The Global Population Map

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Disclaimer: This presentation is to inform interested parties of ongoing research and to encourage discussion of work in progress. Any views expressed on statistical, methodological, technical, or operational issues are those of the author and not necessarily those of the U.S. Census Bureau.

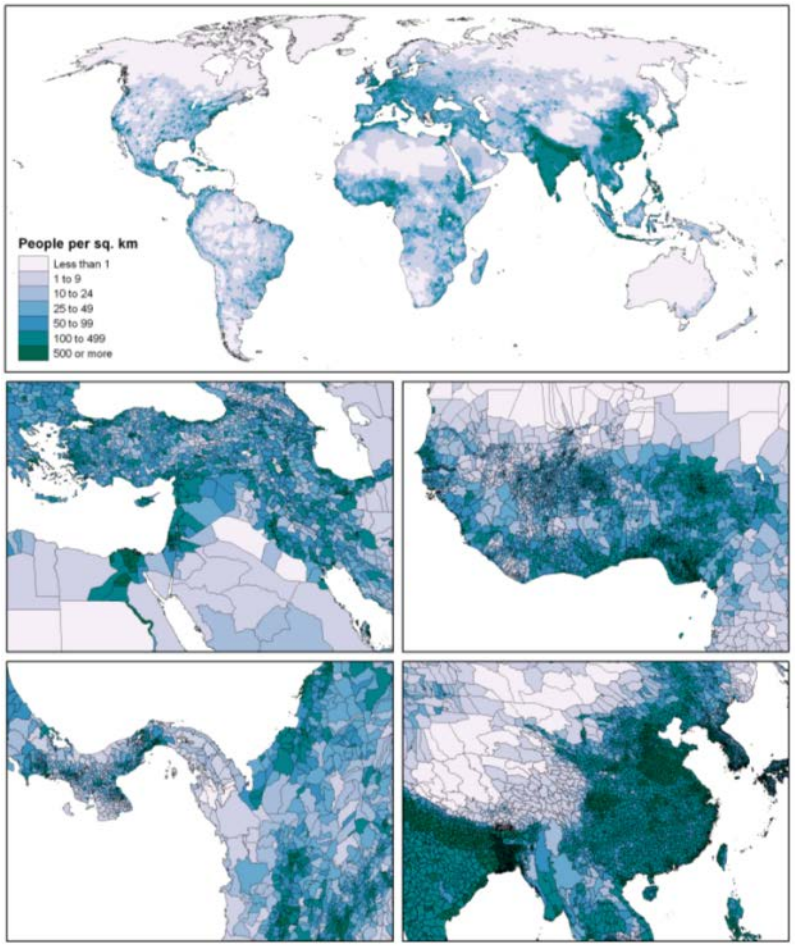
The Global Population Map **completely covers** the Earth's land surface.

Available for **every** country and territory.

Population estimates for about **70,000** subnational areas.

GIS formatted for spatial analysis.

Will be available **online.**



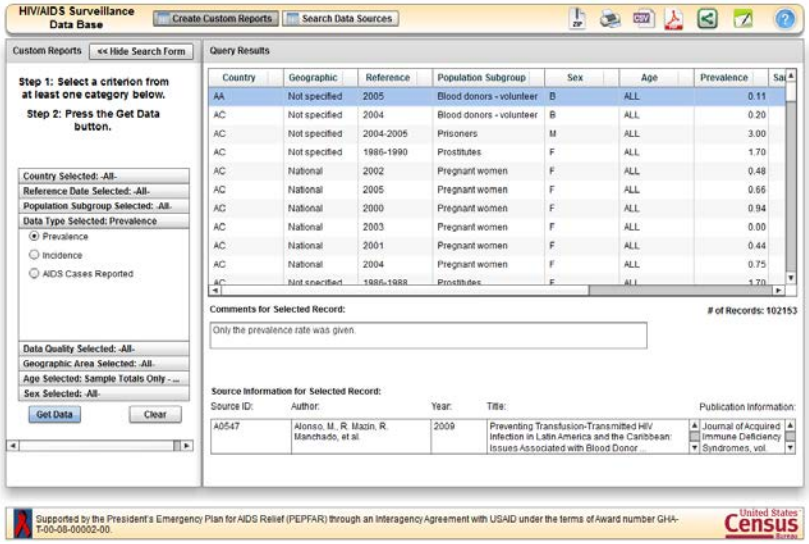
Background:

U.S. Census Bureau International Programs

International Data Products

The U.S. Census Bureau conducts **applied research and analysis on international topics.**

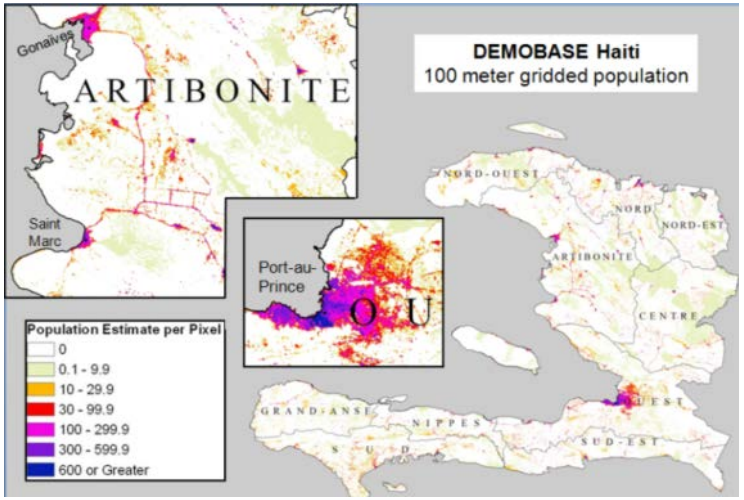
- Demographic, economic, geographic, health, and aging issues.
- Data products include the **International Data Base** (IDB) and **HIV/AIDS Surveillance Data Base**

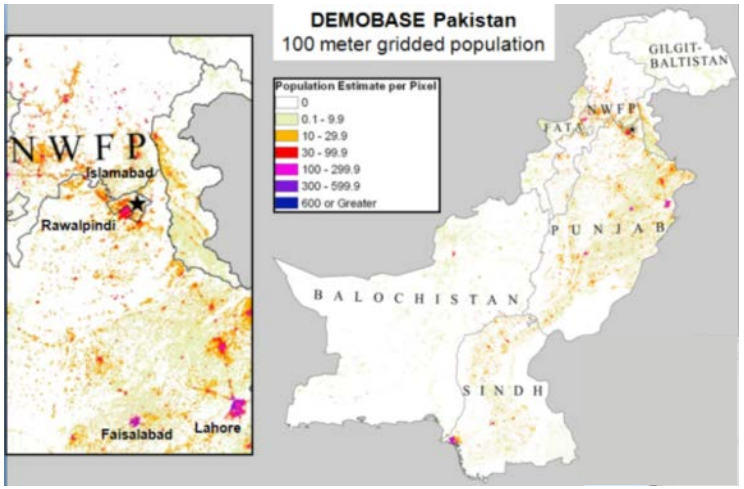


International Data Products

We also produce **subnational** population estimates.

- **Global Population Map:** vector-based subnational population estimates.
- **Demobase:** raster population estimates.
  - Pilot datasets for Haiti, Pakistan, and Rwanda available online.



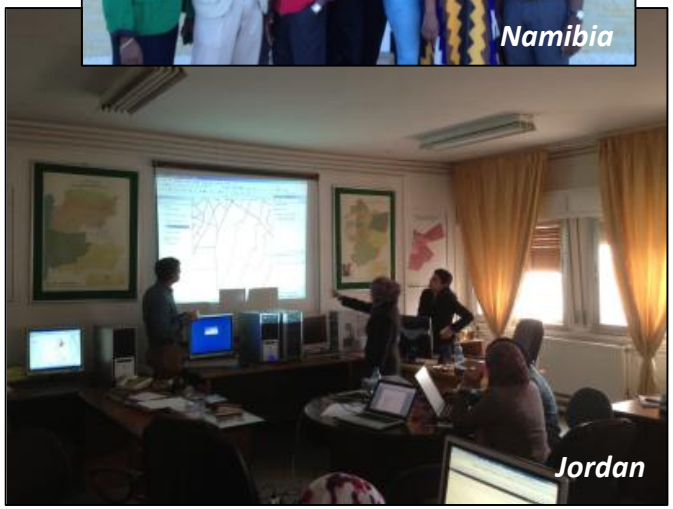


International Assistance

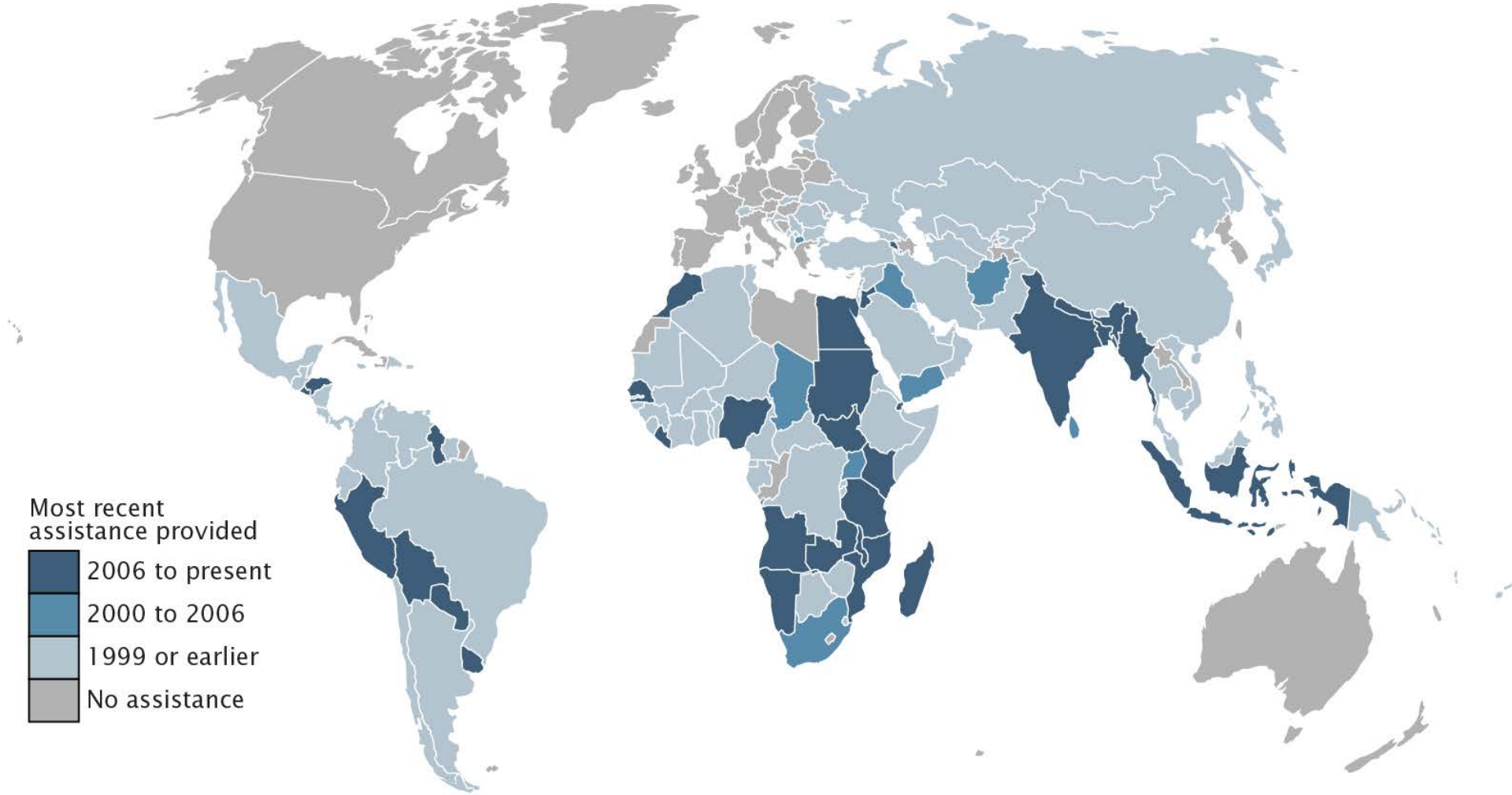
We help **build capacity** of other national statistical offices.

- In-country & regional workshops.
- Technical assistance & consulting.
- **GIS** training frequently provided.

Our **International Assistance** program has been active for over **65 years**.

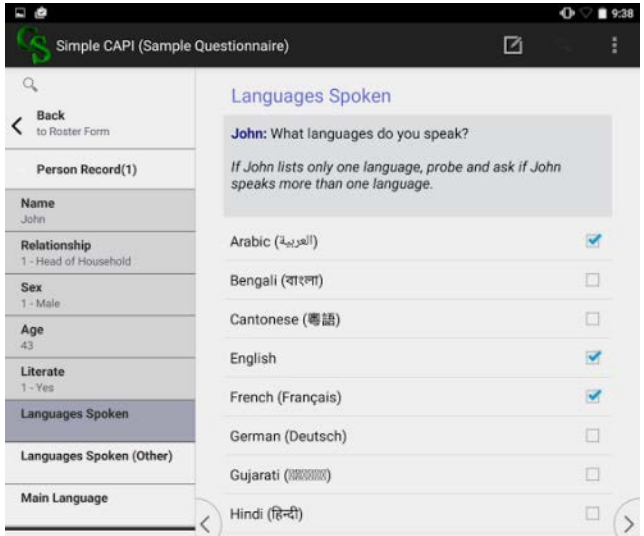


Where We Work



CSPro

- **Census and Survey Processing System (CSPro)**.
- Used by hundreds of organizations and 160+ countries for **entering**, **editing**, **tabulating**, and **disseminating** census and survey data.
- Data entry app for **Android** now available (CSEntry).
- Free and **public domain**.



Headquarters Workshops

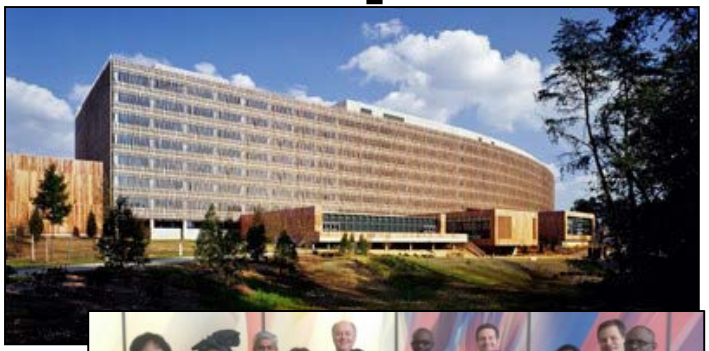
In 2012, we re-established our Washington, D.C. **workshop program**.

Since then, we have trained professionals from **30+ countries**.

Topics:

- Census and survey data processing
- Demographic analysis
- Gender statistics
- Data analysis and dissemination
- Spatial data management

Schedule of classes available online.



Census Bureau Library

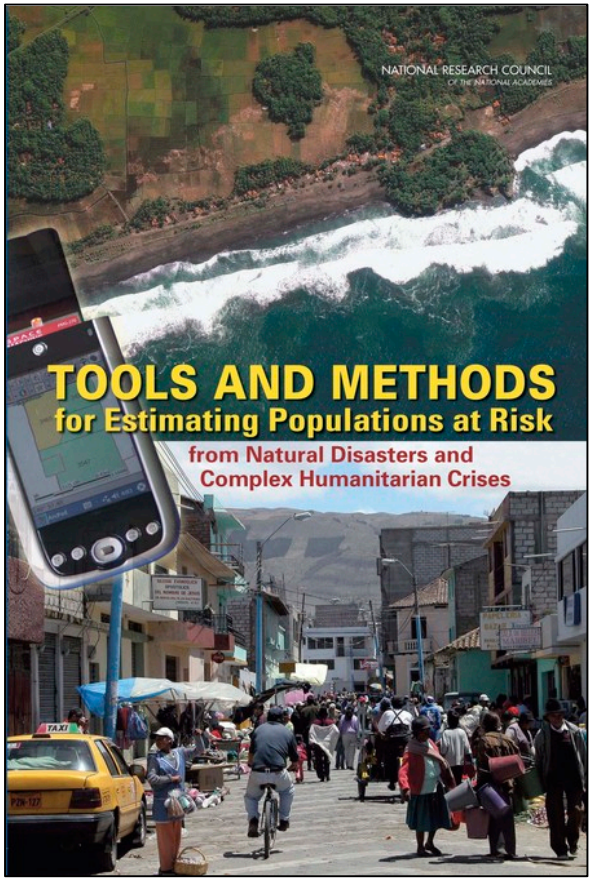
We also maintain a **library** of **international statistical data.**

- Materials cover nearly **every country and territory**.
- More than **115,000** statistical publications.
- **Historical** materials date back to 1800s for some countries.
- Located at Census Bureau HQ and **open to the public** (by appointment).
- **Inter-Library Loan** (ILL) also available.

Global Population Map: **Data**

We have built a linked subnational population and boundary data collection covering **every country and territory of the world**.

We collect data **globally** but focus our efforts on countries with **populations at risk** from natural disasters and complex humanitarian crises.



National Research Council. *Tools and Methods for Estimating Populations at Risk from Natural Disasters and Complex Humanitarian Crises*. Washington, DC: The National Academies Press, 2007.

Population Data

- Ideal source: a **census**.
  - **Complete count** of the population.
  - Most **robust** source of population data, but not necessarily timely.
- Alternatively, we can use more recent official estimates.

CENSO2010

United States Census 2010

CENSOS 2011
XV recenseamento geral da população
V recenseamento geral da habitação

RECENSEMENT
de la population 2014

РОССИИ ВАЖЕН КАЖДЫЙ!
ПРИМИ УЧАСТИЕ ВО ВСЕРОССИЙСКОЙ ПЕРЕПИСИ НАСЕЛЕНИЯ
С 14 ПО 25 ОКТЯБРЯ
2010

中国人口普查
CHINA POPULATION CENSUS
2010

Geospatial Data

- We focus our collection efforts on **subnational administrative boundaries**.
  - E.g., provinces, counties, cities, townships
- Sources:
  - National governments
  - International/regional bodies
  - Research organizations
  - Free and open sources online **(ideal)**

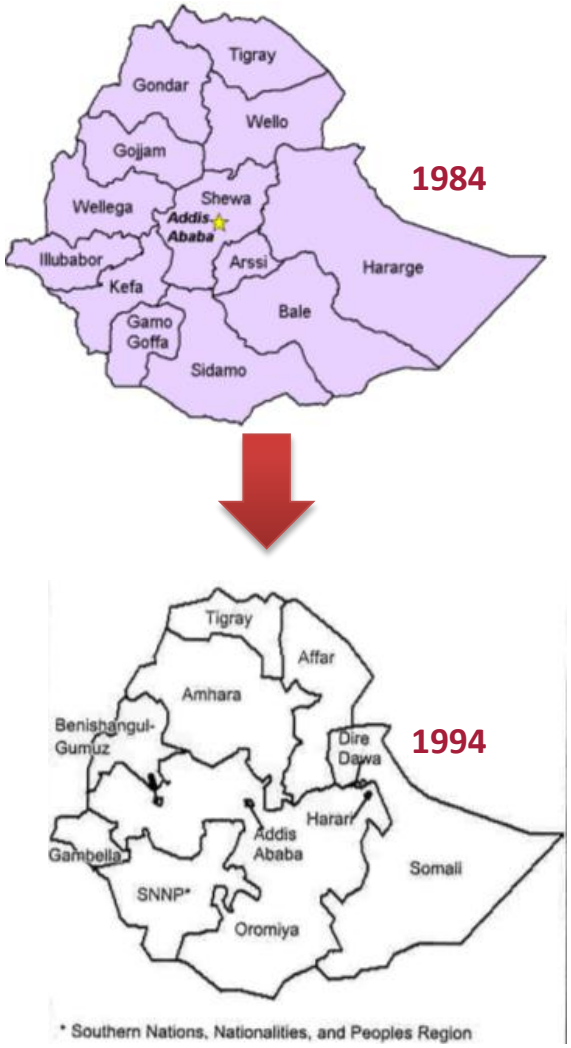
Global Population Map: **Methods**

Step 1: **Reconcile Data**

GIS boundary data **must match one-to-one** with census tabular data.

Usually requires substantial research/editing to reconcile.

Ethiopia Boundary Changes



Step 2: **Estimate Population**

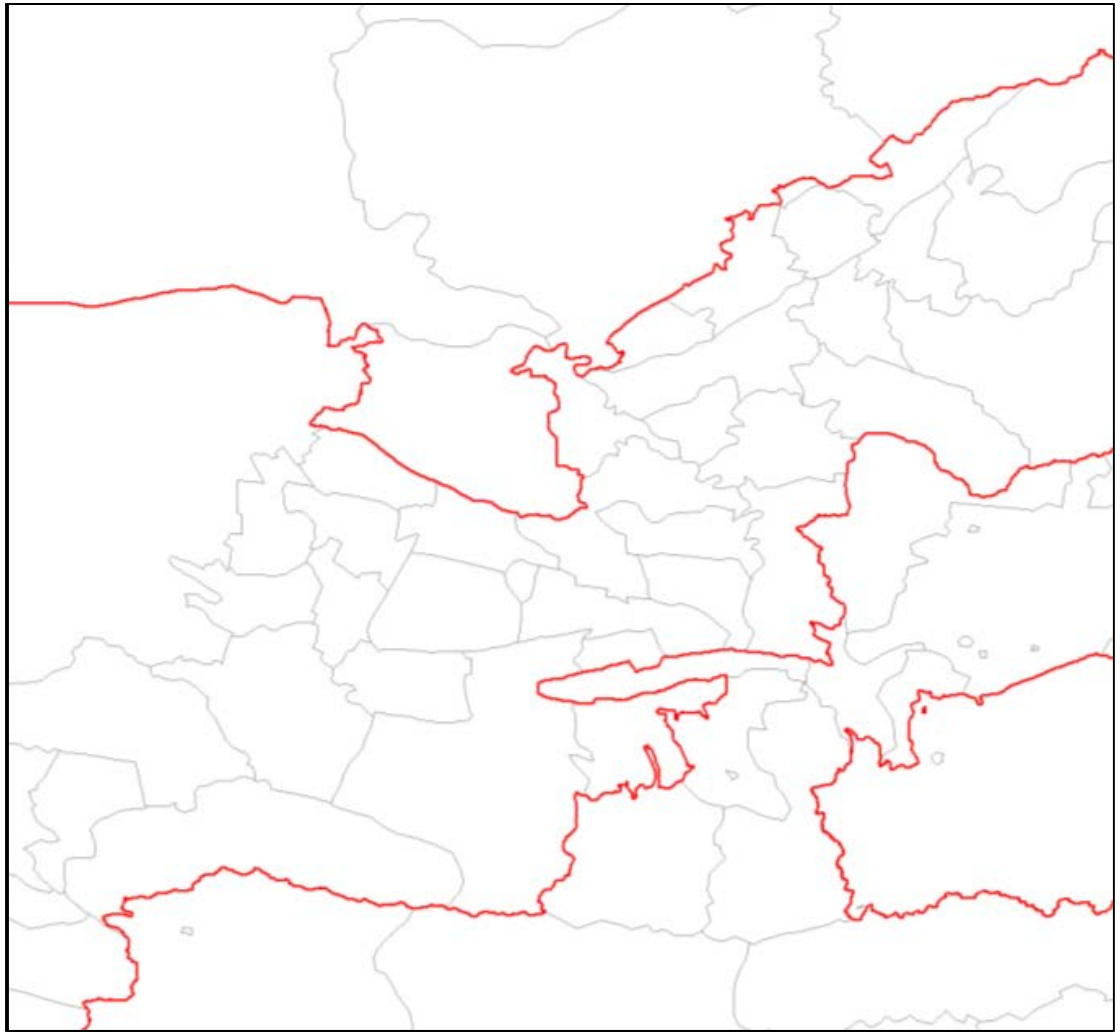
Subnational census total populations are **projected forward to a target date** using the national level **IDB** numbers as the control.

Further refinements (where possible):

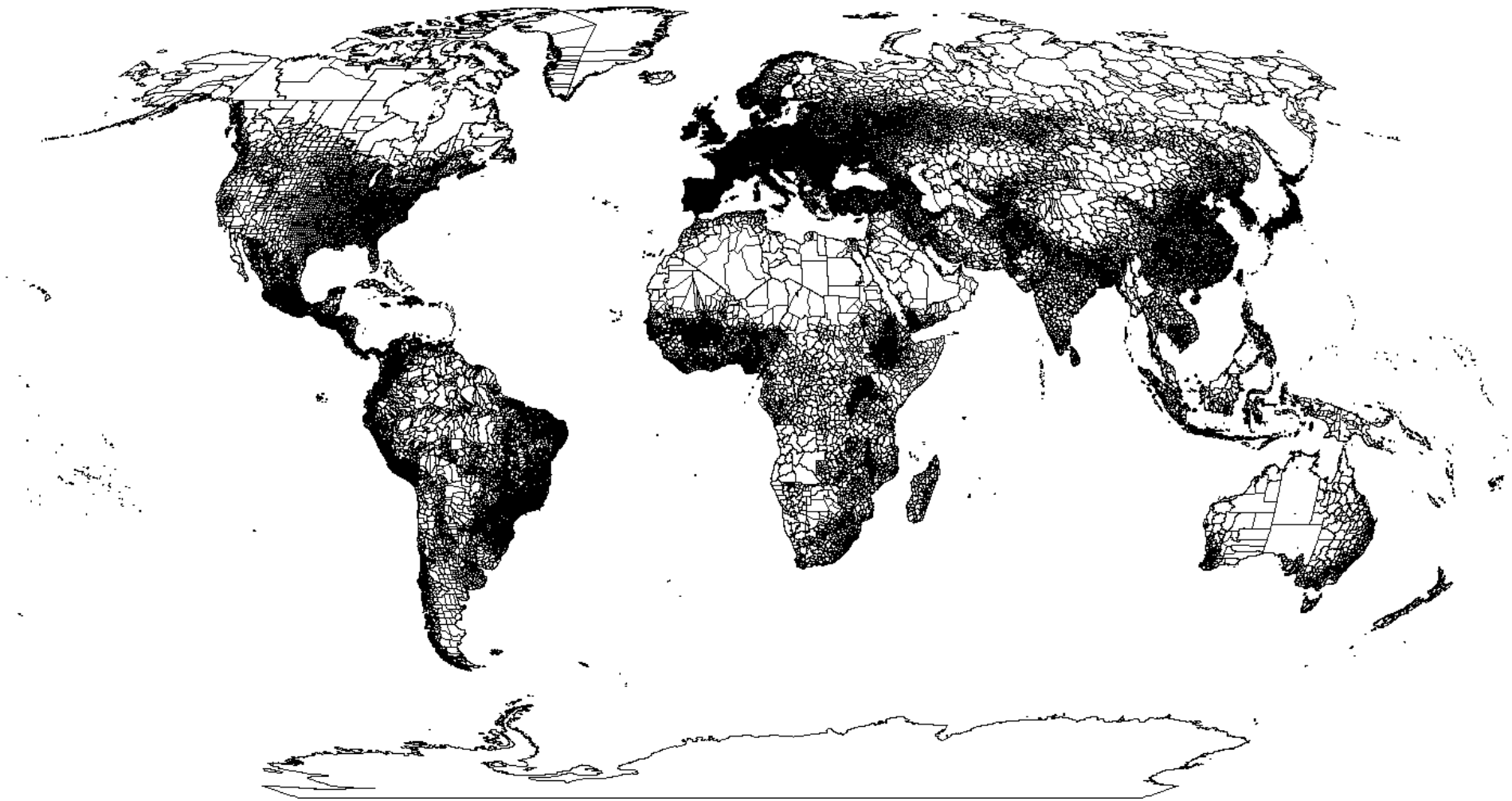
- Estimates of 5-year **age/sex** groups.
- **Two or more censuses** used for greater local variation in projections over time.

Step 3: **Integrate Seamlessly**

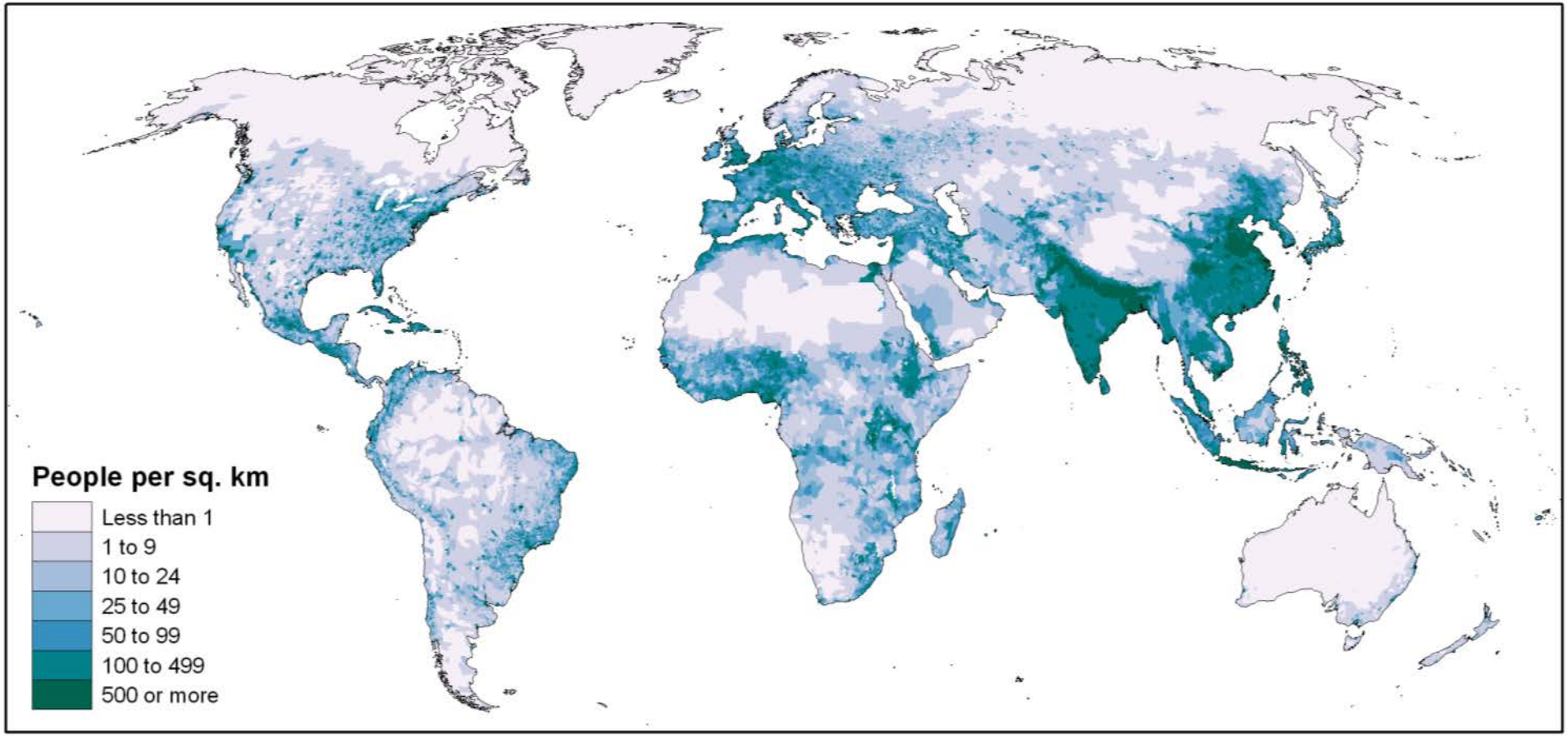
- Used the **Large-Scale International Boundary (LSIB)** dataset produced by the State Department.
- Available for download from **hiu.state.gov/data**.
- LSIB is **authoritative** and generally **accurate** to within 1 km.



Global Subnational Boundaries



Global Population Distribution

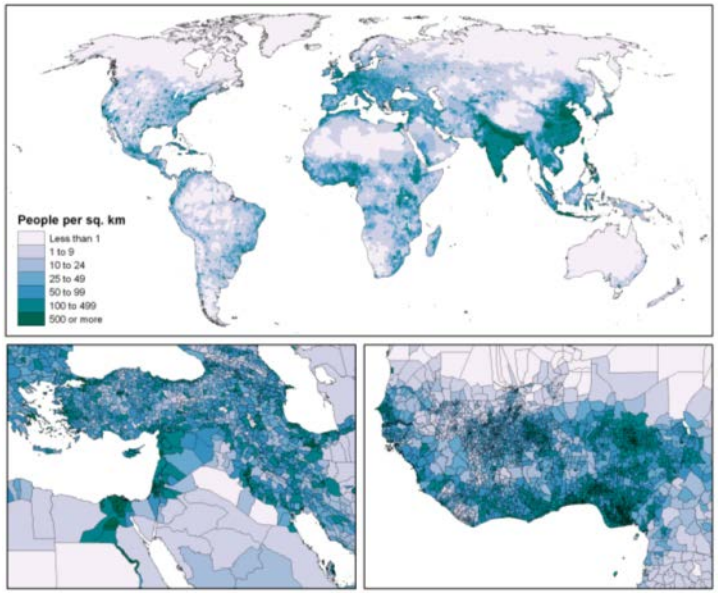


Global Population Map: **Dissemination**

Available on Census.gov

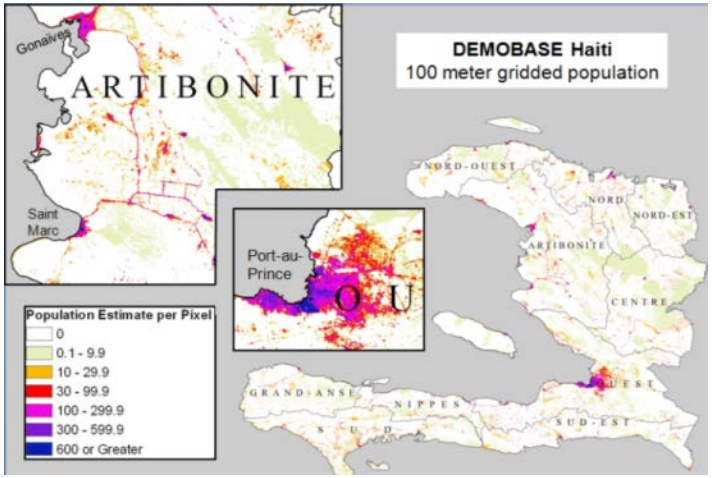
Global Population Map

- Total population estimates for every country at the smallest administrative unit.
- Will be available for **bulk** download.



Demobase

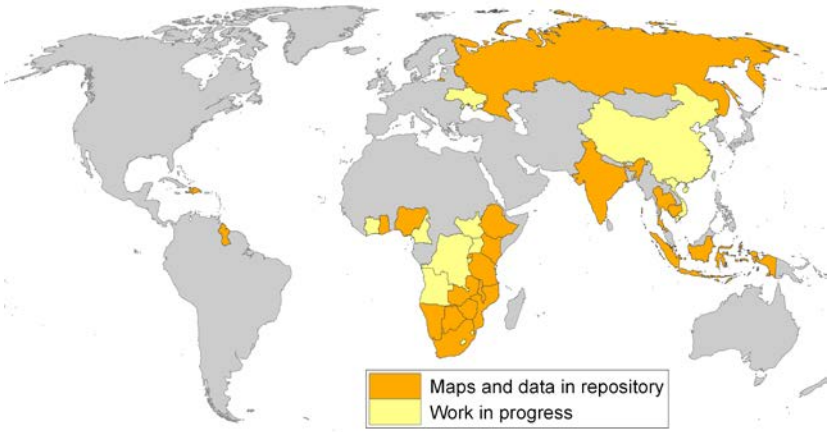
- Raster (100-meter) population estimates.
- Available for Haiti, Pakistan, and Rwanda.

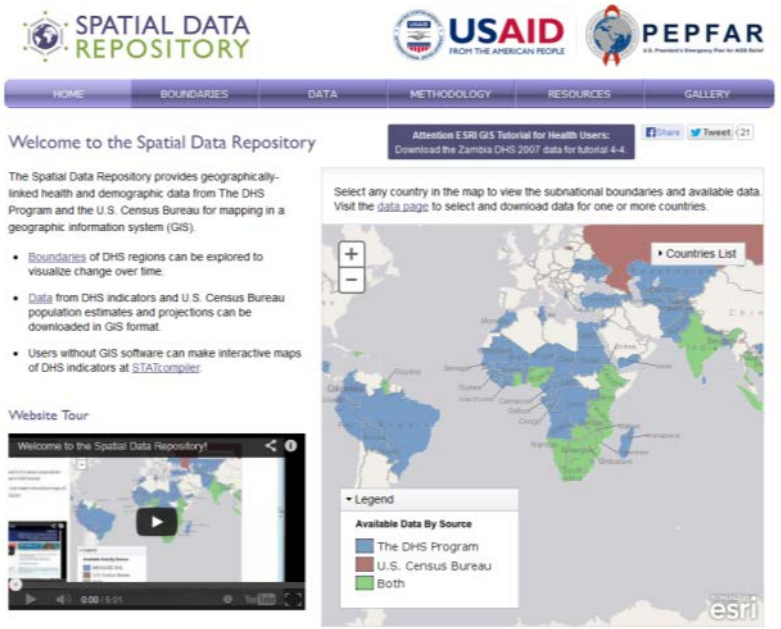


Available Through Our Partners

Enhanced subnational estimates and projections for selected countries.

- Includes population estimates and projections for the years 2000-2015.
- Covers all five-year age/sex groups.
- Available through USAID-funded Demographic and Health Surveys (DHS) Program **Spatial Data Repository**.
- spatialdata.dhsprogram.com



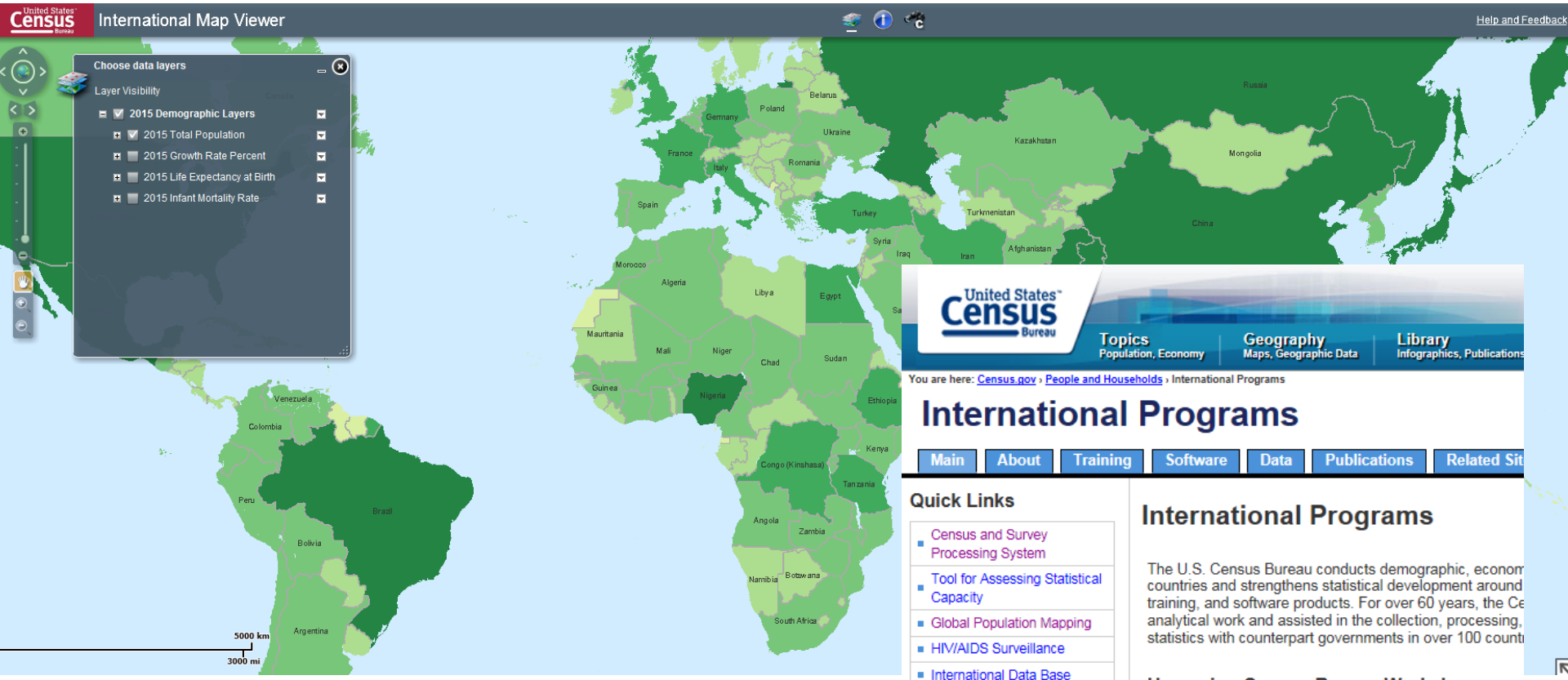


International Map Viewer

Developed using **ArcGIS Viewer for Flex**.

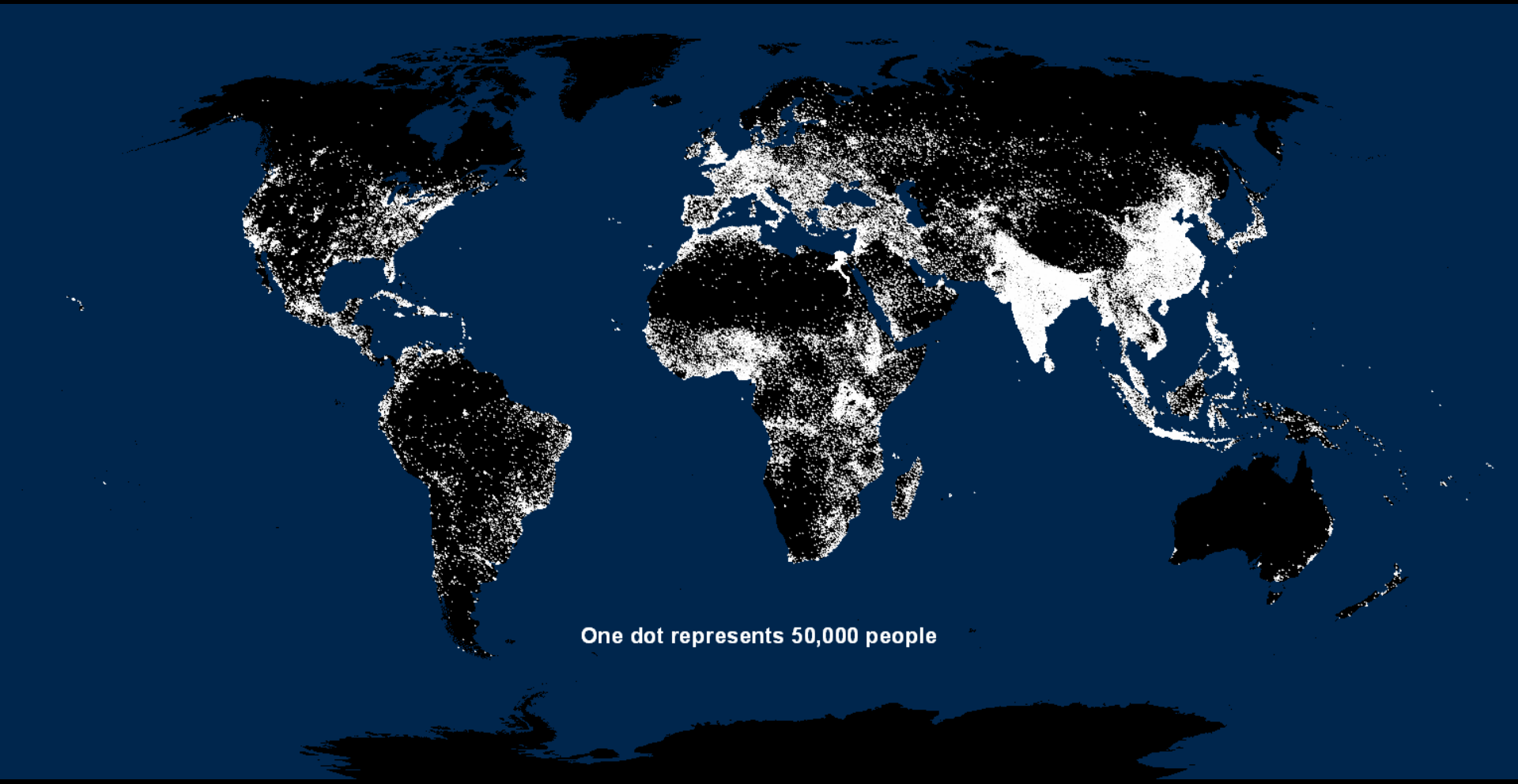
- Initially, just basic functionality and limited data for viewing (national only).
- **Plan to release subnational data soon** (both in viewer and for download as shapefile).
- Plan to re-write viewer using ArcGIS API for **JavaScript** in the future.

International Map Viewer



Direct link:
census.gov/population/international/data/intlmapviewer.html

Population Distribution of the World



Thank You

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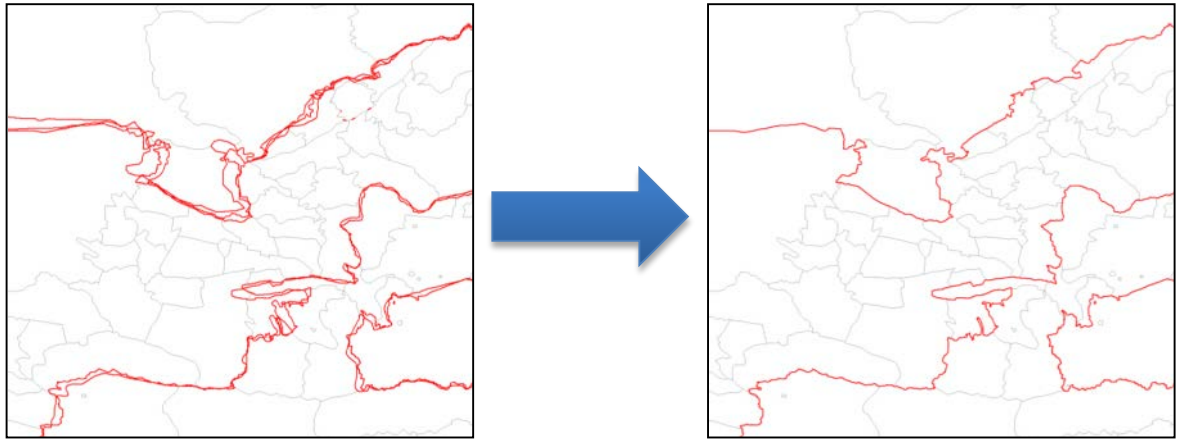
Integration into Global Dataset

1. Converted our polygon data to lines
2. Deleted inconsistent international boundaries
3. Replaced with LSIB boundaries
4. Cleaned up **topology**
5. Converted back to polygons
6. Exported attributes from original (exploded) dataset as centroids and rejoined to new dataset