



GRID³

GEO-REFERENCED INFRASTRUCTURE AND
DEMOGRAPHIC DATA FOR DEVELOPMENT

BILL & MELINDA
GATES *foundation*



world
pop
FLOWMINDER.ORG



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

From Afghanistan to GRID³



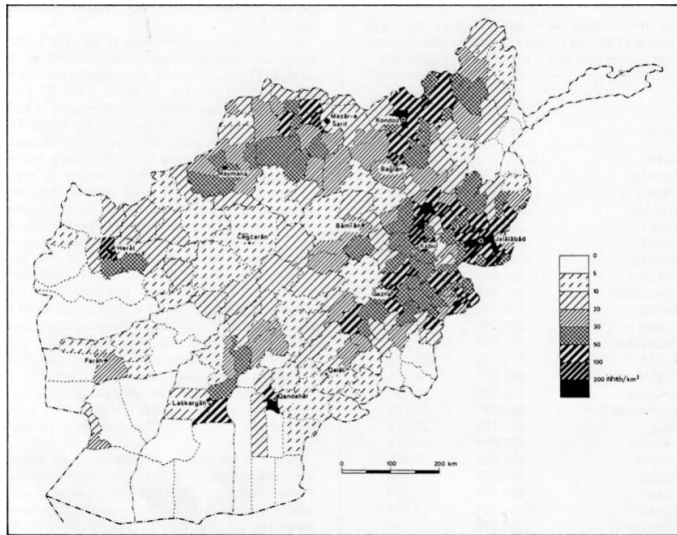
High-resolution population mapping with incomplete data:
Applications in Afghanistan

Afghanistan - Background

Prior to working with GRID³, population maps were largely based on estimates

Last national population census was in 1979

Significant uncertainties in national and subnational estimates



1979 Census map

One-third of country covered by a rolling census, but insecurity preventing additional data collection

President Ghani requested exploration of new methods for obtaining subnational population numbers

Afghanistan - Project Aims

The project aimed to:

- Undertake training in geospatial methods for National Statistical Office and other ministries
- Estimate population counts at enumeration area (EA), district, province and national levels and associated measures of uncertainty
- Produce a 100m x 100m gridded population estimates
- Develop estimates of the age/sex structure of the population and associated measures of uncertainty





Model-based estimates - Steps

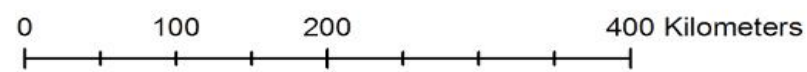
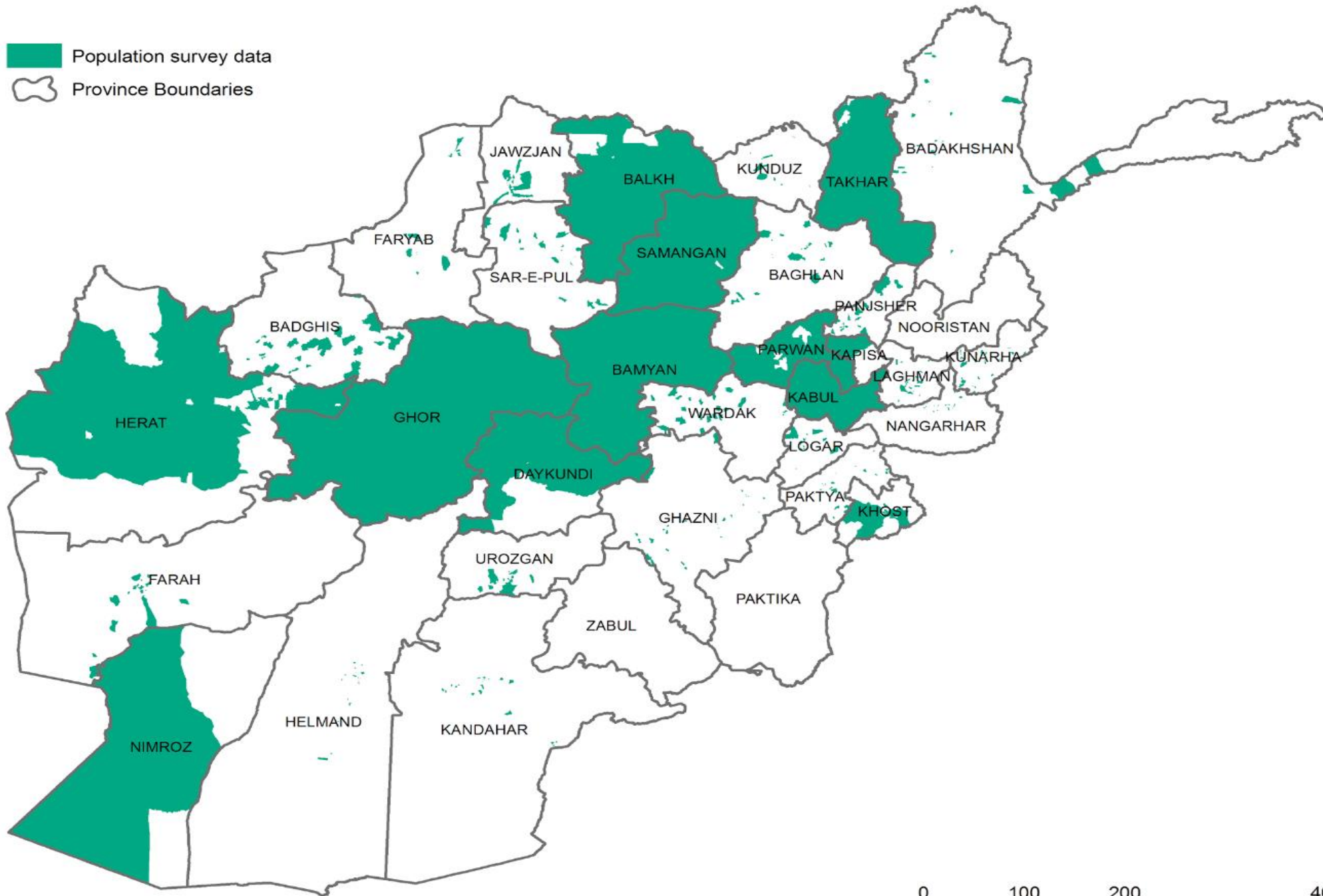
Population
Data

Settlement

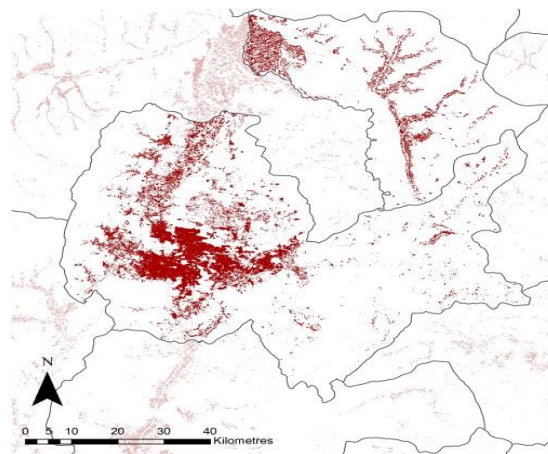
Geospatial
Covariates



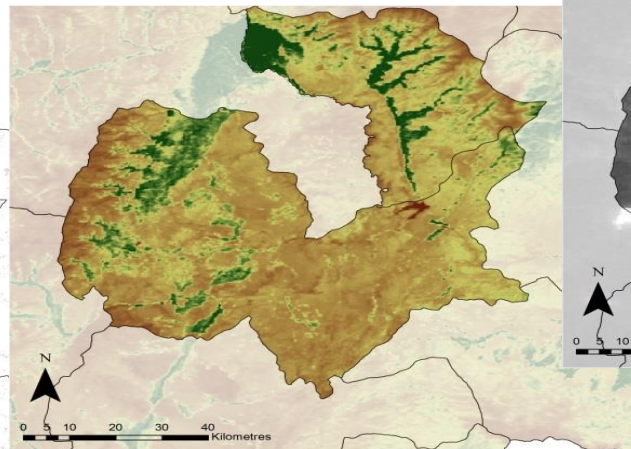
-  Population survey data
-  Province Boundaries



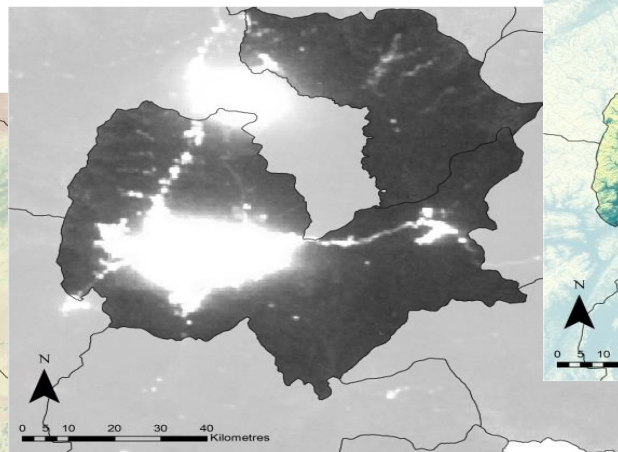




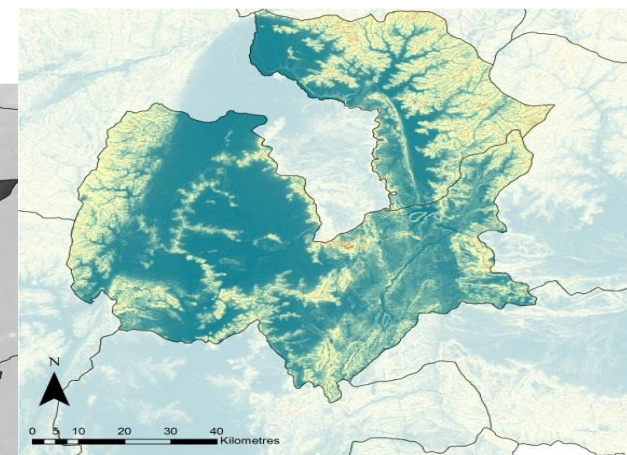
Number of compounds & area settled



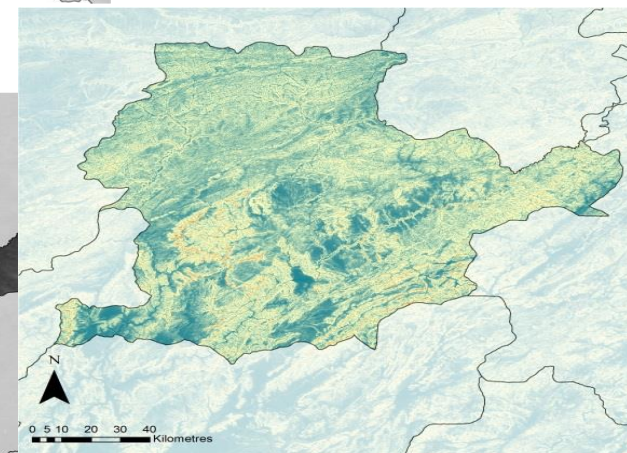
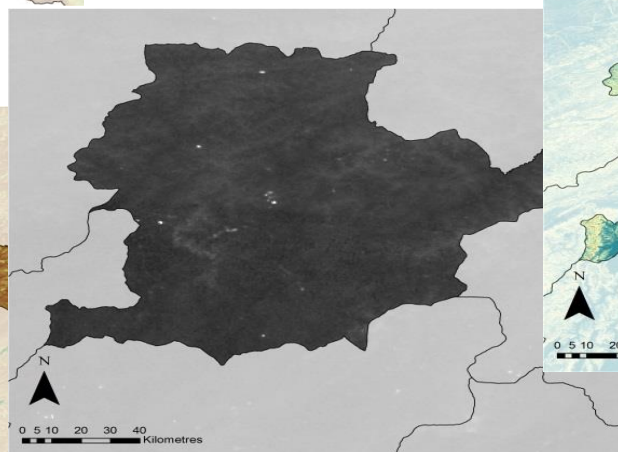
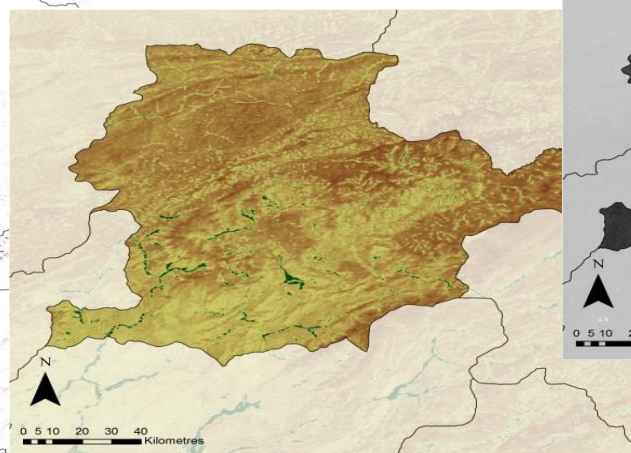
Vegetation index



Night-time lights



Slope



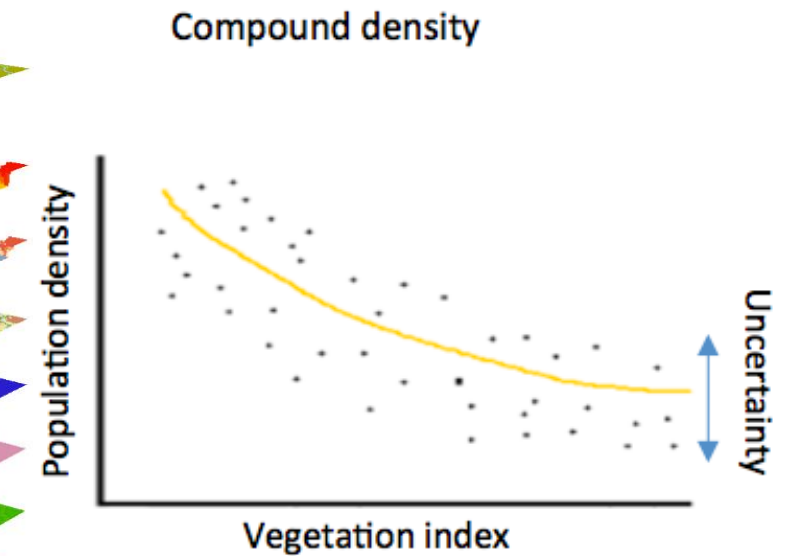
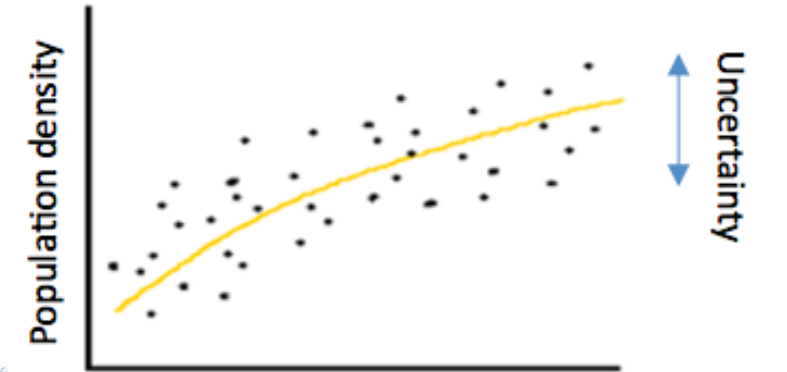
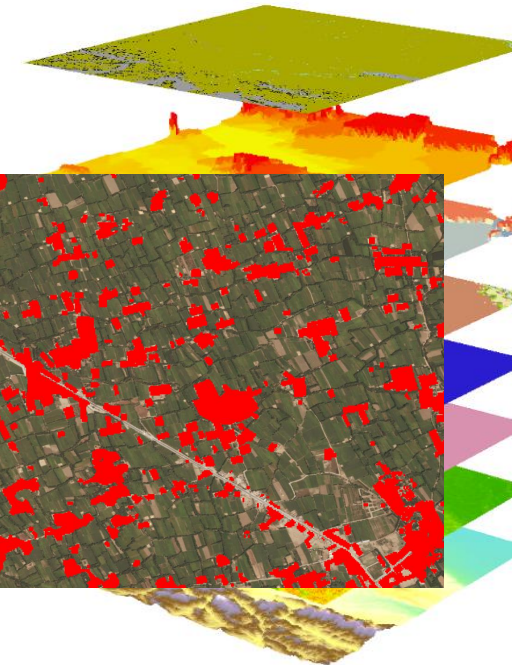
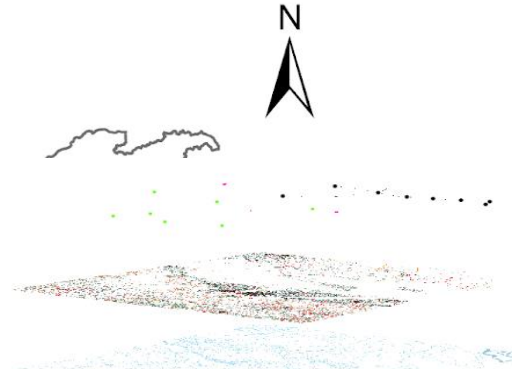
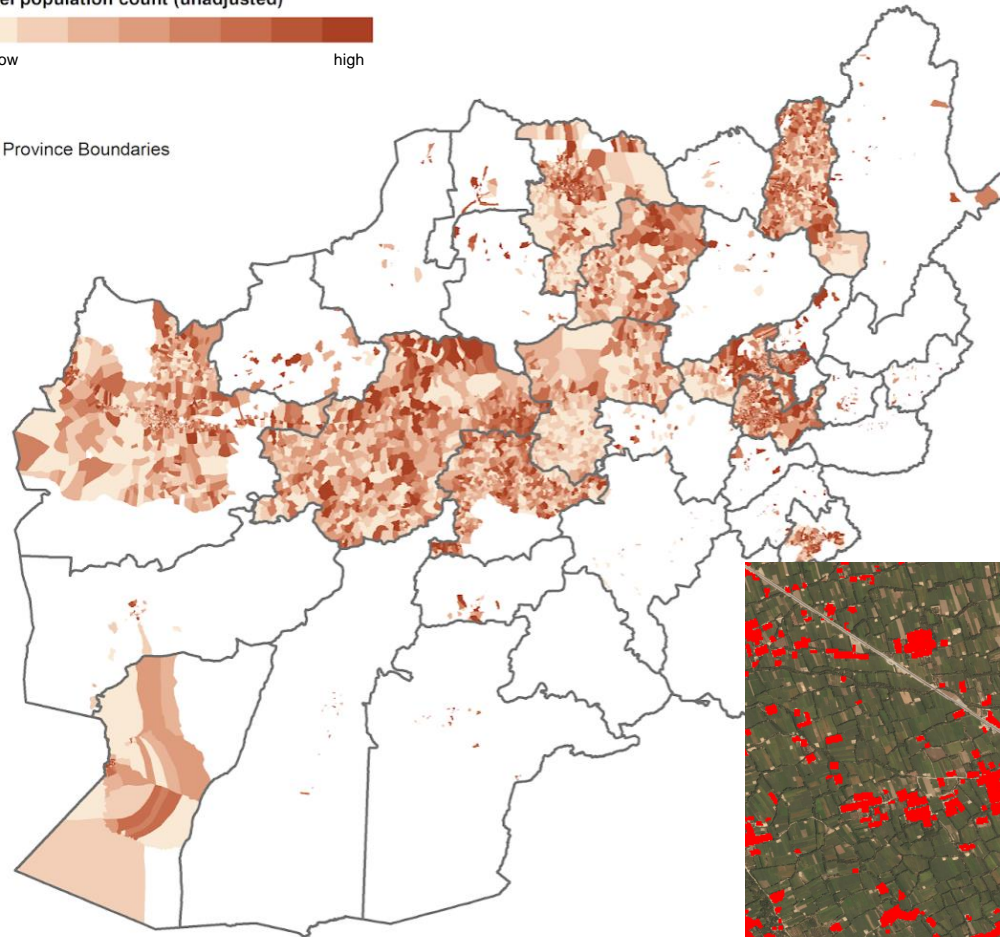
>100 geospatial datasets

Model-based estimates - Steps

EA-level population count (unadjusted)




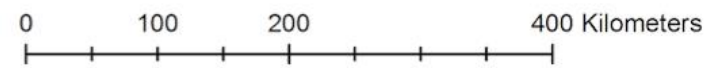
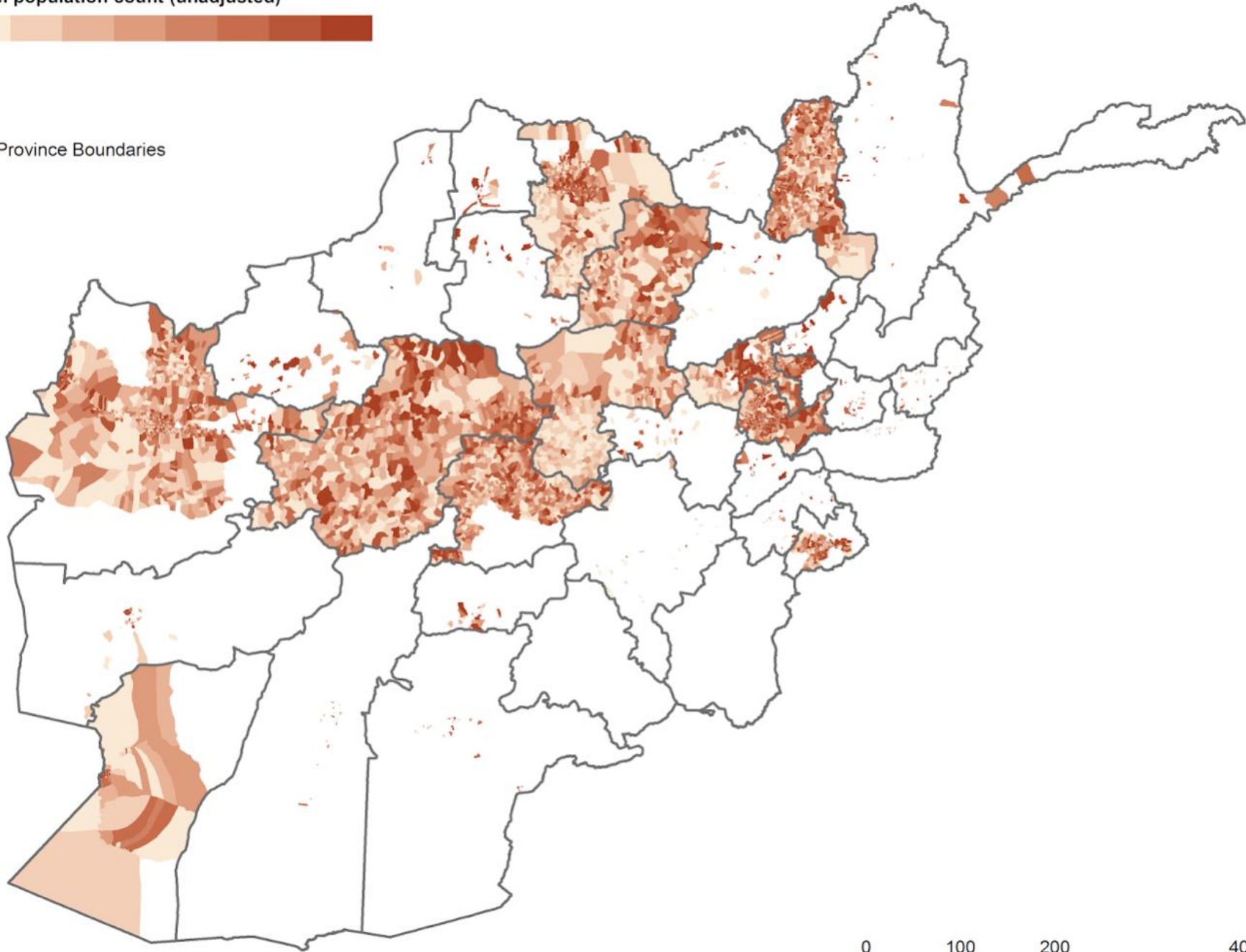
Province Boundaries



EA-level population count (unadjusted)




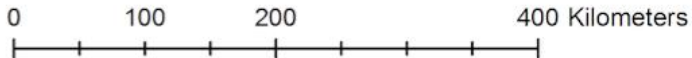
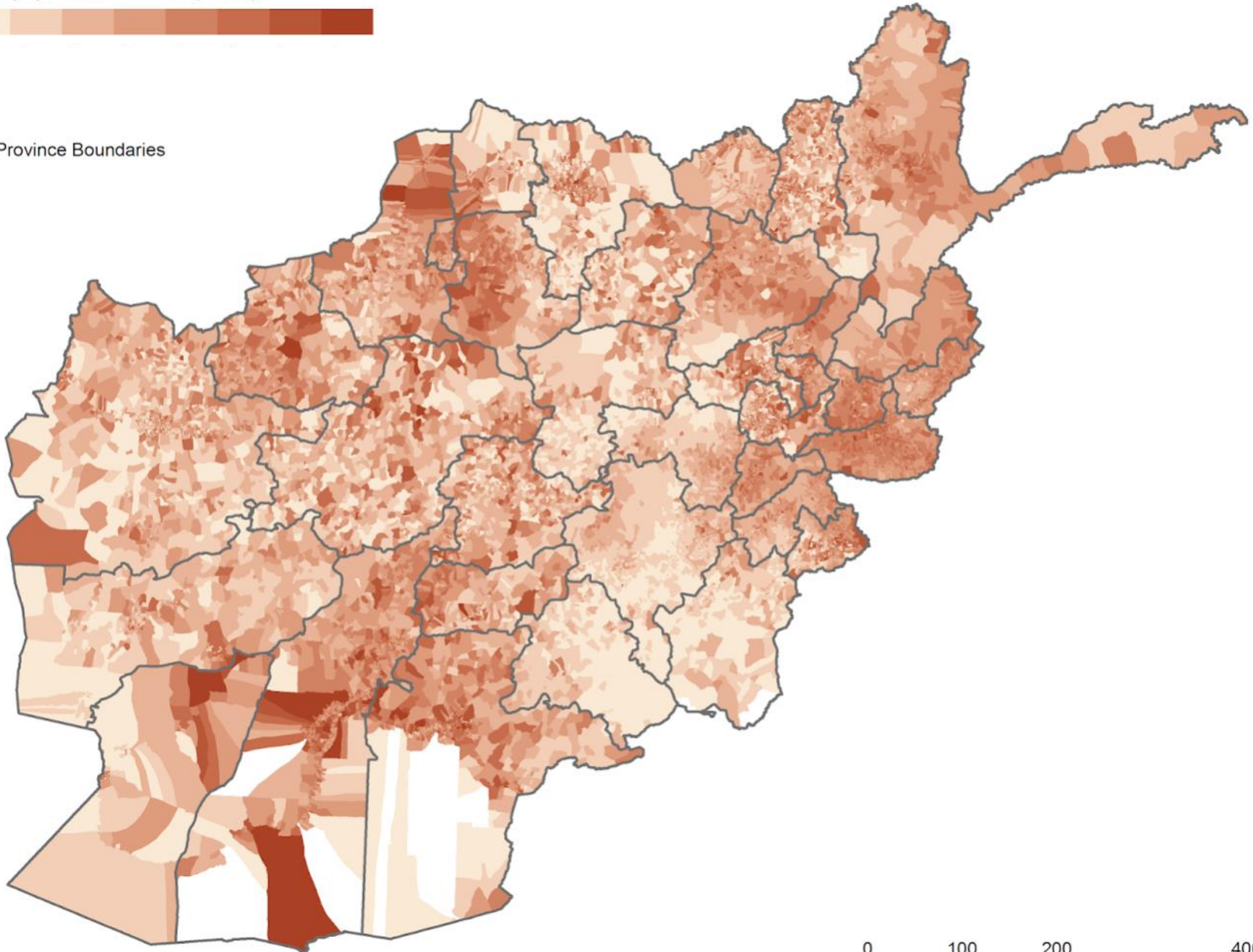
 Province Boundaries



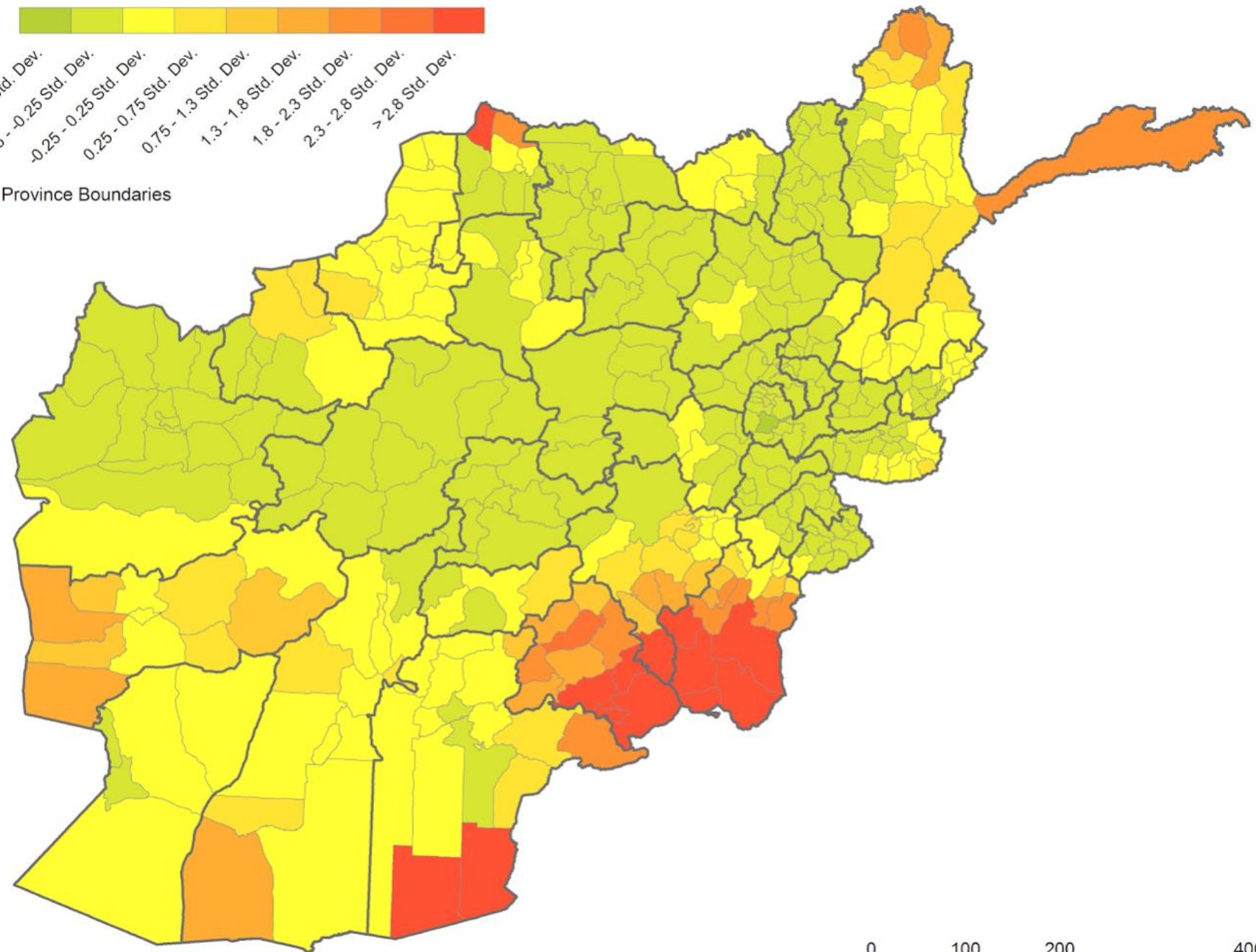
EA-level population estimate (count)

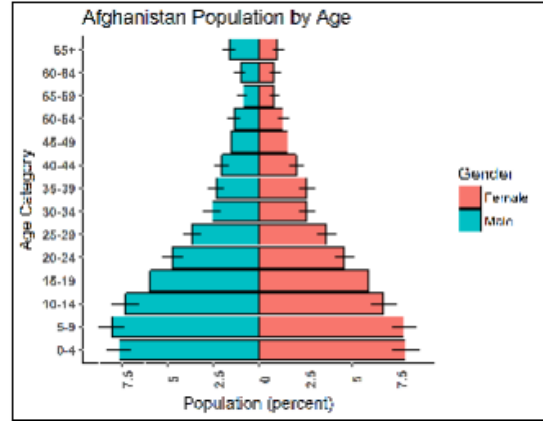


 Province Boundaries

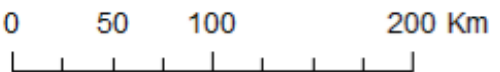
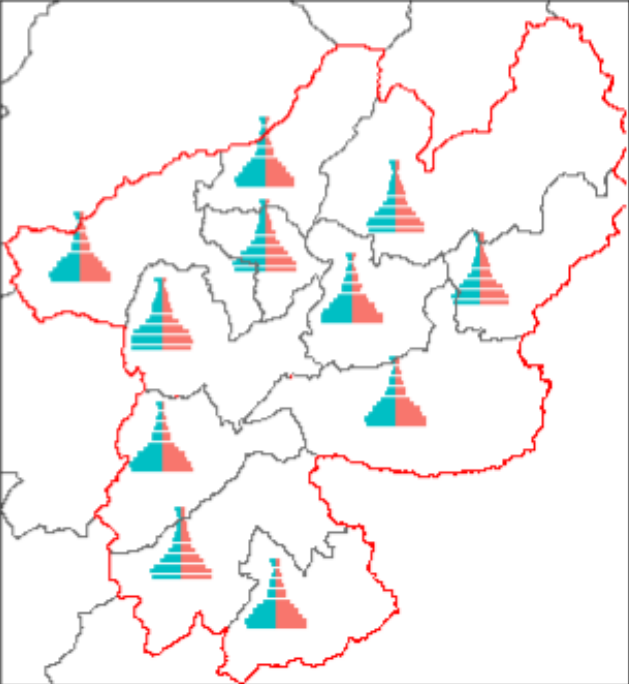
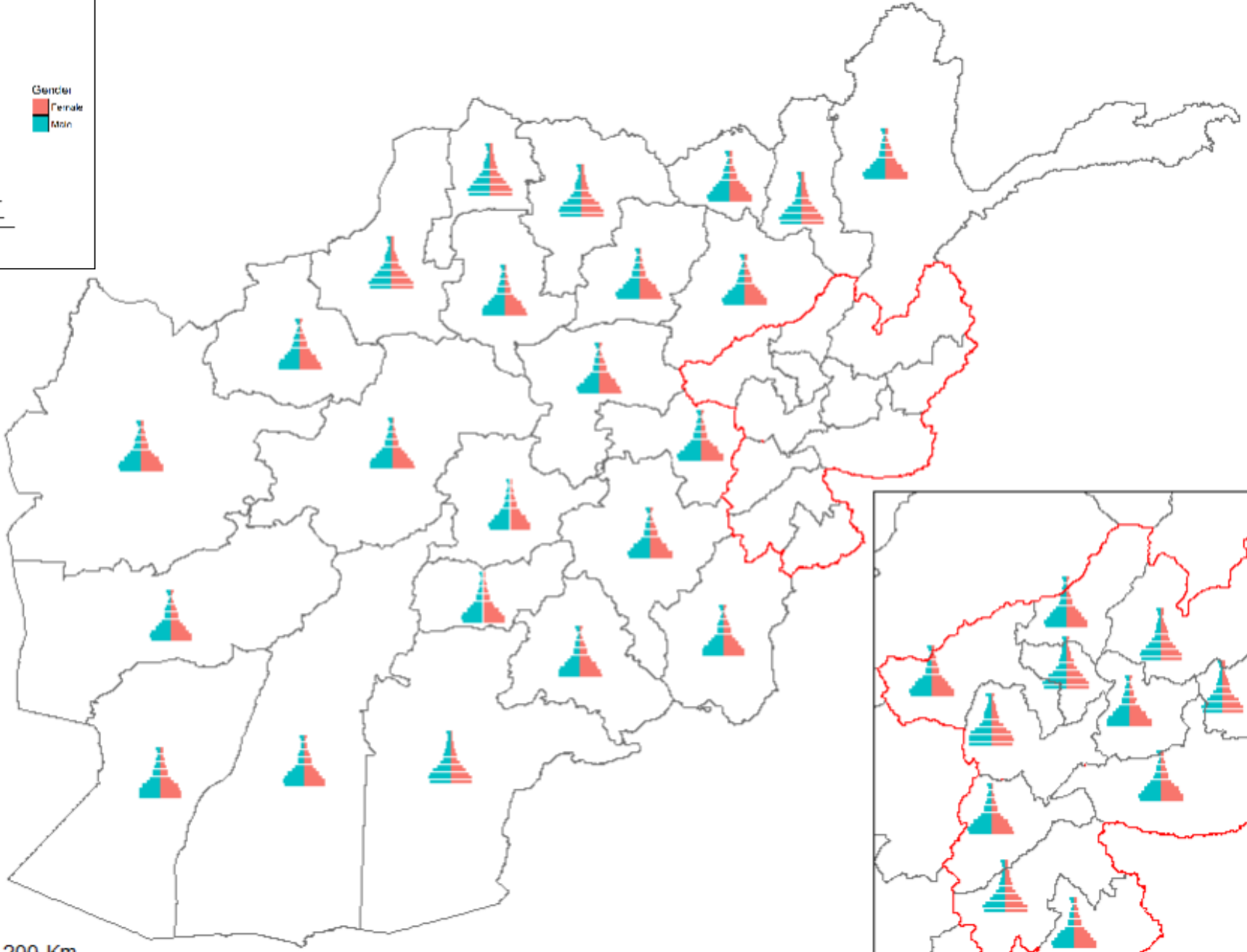


Uncertainty in District 2017 Population Estimates





Province boundaries





GRID³

GEO-REFERENCED INFRASTRUCTURE AND
DEMOGRAPHIC DATA FOR DEVELOPMENT

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

For project updates and announcements, follow the partners on Twitter or #GRID3

@Flowminder, @WorldPopProject, @PopDevUNFPA, and @CIESIN