

# 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.

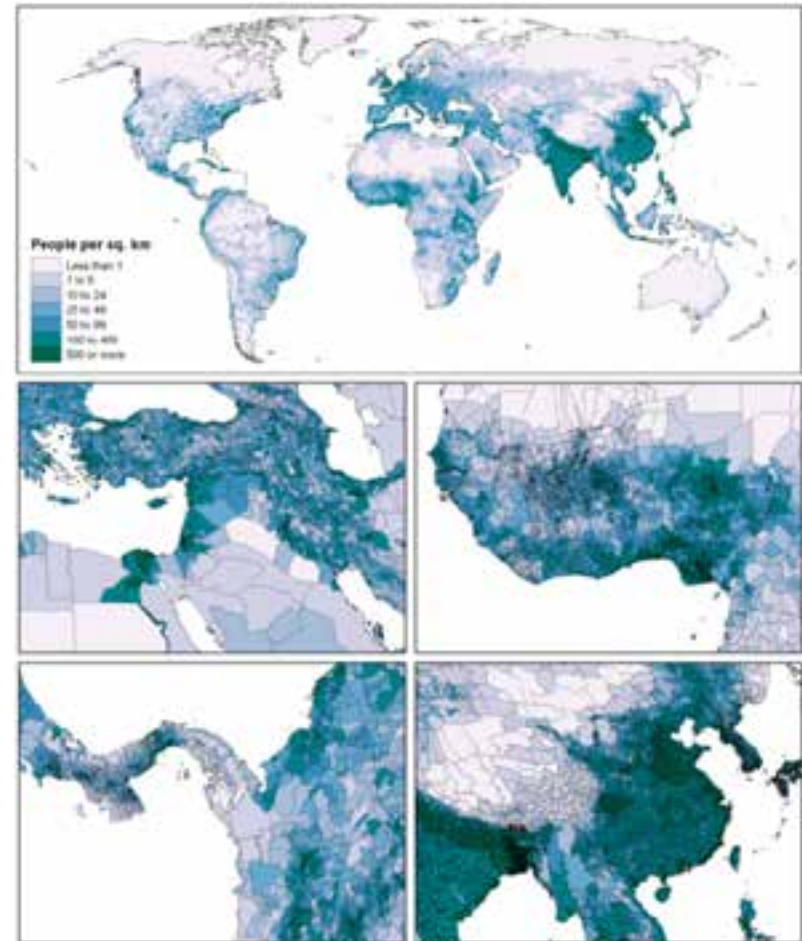
The Global Population Map **completely covers** the Earth's land surface.

Available for **every** country and territory.

Recent **population estimates** for about **70,000** subnational areas.

**GIS** formatted for spatial analysis.

Accessible **online**.



# The Global Population Map: Background

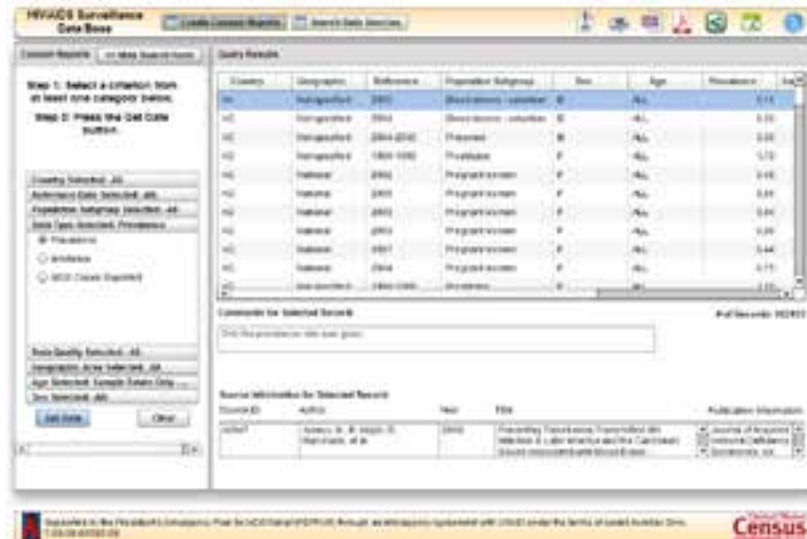
# International Data Products

The U.S. Census Bureau conducts **applied global research and analysis.**

§ Demographic, economic, geographic, health, and aging issues.

§ **Expert staff** and **exceptional access** to international data.

§ Data products include the **International Data Base (IDB)** and **HIV/AIDS Surveillance Data Base**



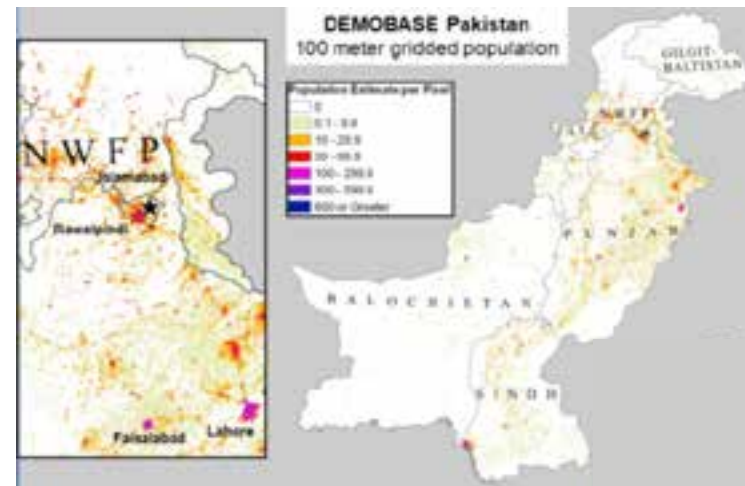
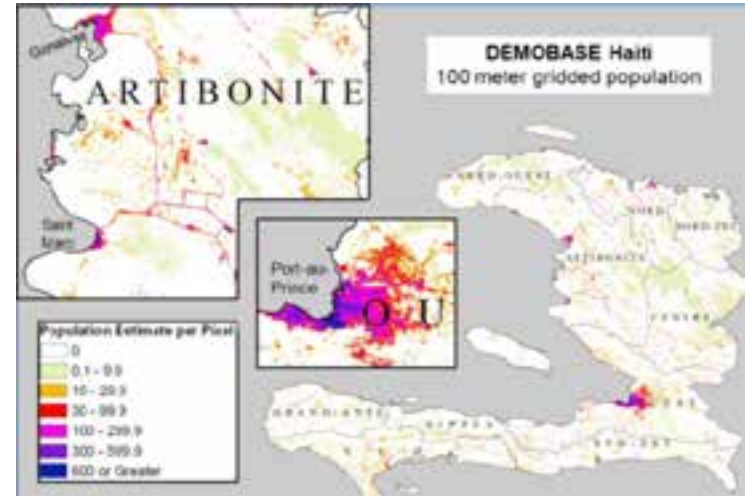
# International Data Products

We also produce **subnational** population estimates in **GIS** format.

§ At present, work is primarily in cooperation with the **U.S. President's Emergency Plan for AIDS Relief (PEPFAR)**.

In addition, we have produced **gridded population estimates** for:

- § Haiti (upper right)
- § Pakistan (lower right)
- § Rwanda



# International Assistance

We provide technical assistance and **capacity building** to other national statistical offices.

§ **GIS** training is frequently provided.

Our **International Assistance** program has been active for over **60 years**

§ Currently active (on site) in **10 countries**.

§ Since 2012, we have hosted statistical workshops in D.C. for professionals from **22 countries**.



Zambia



Namibia



Jordan

# 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.

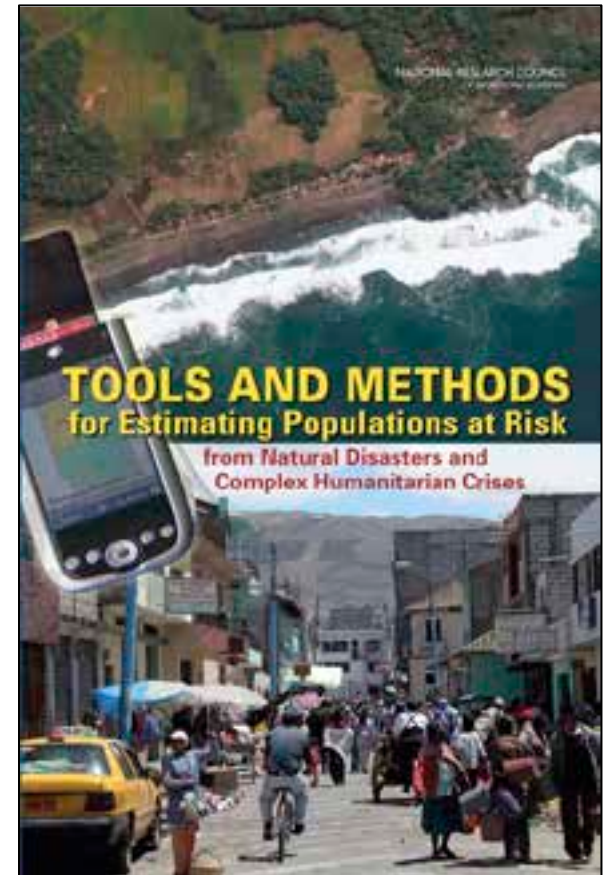


# The Global Population Map: Data



We have built a 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.

We are always searching for **population** and **boundary** data at the **most detailed level**, such as counties, townships, or even enumeration areas.

# However, data **problems** abound:

## Availability

Subnational population and boundary data may simply not exist.

## Licensing

If there are data available, their usefulness is often stymied by restrictive licensing.

## Accuracy

Data may be too generalized or poorly digitized.

## Consistency

Subnational geospatial boundaries might not match base population tables.

## Integration

Data must be painstakingly integrated into international boundaries dataset.

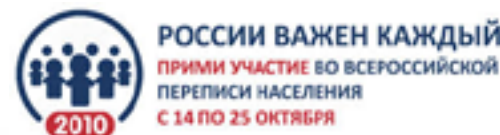
# Population Data

§ 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.



# 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**)

# The 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.**

- § May involve splitting/merging administrative divisions.
- § Or, we are limited to using data at a higher administrative level than preferable (e.g., states instead of counties).

Ethiopia Boundary Changes



\* Southern Nations, Nationalities, and Peoples Region

## Step 2: Estimate Population

Subnational five-year age/sex census data are **projected forward to a target date** using the national level **IDB** numbers as the control.

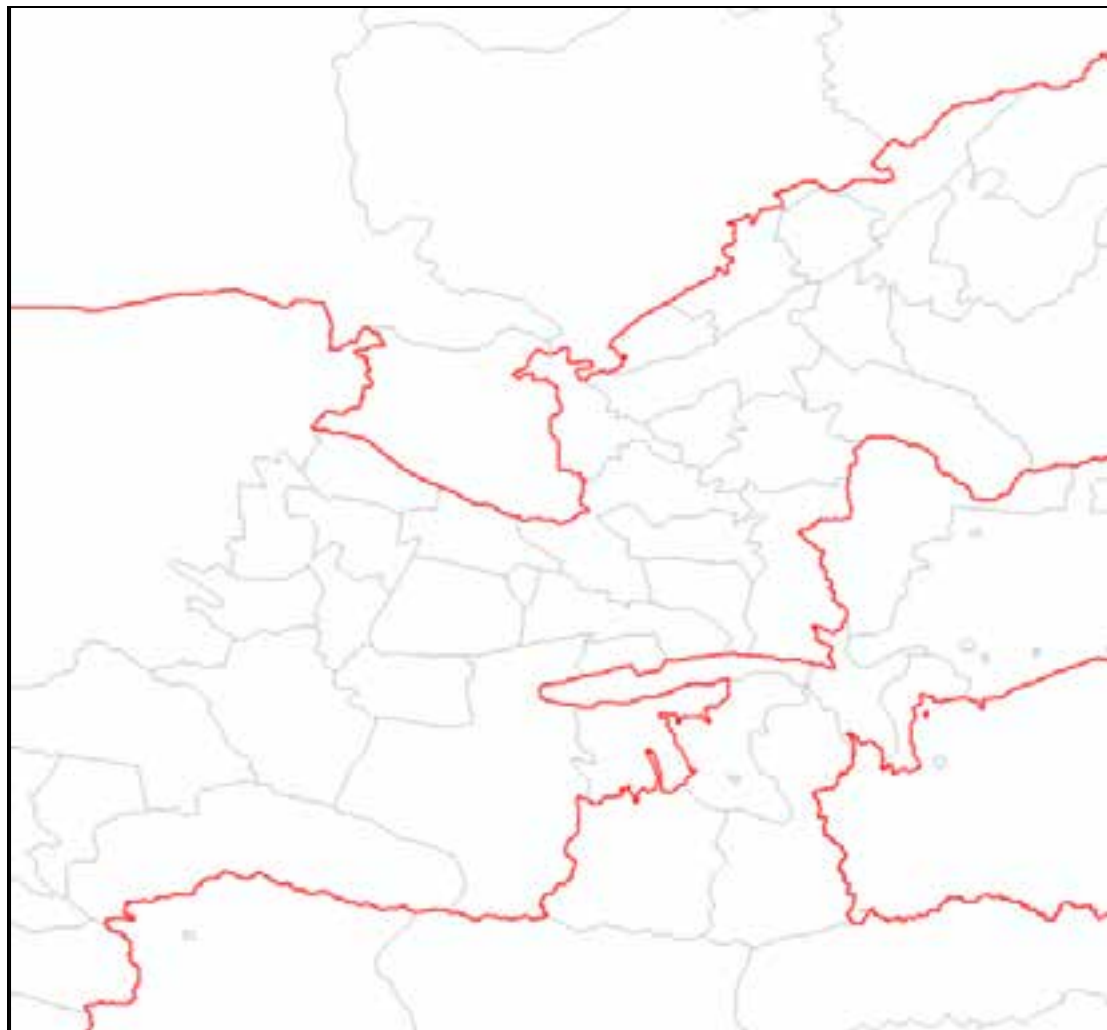
Further refinements (where possible):

- § Subnational **age/sex** census data used to produce more robust estimates.
- § **Two or more censuses** used for greater local variation in projections over time.

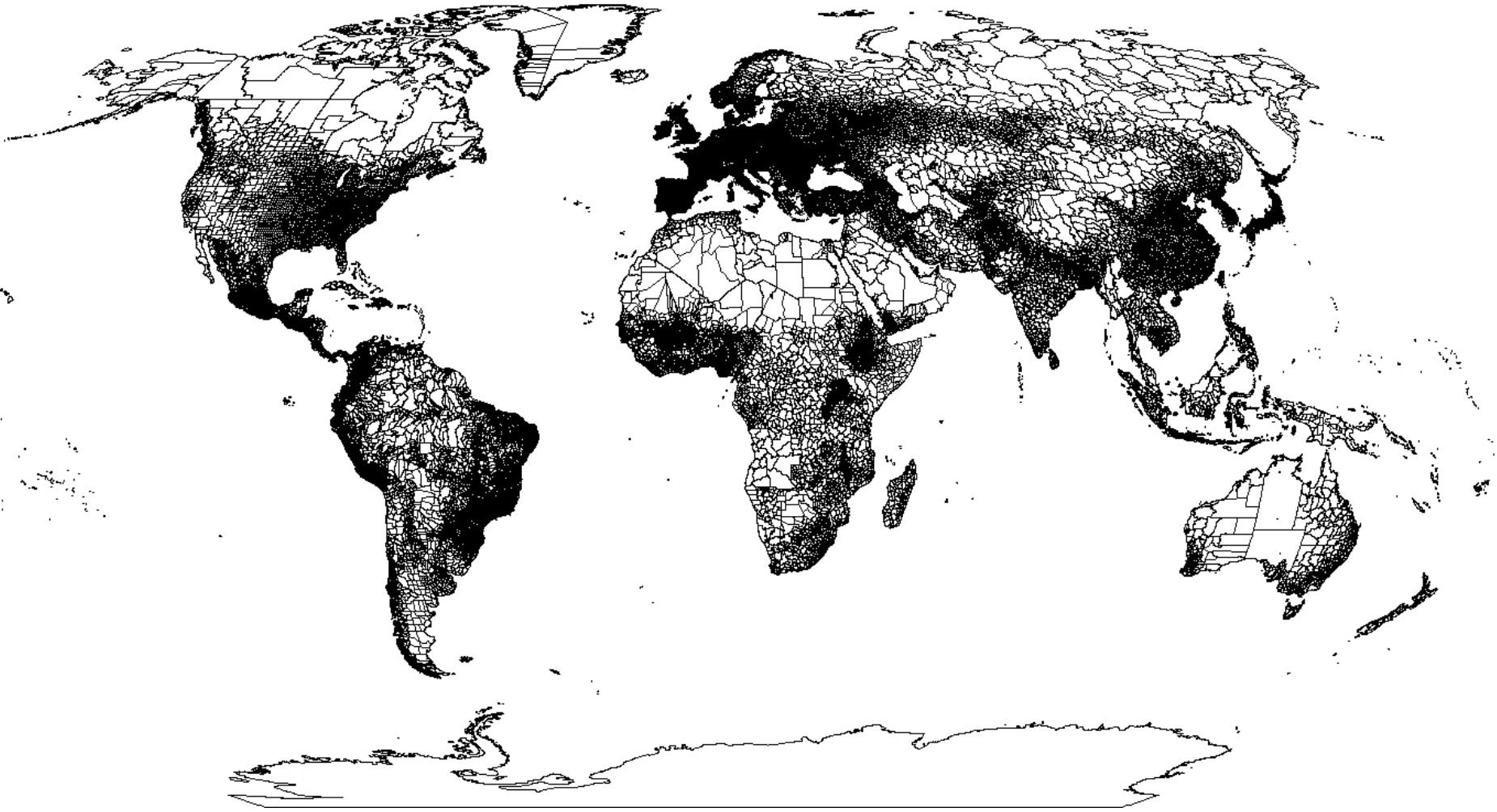


# Step 3: Integrate Seamlessly

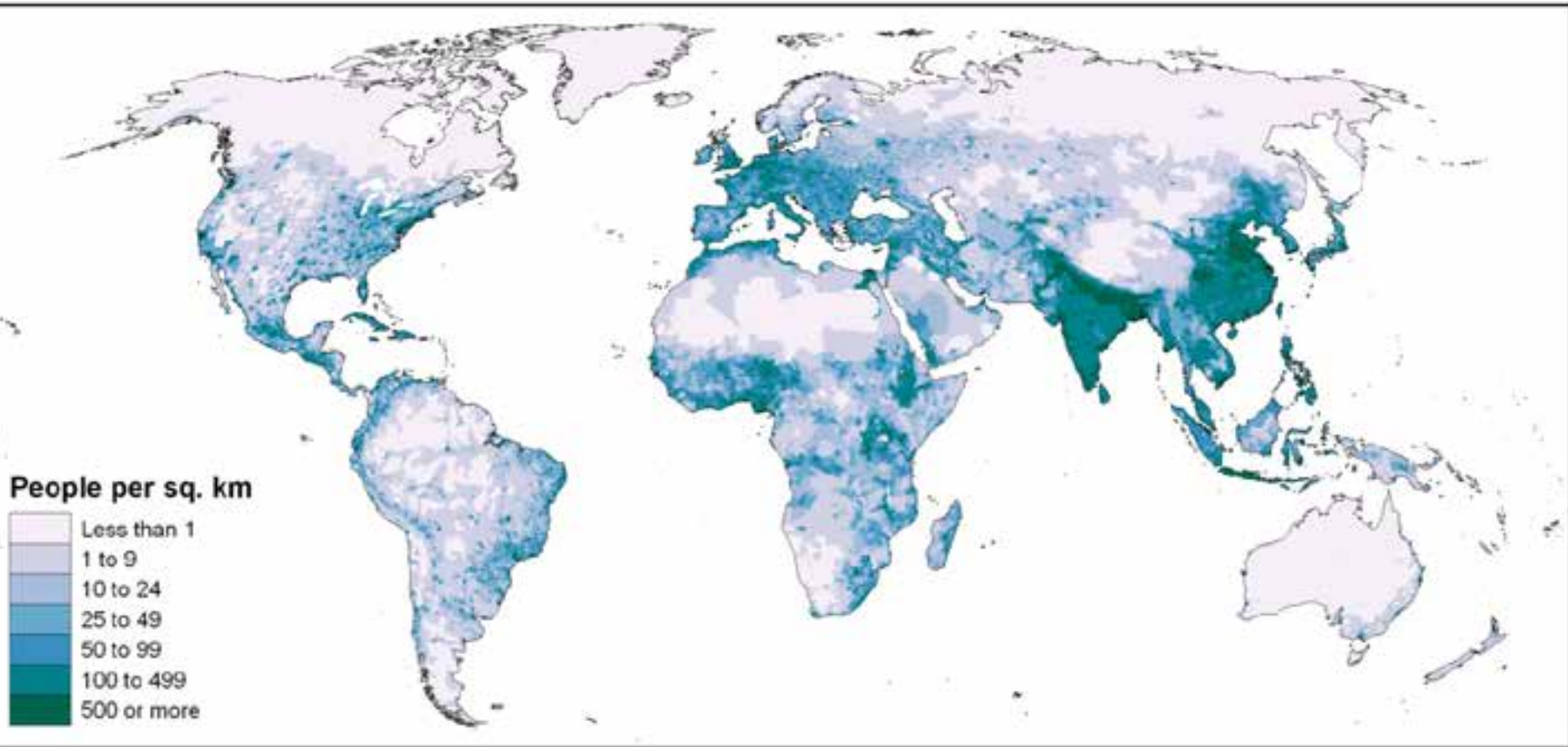
- § Used the **Large-Scale International Boundary (LSIB)** dataset produced by the State Department.
- § Available for download from **[hiu.state.gov/data](https://hiu.state.gov/data)**.
- § LSIB is **authoritative** and generally **accurate** to within 1 km.



# Global Subnational Boundaries



# Global Population Distribution

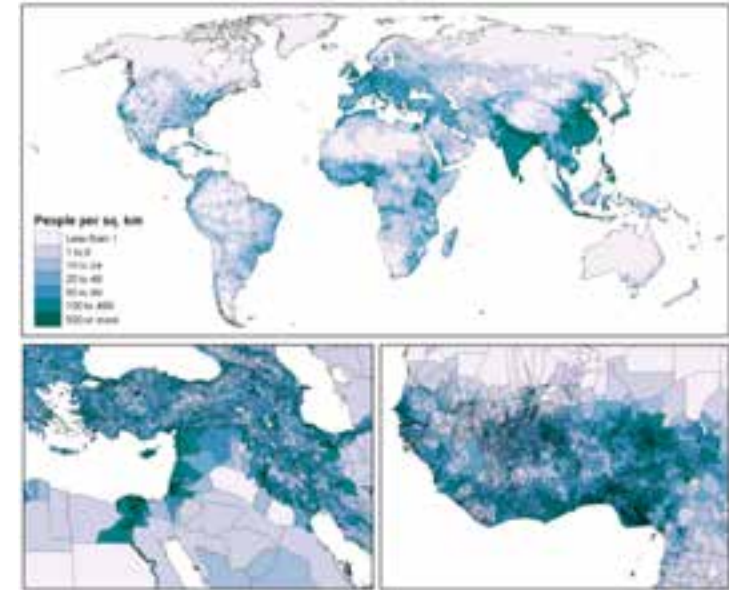


# The Global Population Map: Dissemination

# Available on Census.gov

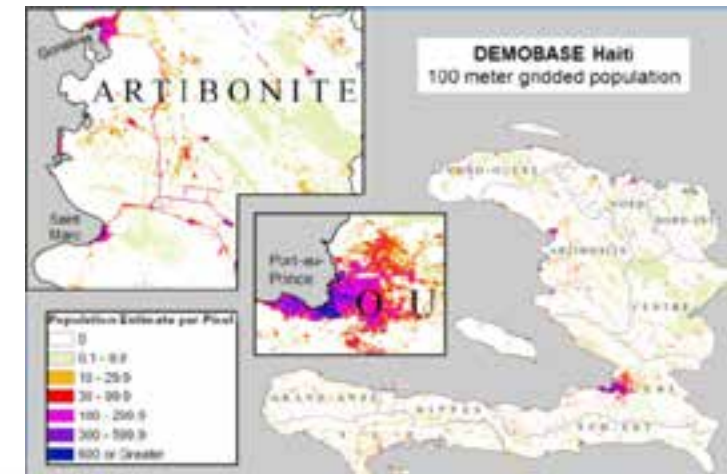
## Global Population Map

- ∅ Total population estimates for every country at the smallest administrative unit.
- ∅ Available for **bulk** download.
- ∅ *Coming soon: country-by-country download option.*



## Demobase

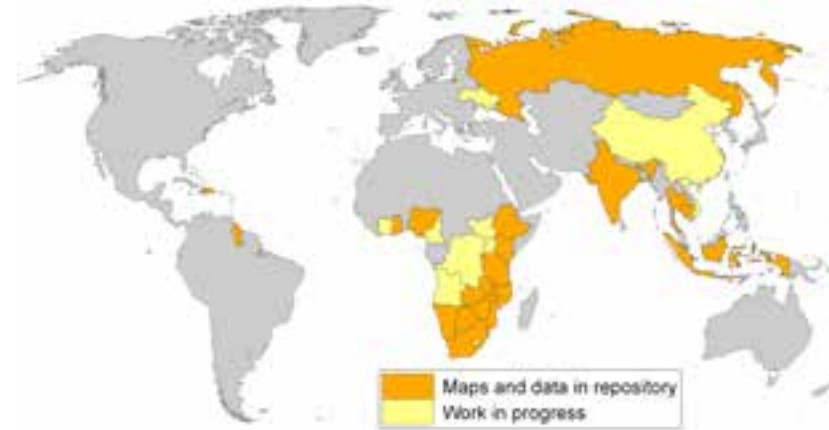
- ∅ Gridded (100 meter) population estimates.
- ∅ Available for Haiti, Pakistan, and Rwanda.



# Available Through Our Partners

Enhanced subnational estimates and projections for selected countries.

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



# Web Map

We are also developing a **web map** using ArcGIS Viewer for Flex.

§ Initially, just basic functionality and limited data for viewing.

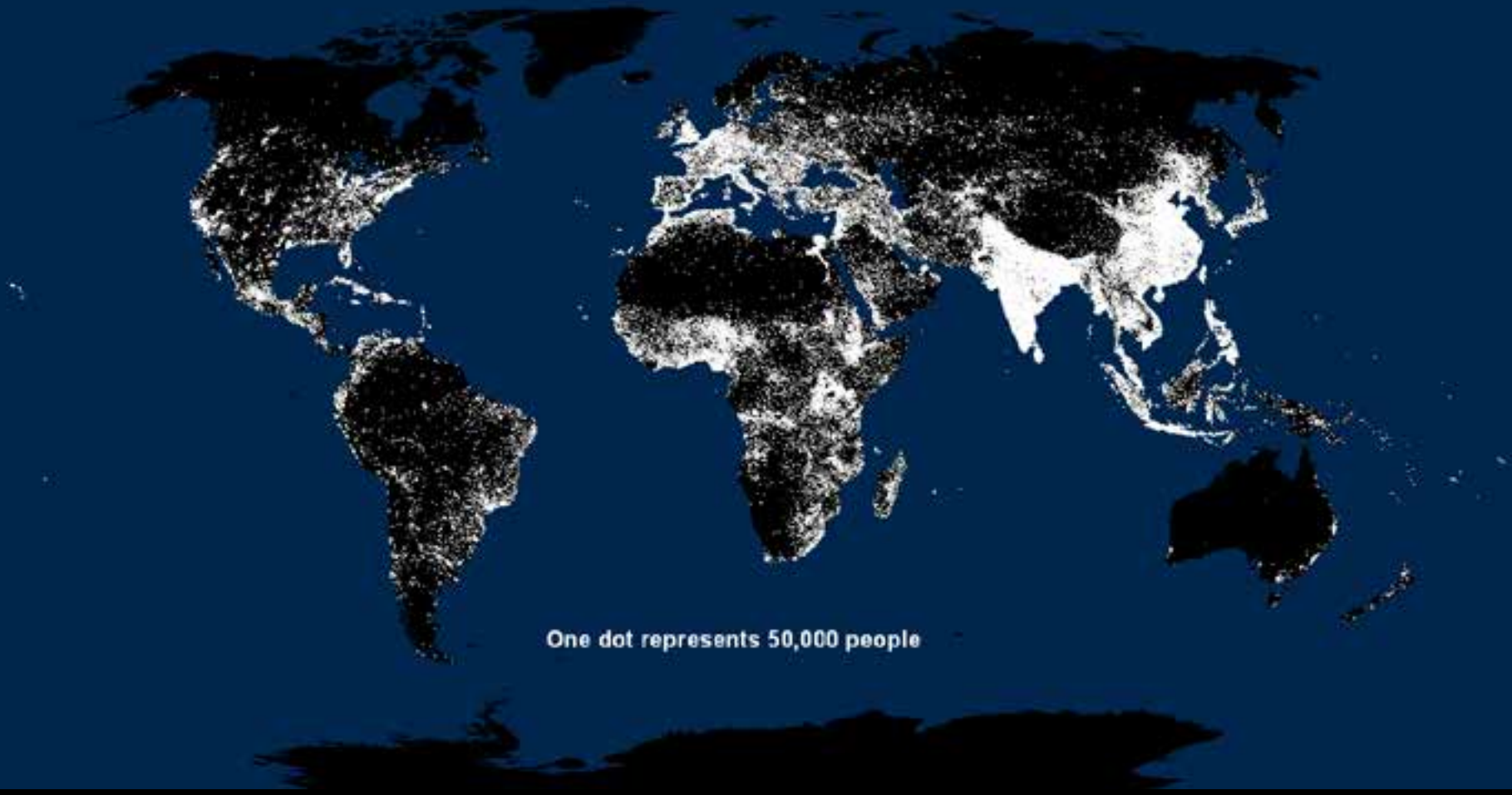
§ Later, we may incorporate a **time series element**.

*§ We do not want to overwhelm the user.*

§ Will be available on **Census.gov**.

*§ Hopefully within the next few months.*

# 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

