy use of the population data at the local and central levels. Health managers can select areas of interest and obtain population estimates of target populations such as number of infants, children under 5 years, pregnant women, etc.
- Creation of a digital health map for the 3 pilot districts in Chad.



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