GRID3

GEO-REFERENCED INFRASTRUCTURE AND DEMOGRAPHIC DATA FOR DEVELOPMENT

"Leaving no one behind" Helping Improve Population Data

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BILL & MELINDA GATES foundation

UKaid from the British people

world pop FLOWMINDER.ORG

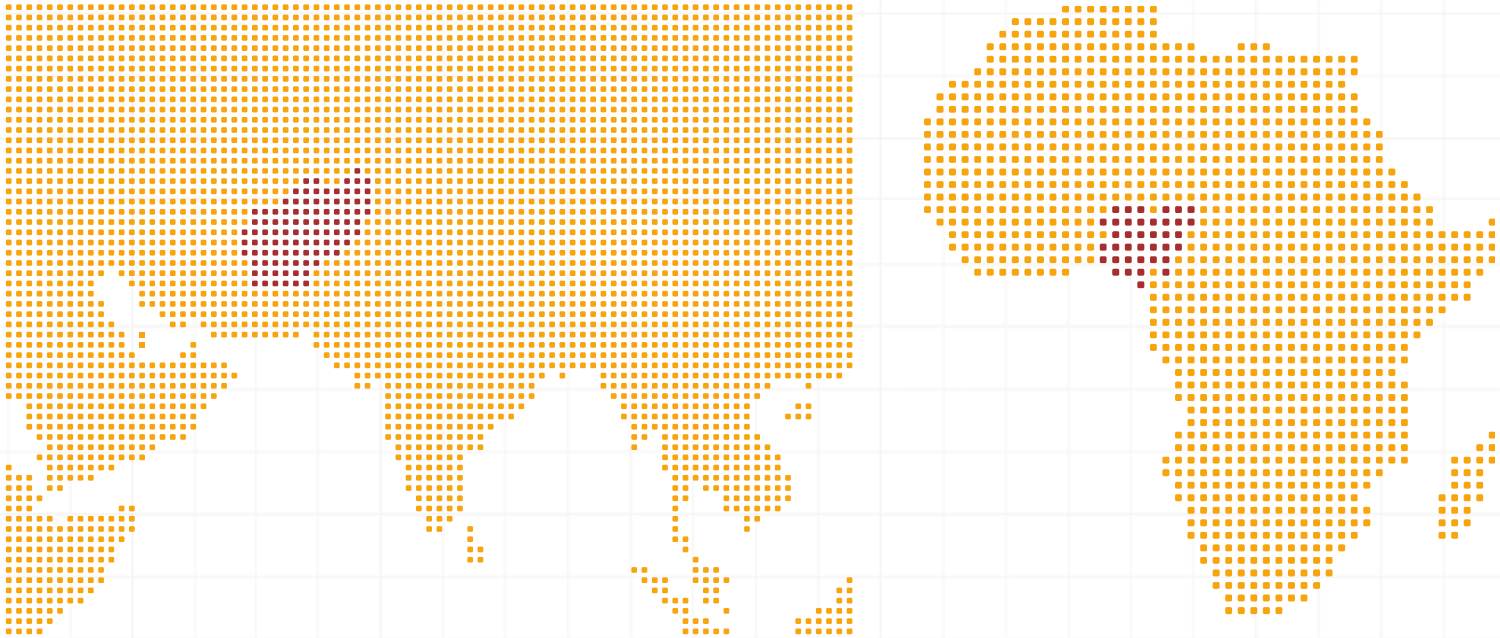
UNFPA

Center for International Earth Science Information Network
EARTH INSTITUTE | COLUMBIA UNIVERSITY

Project Overview

Precursor to GRID3

The idea behind GRID3 started with an effort to eradicate Polio in Nigeria, and grew out of the collaboration between UNFPA and WorldPop/Flowminder in Afghanistan.



Our Vision:

Mapping a path to sustainable development for everyone.

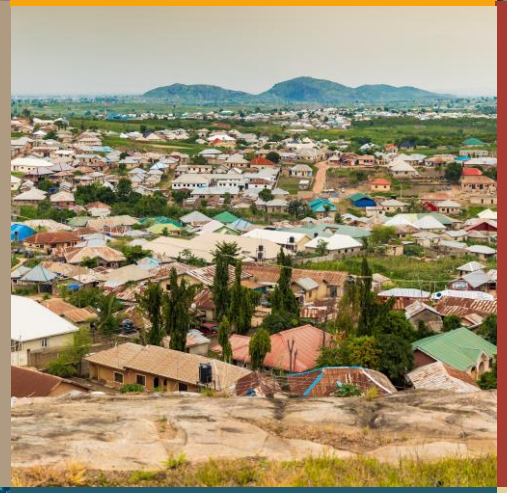
Our Mission:

To build spatial data solutions that make development goals achievable.

Housing census & hybrid method support

High-resolution population estimates

Harmonized Subnational boundaries



Comprehensive settlement locations

Locating critical infrastructure

Capacity Strengthening

GRID3 is currently operating in five African countries:

- South Sudan
- Nigeria
- Zambia
- Mozambique
- Democratic Republic of the Congo

GRID3 Partners

A global partnership

Funding Partners

Bill & Melinda Gates foundation

UKaid from the British people

Implementing Partners

worldpop FLOWMINDER.ORG

UNFPA

Coordinating Partner

Center for International Earth Science Information Network
Earth Institute | Columbia University

Oversight and Decision Making

Technical Expertise and Capacity Strengthening

Technical Support and Advocacy

Approach

Identifying opportunities

- Need to fill a spatial gap
- Strong use cases potential
- Production of open data networks & frameworks
- Commitment to achieve the SDGs

Approach

GRID3 works with national level partners to develop tailor-made strategies

Create partnerships

Determine applications

Identify needs

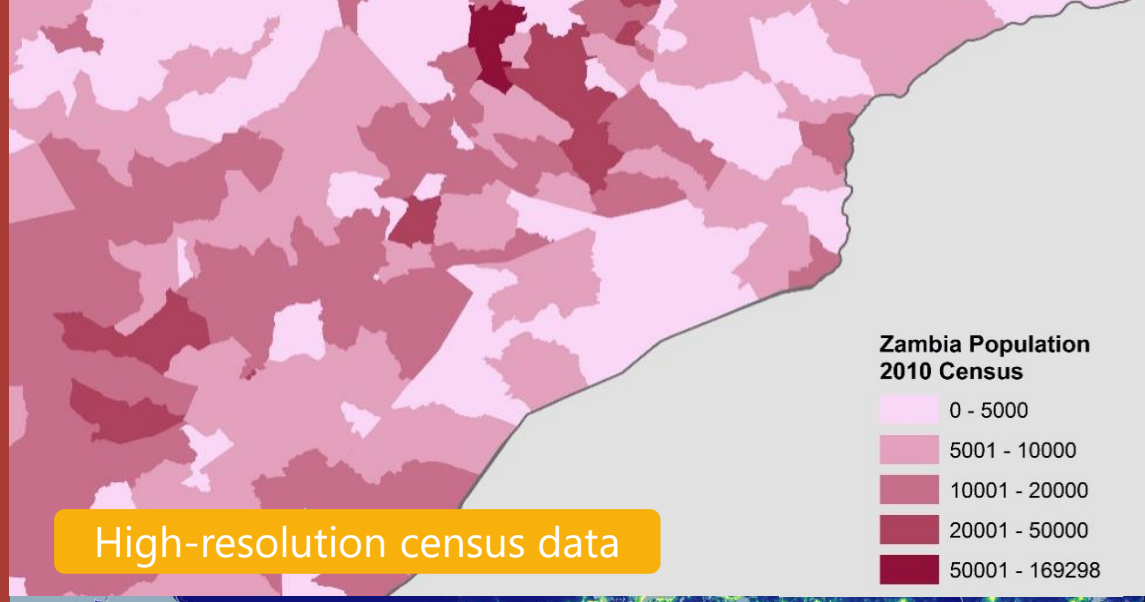
Collect and produce data

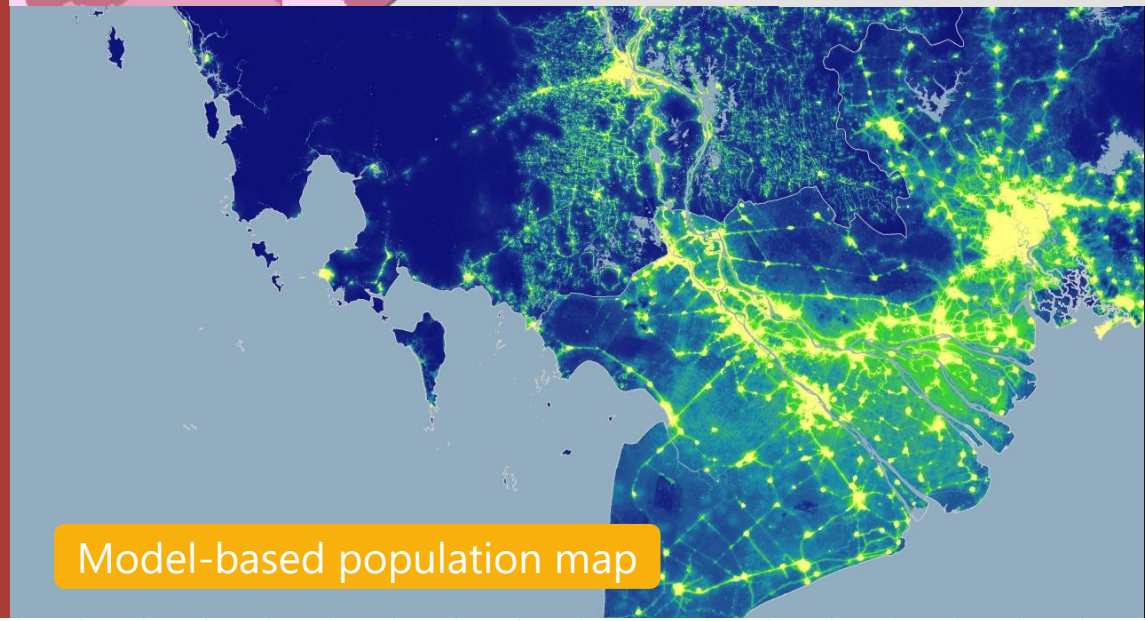
Share data

Outcomes

High-resolution population maps

Depending on needs and feasibility, GRID3 can support the generation of high-resolution geo-referenced **census data** or produce **model-based population maps**



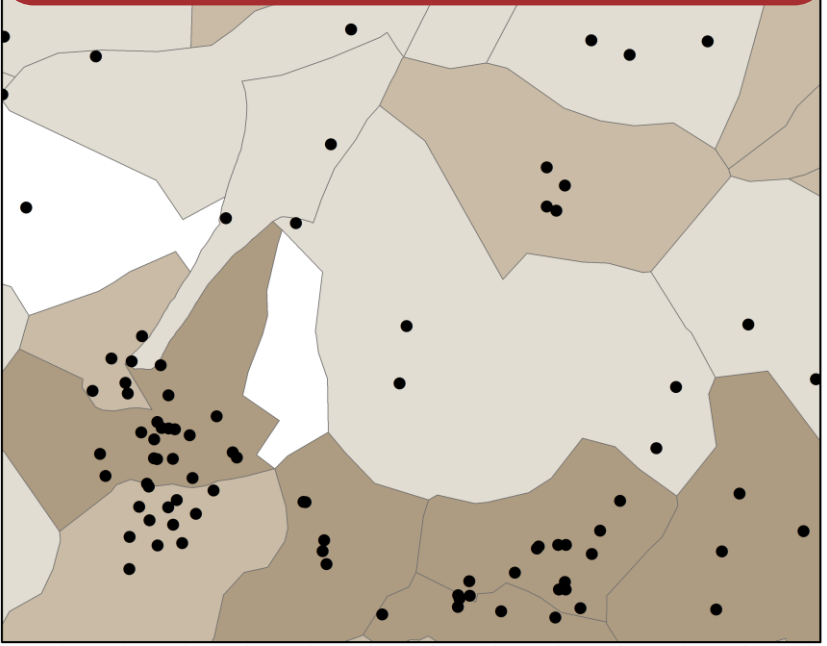


Two complementary approaches

Gridded population estimates

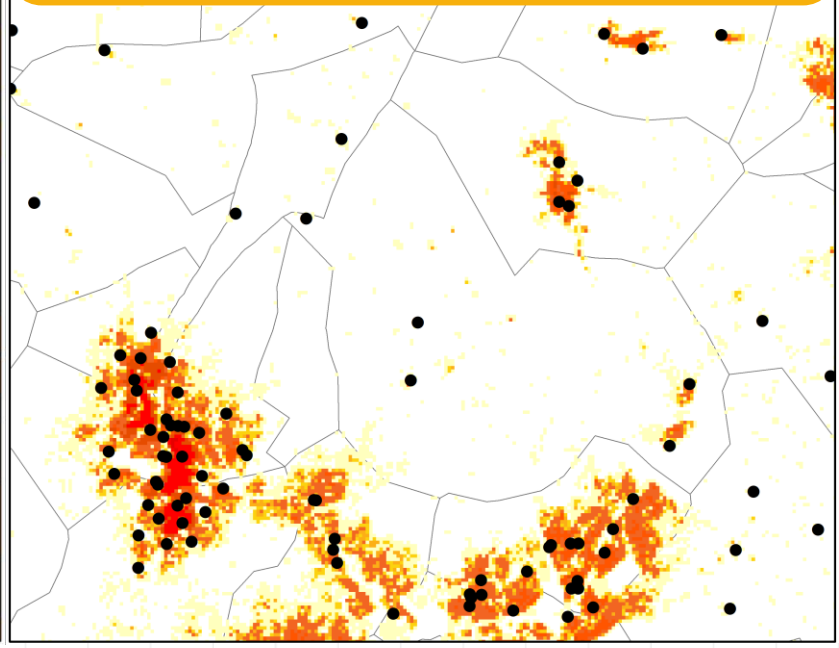
Value of high-resolution demographic data

Health facilities overlaid on admin unit population counts

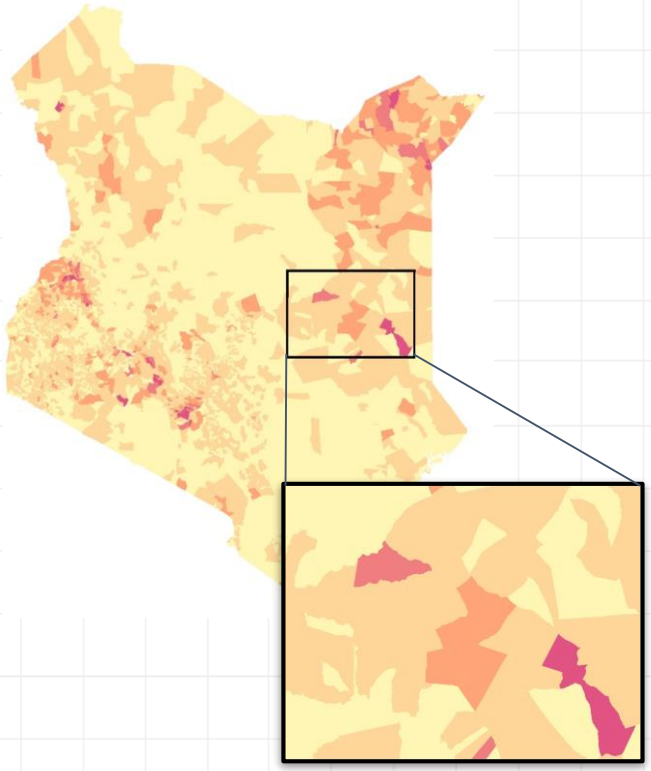


How many people live within 1km of a facility?

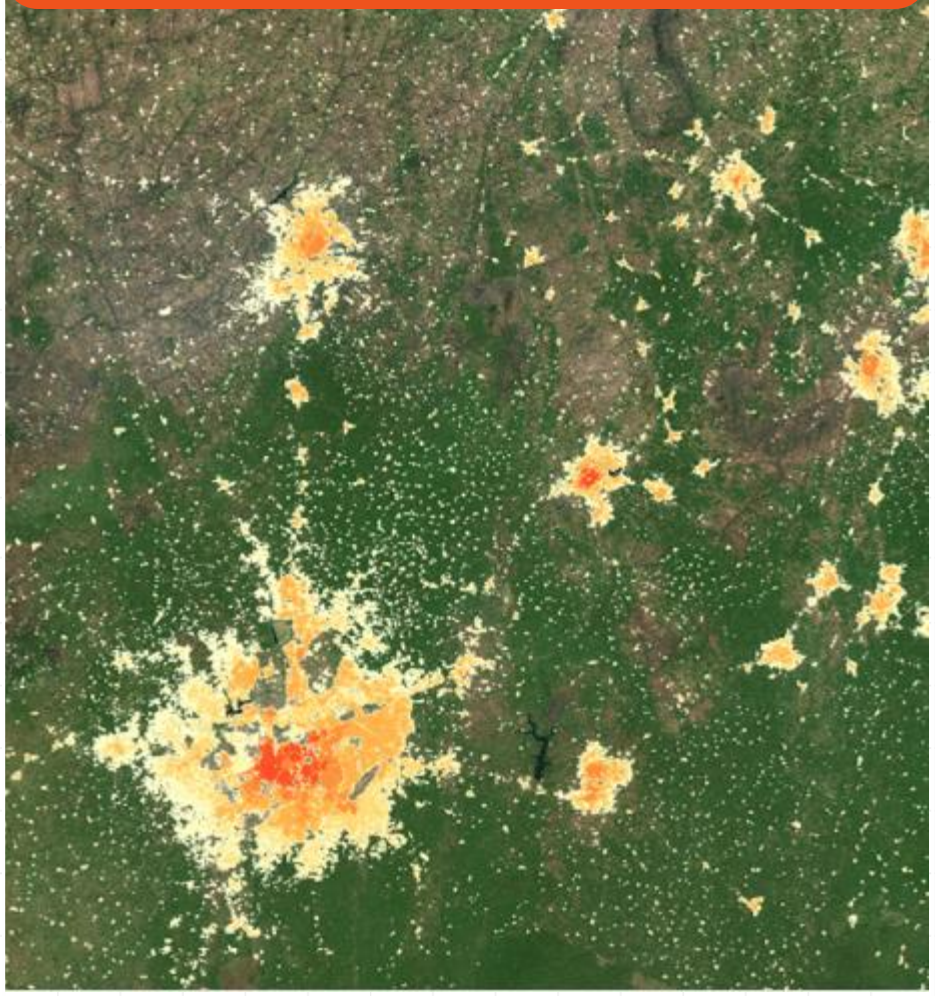
Much easier and more accurate to measure using gridded population data



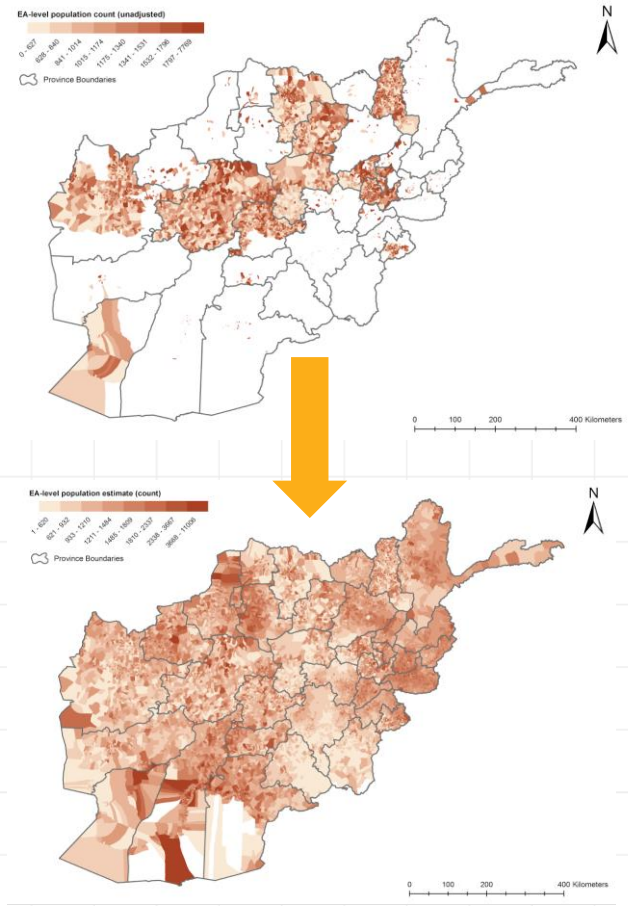
Mapping from census data



Disaggregation to grid cells



Population estimation models



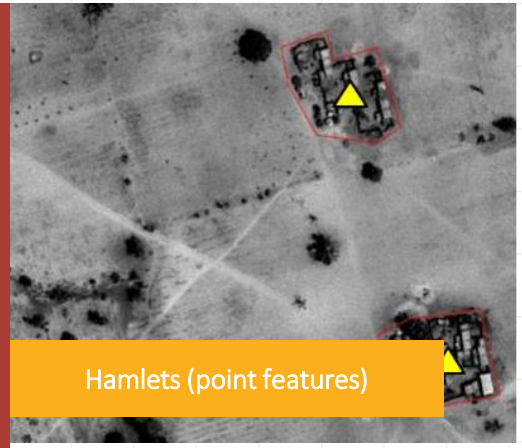
Paths to high-resolution demographic data

High-quality geo-referenced census

GRID3 assists in carrying out the highest resolution census possible, and where insecurity or inaccessibility make a full census impossible, supports through a “hybrid census” approach.

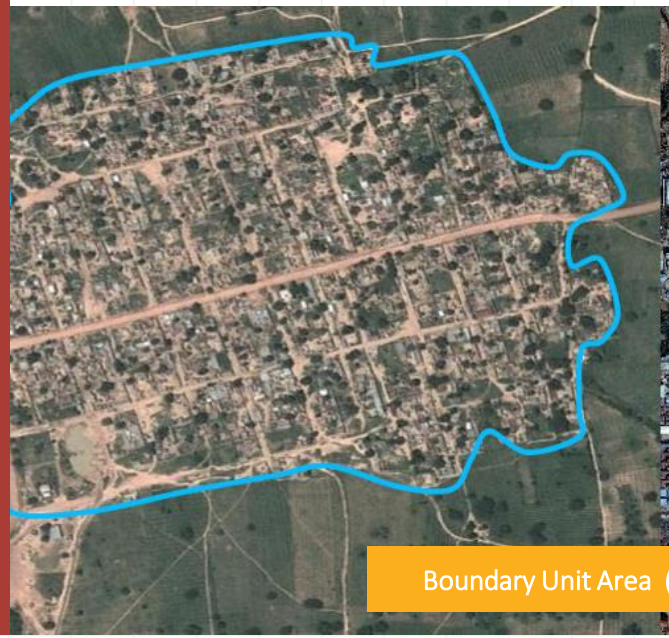
Settlement locations

GRID3 collects and assigns names of places to point locations or areas of settlement



Hamlets (point features)

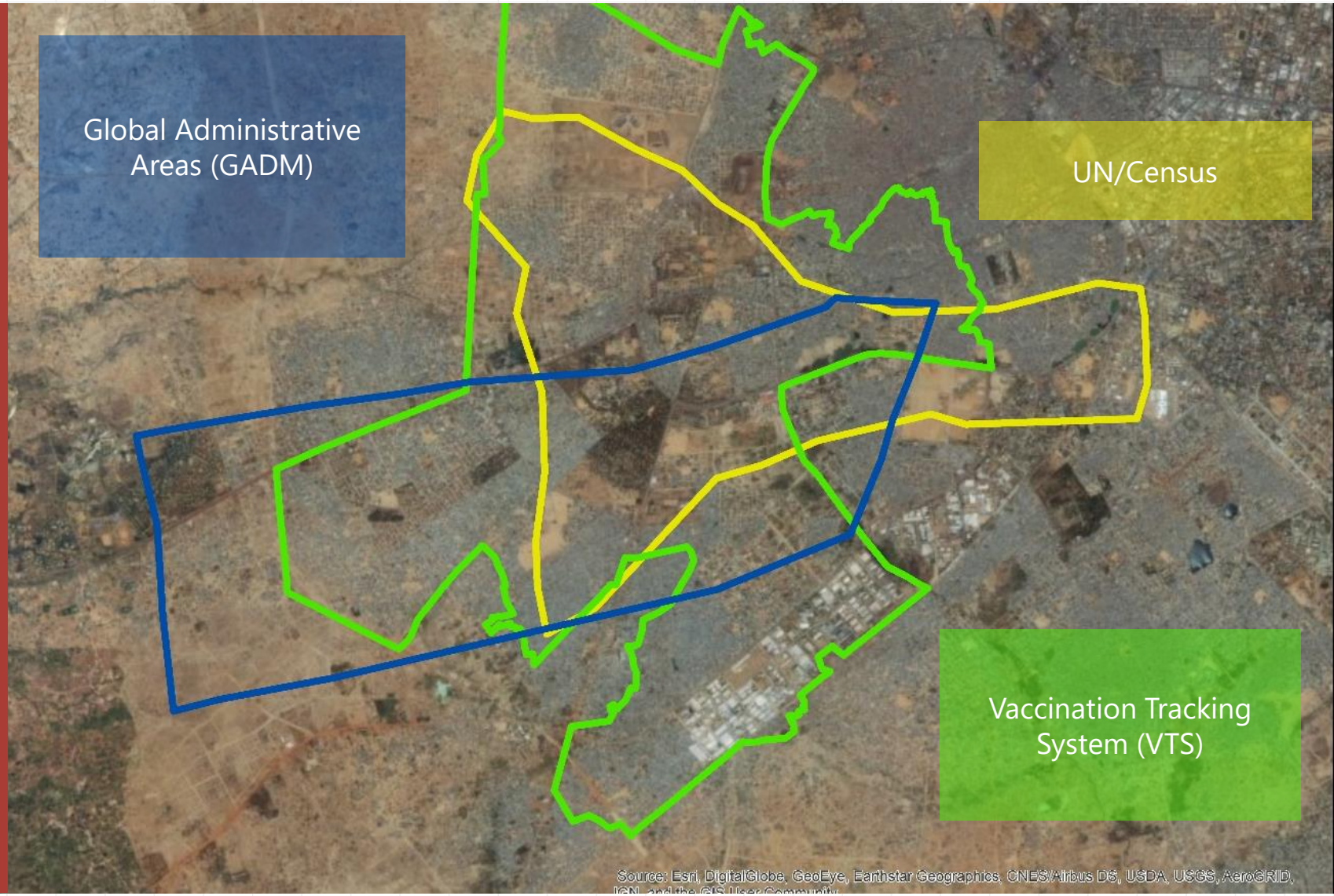
Small Settlements (point features)



Boundary Unit Area (polygon features)

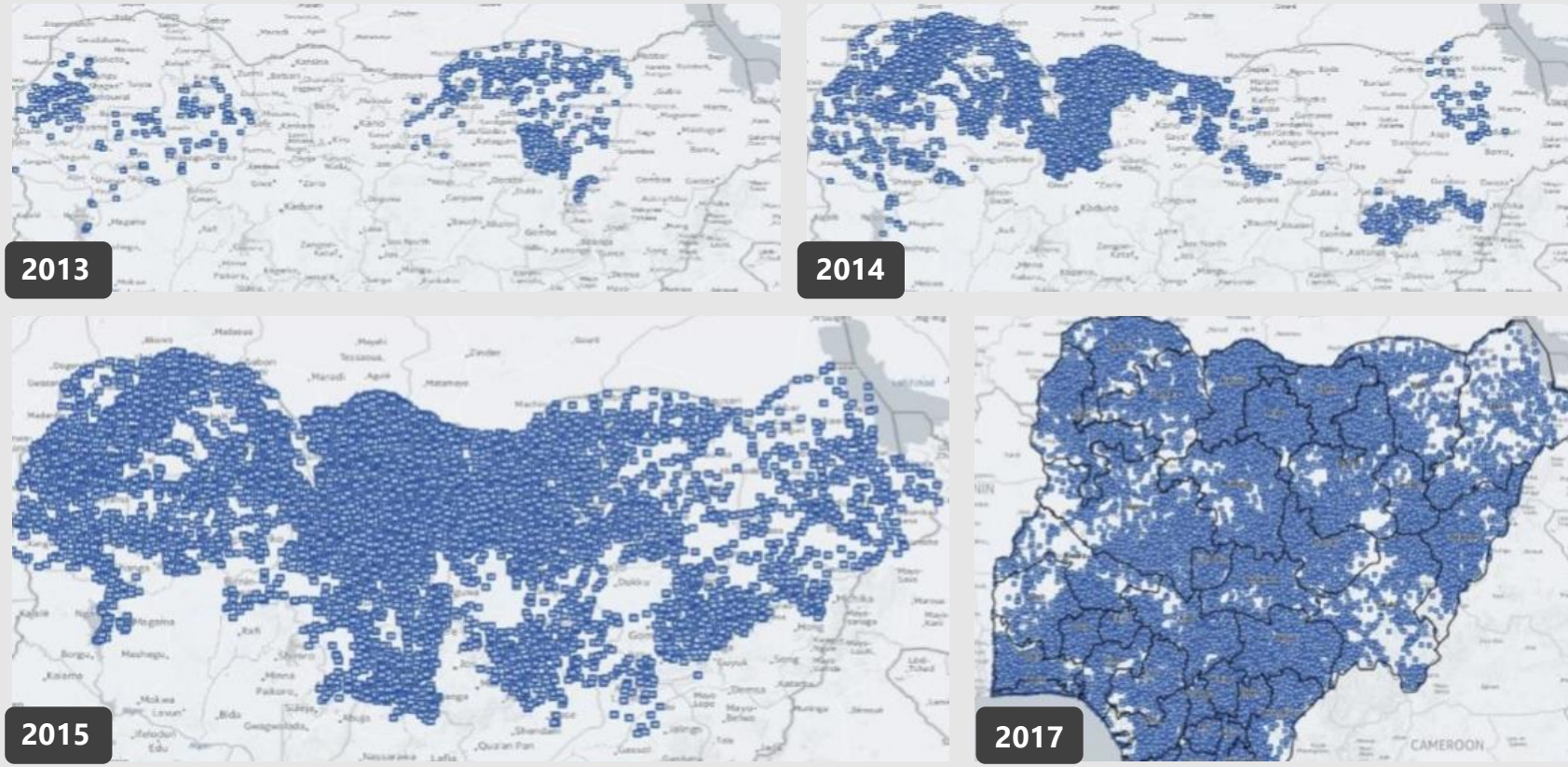
Subnational boundaries

GRID3 provides the methodology to access, edit and validate sub-national administrative boundaries.

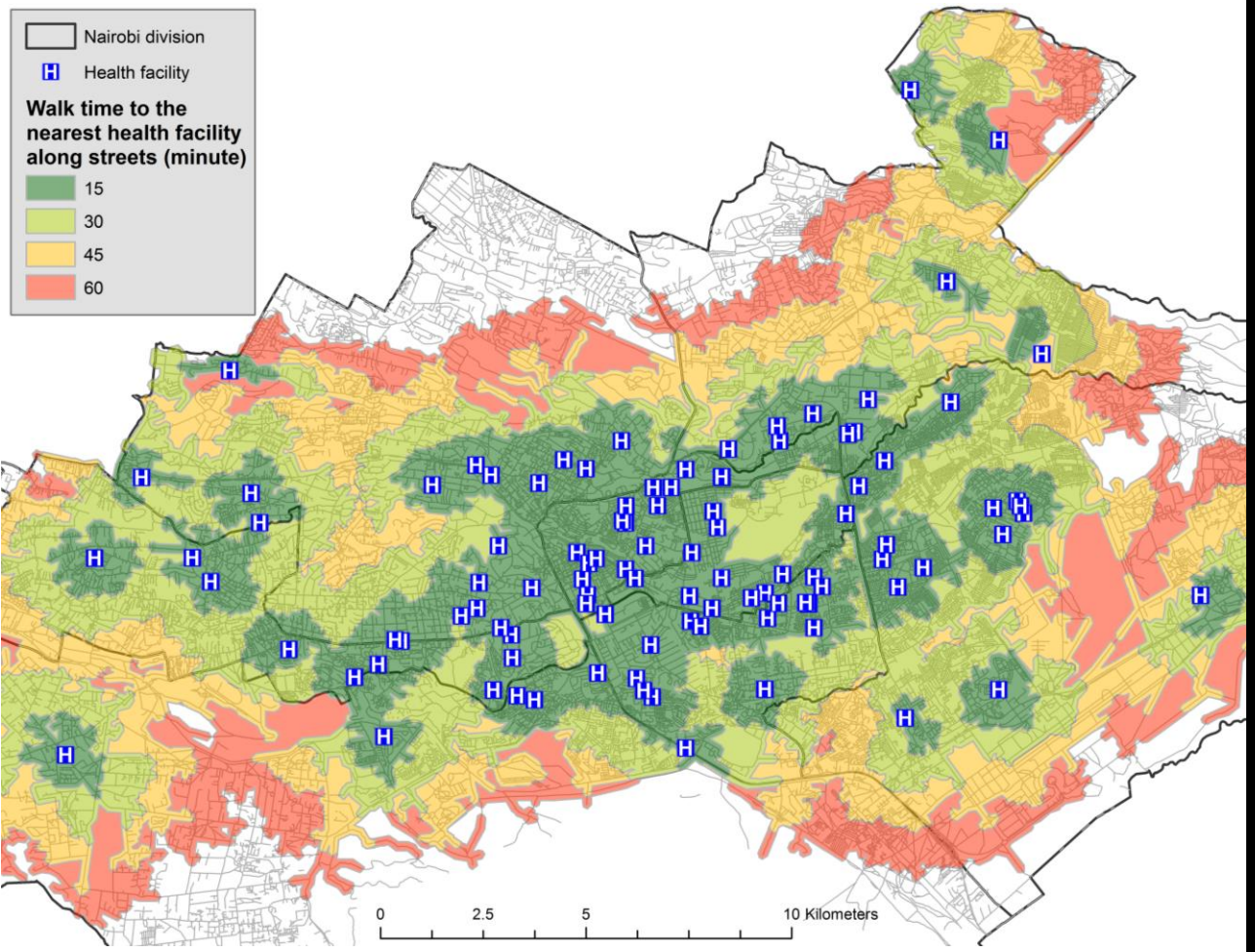


Infrastructure mapping

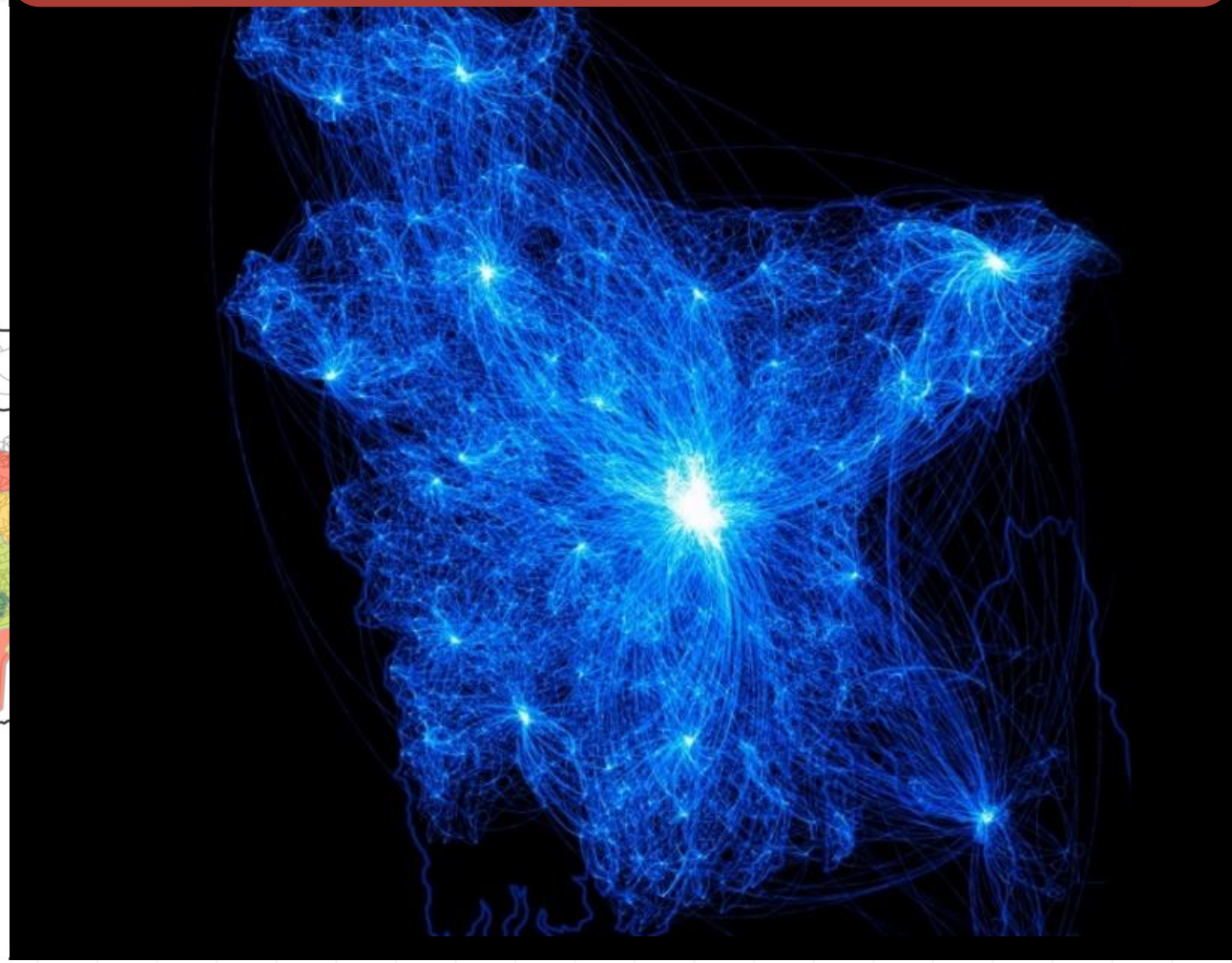
GRID3 can target and produce infrastructure data layers depending on a country's current needs or desires.



High-resolution mapping of population **health and welfare indicators**



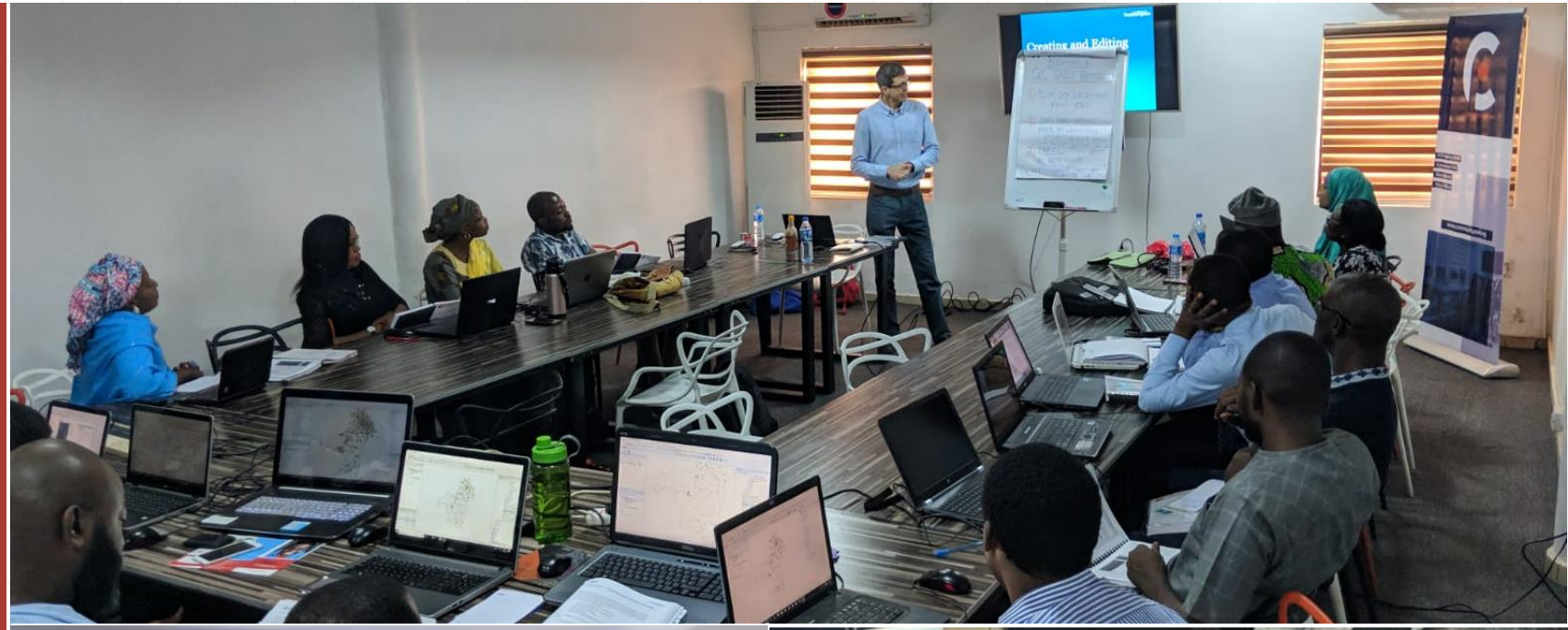
Integration of **mobile network data**



Other spatial data improvements

Capacity strengthening

- Generate/collect high resolution GRID3 data
- Manage, analyse and utilise GRID3 data to meet development and humanitarian needs
- Disseminate & share GRID3 data



Applications

Case study

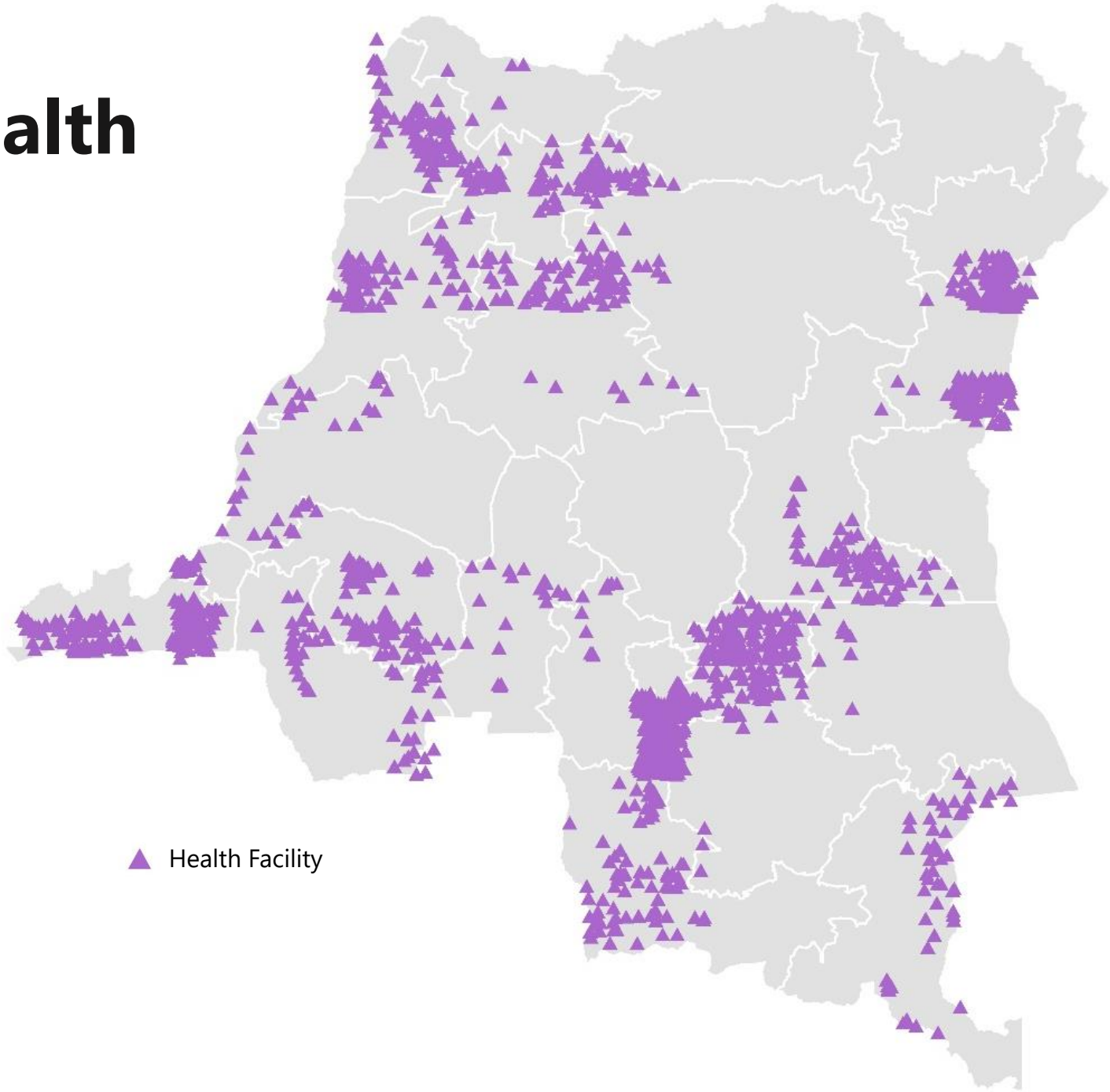
Democratic Republic of the Congo (DRC)

35 years ago

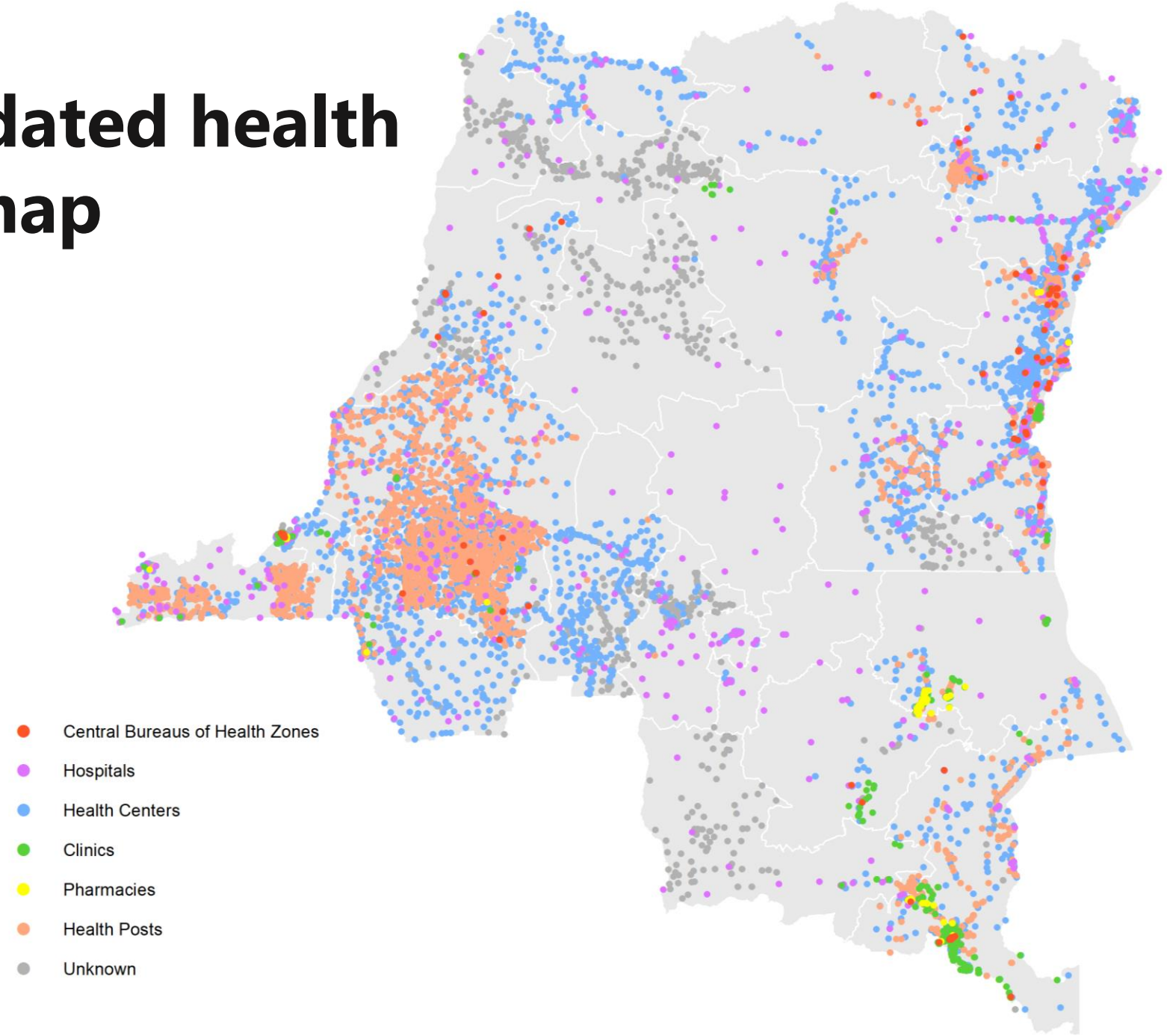
The Democratic Republic of the Congo had its **last census in 1984**. Current population estimates are still based on this number.

The outskirts of Kinshasa - A sudden transition into paddy fields on this side. *Photo credit: F*

Pre-GRID3 health facilities map



GRID3 updated health facilities map



Use cases & impact

Types of use cases - Examples

Support Field Operations

Bednet delivery

Vaccination campaigns

Supply chain routing

Assess needs

Location of unmet needs / regional prioritisation

Exposure to risks

Design programmes

Optimise location of new facilities/services

Characterise benefits to citizens and donors

Empower private sector

Market research

Investment location

Enhance statistical power

Sampling frames

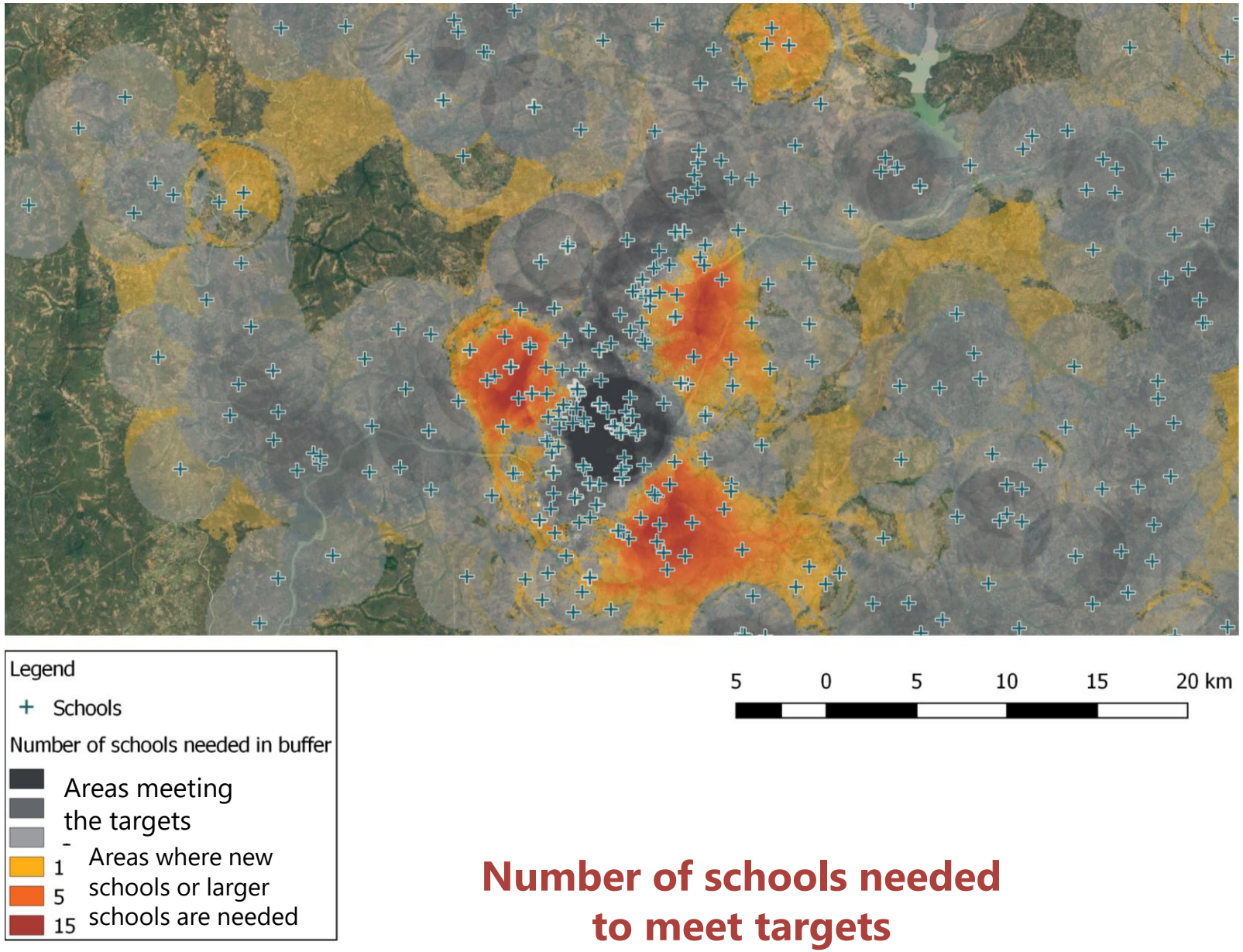
Common benchmarks for denominators

Common aggregation units

Assess needs

Access to Schools

Combining geo-referenced school data with high-resolution population data permits **identification of unmet needs by local administrative unit.**



Number of schools needed to meet targets

(Number of people in buffer / target) – number of schools in buffer

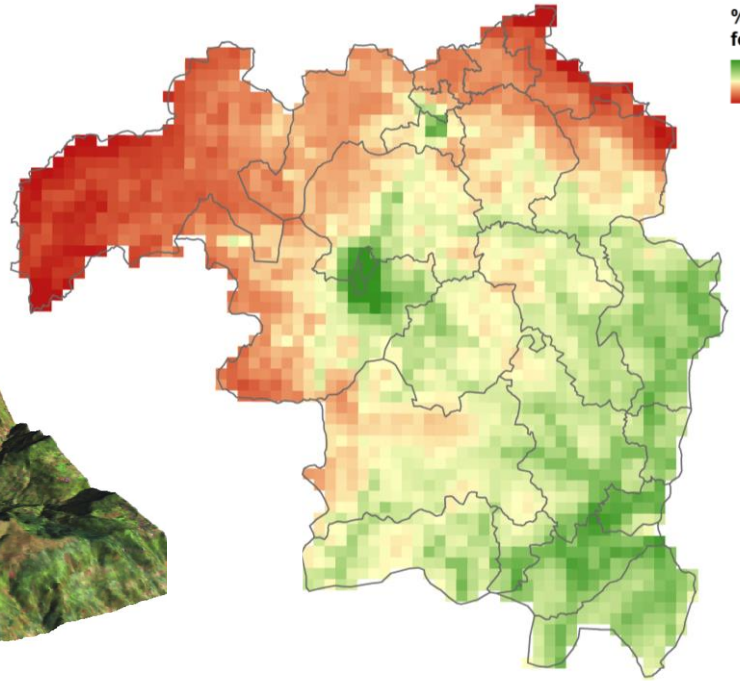
Design programmes

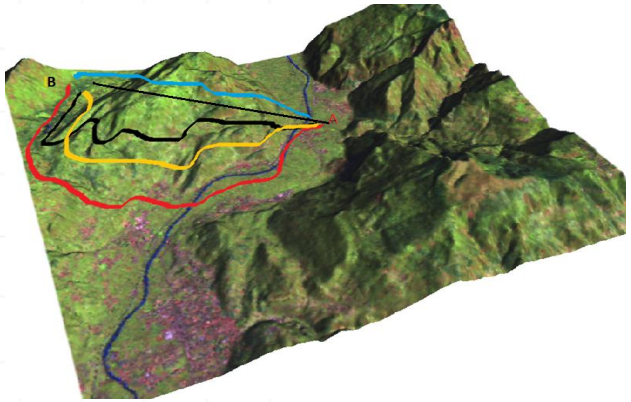
Health Facility Siting

Proportion of women aged 15-49 with demand satisfied for family planning

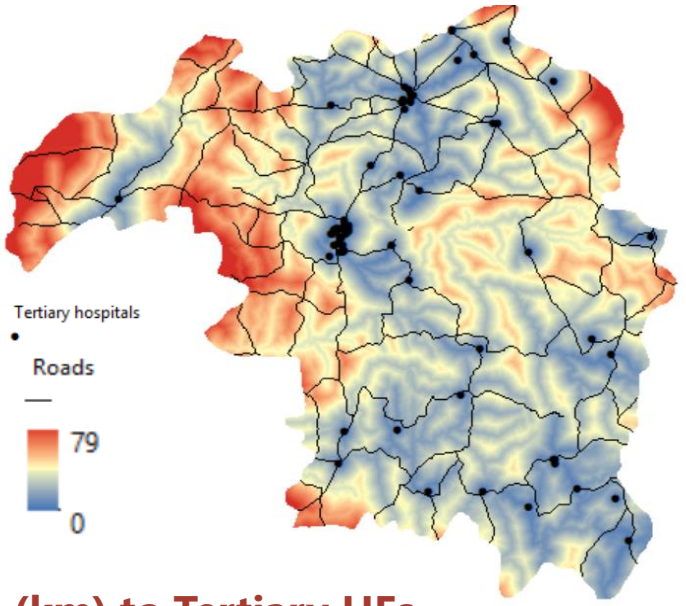
Simulated results of optimal new health facility construction, relying on different resolution population data.

% Demand Satisfied for Family Planning

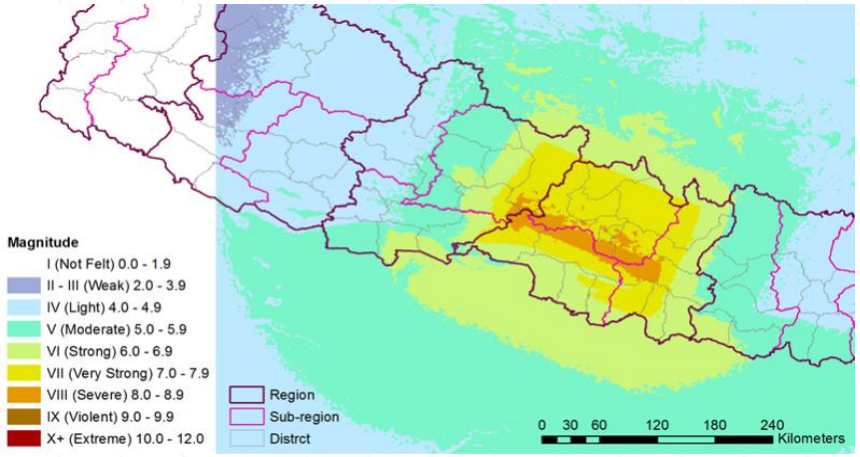


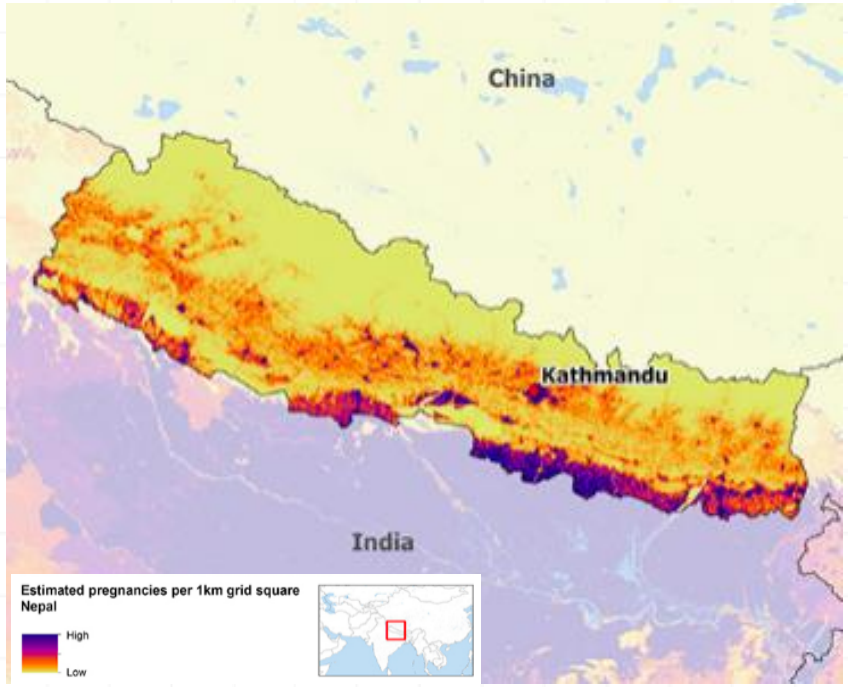


Natural barriers: time and distance



Distance (km) to Tertiary HFs



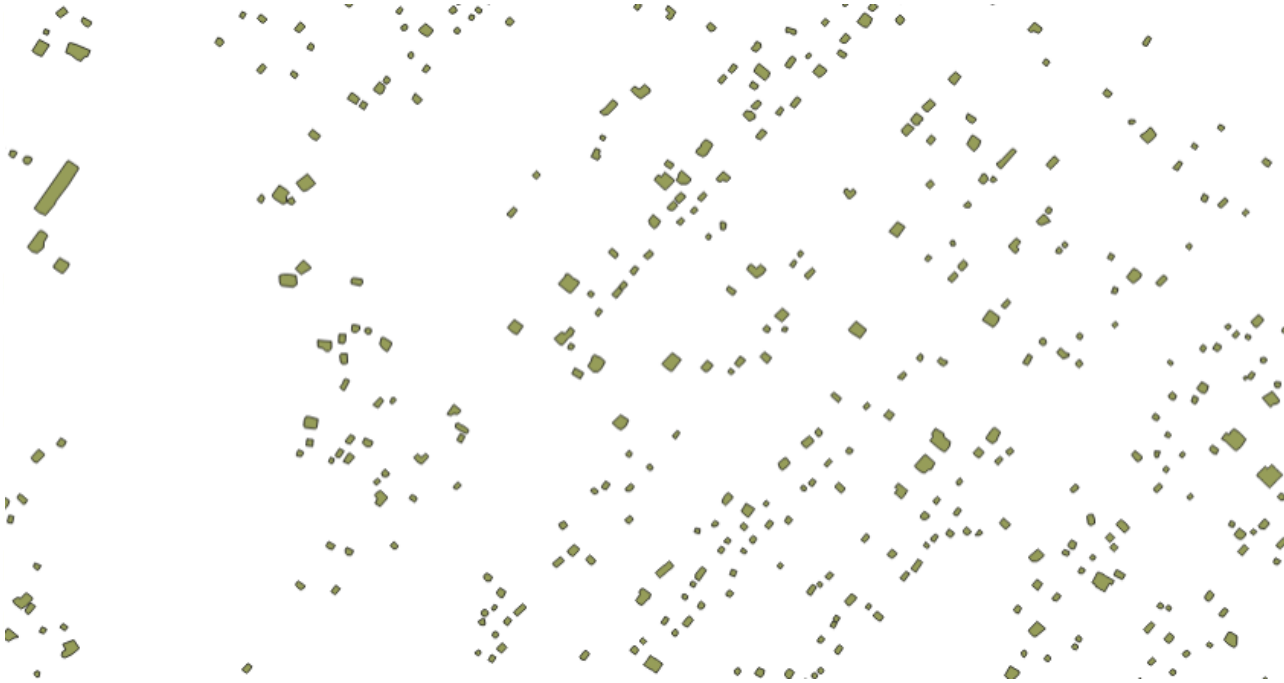


Population at risk

How many pregnant women were at risk after the **2015 Nepal earthquake?**

Intercensal population estimate map

Updated satellite-derived building map



Census Planning

GRID3 Country level impact

Health

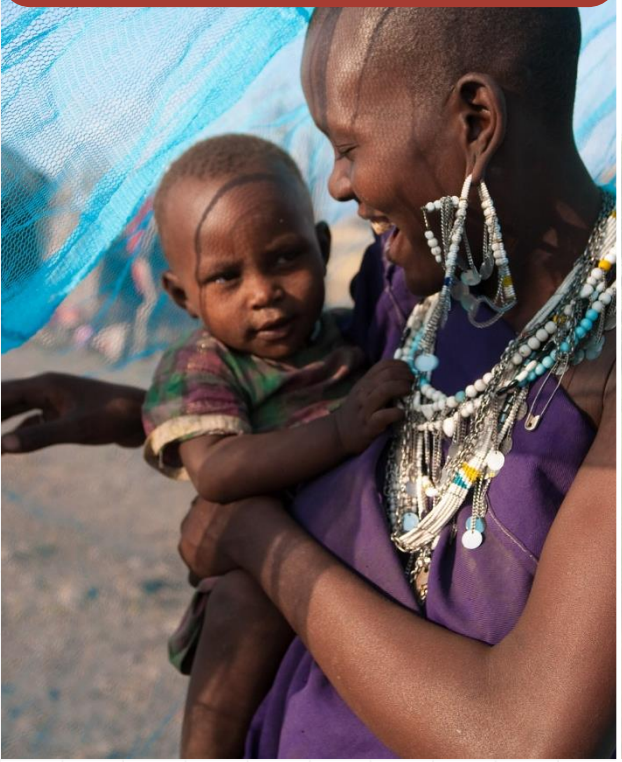


Photo credit: Maggie Hallahan, Flickr

Infrastructure and Climate

Education

Photo credit: Steve Jurvetson, Flickr

Agriculture and Resources

GRID3 Global impact

https://sustainabledevelopment.un.org/sdgs

GRID3

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For more information, contact us: **info@grid3.org**

For project updates and announcements, visit us online at:

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