

Visualizing U.S. Census Bureau International Population Data

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Global demographic data are in **high demand!**

- Needed by **Governments/Non-profits:**
 - *International development, Millennium Development Goals, post-disaster recovery*
- Needed by **Academia:**
 - *Researching human/environment interaction; studying people affected by rising sea levels*
- Needed by **Businesses:**
 - *Expanding operations abroad, conducting market research, locating stores*

However, global demographic data...

1. **...Can be hard to find and inconsistent:** Countries can have multiple/competing statistical agencies, with varying levels of technical capabilities; data are disseminated at different levels of detail and in different formats
2. **...Are usually not GIS-ready:** Geographic data are often considered proprietary, unnecessary to release, or handled by multiple/competing agencies
3. **...Are complex:** The best government population data are the result of rigorous statistical processes, and a census is not the same as a survey

What **global products and services** are provided by the **U.S. Census Bureau**?

Census Bureau International Programs

- **Applied global research and analysis**

- Demographic, economic, geographic, health, and aging issues
- Expert staff and exceptional access to international data

- **International assistance**

- Active projects in **16** countries
- Capacity building to improve census/survey operations



International Data Base (IDB)

- The **IDB** provides annual national-level population estimates/projections to **2050** for **228 countries** and territories
- Demographic variables
- Accessible **online**
- Numbers feed into the CIA **WORLD FACTBOOK**



Mexico

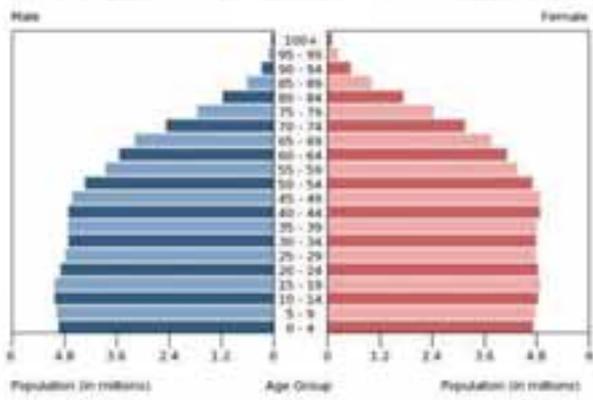
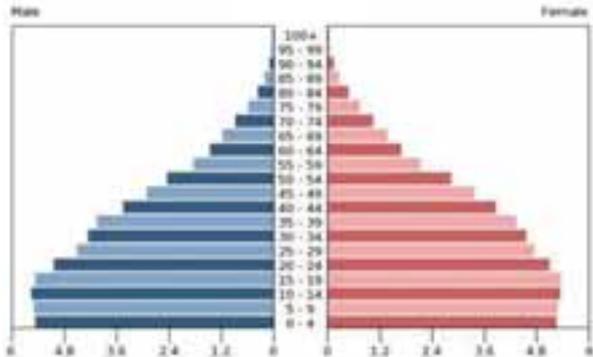
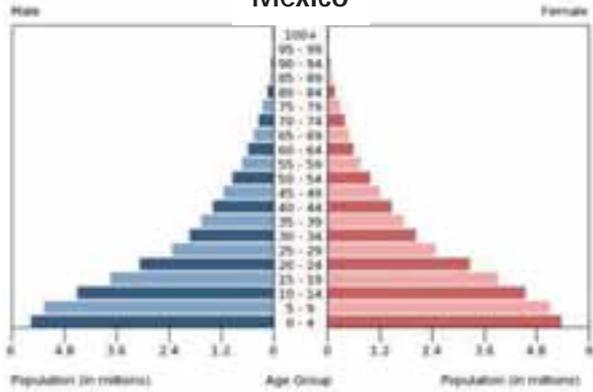
1980



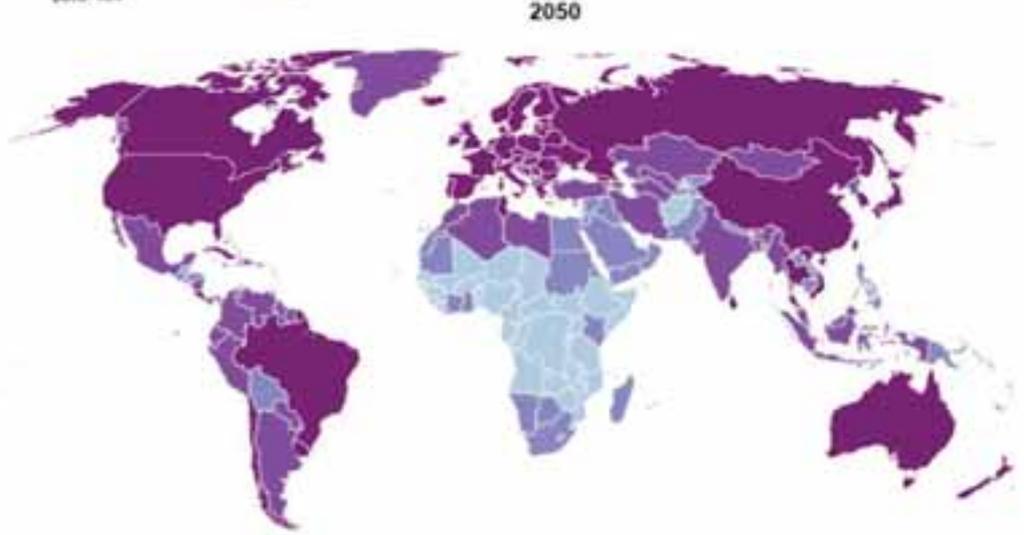
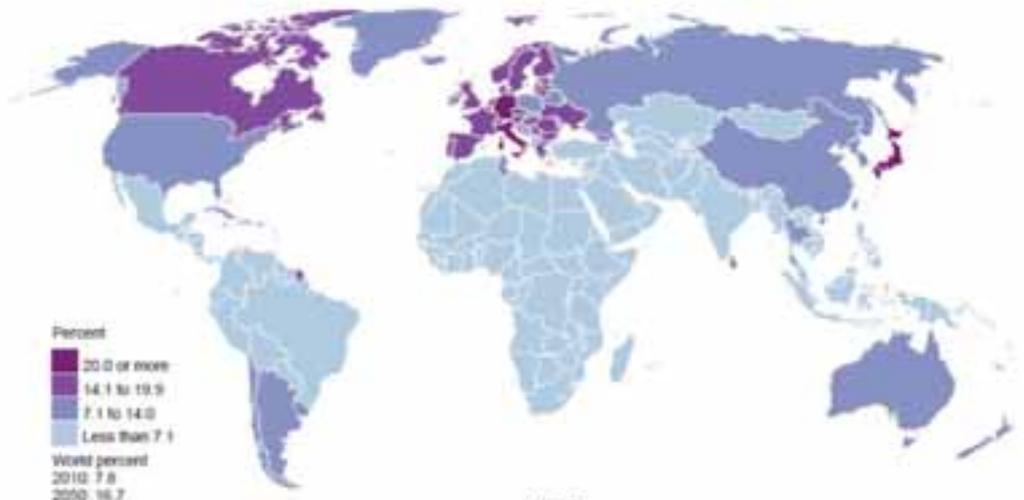
2010



2040



Percent of Population Aged 65 and Over by Country



HIV/AIDS Surveillance Data Base

Developed by the Census Bureau and U.S. Agency for International Development (USAID) to provide **easy access** to published results from **health surveys and studies**

Query Results

Country	Geographic	Reference	Population Subgroup	Sex	Age	Prevalence
AA	Not specified	2005	Blood donors - volunteer	B	ALL	0.11
AC	Not specified	2004	Blood donors - volunteer	B	ALL	0.20
AC	National	2005	Pregnant women	F	ALL	0.86
AC	National	2002	Pregnant women	F	ALL	0.48
AC	National	2003	Pregnant women	F	ALL	0.00
AC	National	2000	Pregnant women	F	ALL	0.94
AC	National	2004	Pregnant women	F	ALL	0.75
AC	National	2001	Pregnant women	F	ALL	0.44
AC	Not specified	2004-2005	Prisoners	M	ALL	3.00
AC	Not specified	1995-1996	Prostitutes	F	ALL	1.70
AC	Not specified	1995-1996	Prostitutes	F	ALL	1.70

Comments for Selected Record # of Records: 96382
 Only the prevalence rate was given.

Source Information for Selected Record

Source ID	Author	Year	Title	Publication Information
A054T	Aones, M., R. Marin, R. Manchado, et al.	2009	Preventing Transmission-Transmitted HIV Infection in Latin America and the Caribbean: Issues Associated with Blood Donor	Journal of Acquired Immune Deficiency Syndromes, vol. 51

Library of International Statistical Data

- **Covers nearly every country and territory**, along with materials from international agencies
- **More than 115,000 statistical publications**
- **Historical**, with materials dating back to 1800s
- Located at the Census Bureau headquarters and **open to the public (by appointment)**



International Assistance

- **Technical assistance** and **capacity building** provided to counterpart statistical agencies in other countries
 - **GIS** training is frequently provided
- **Software development** to aid census and survey processing



U.S. Census Bureau Subnational Population Estimates

Subnational Estimates: Background

- The Census Bureau produces **current** subnational population estimates in **GIS** format
- Estimates formed the demographic base for Oak Ridge National Laboratory's Global **LandScan** Dataset
- At present, work is primarily in cooperation with the **U.S. President's Emergency Plan for AIDS Relief (PEPFAR)**

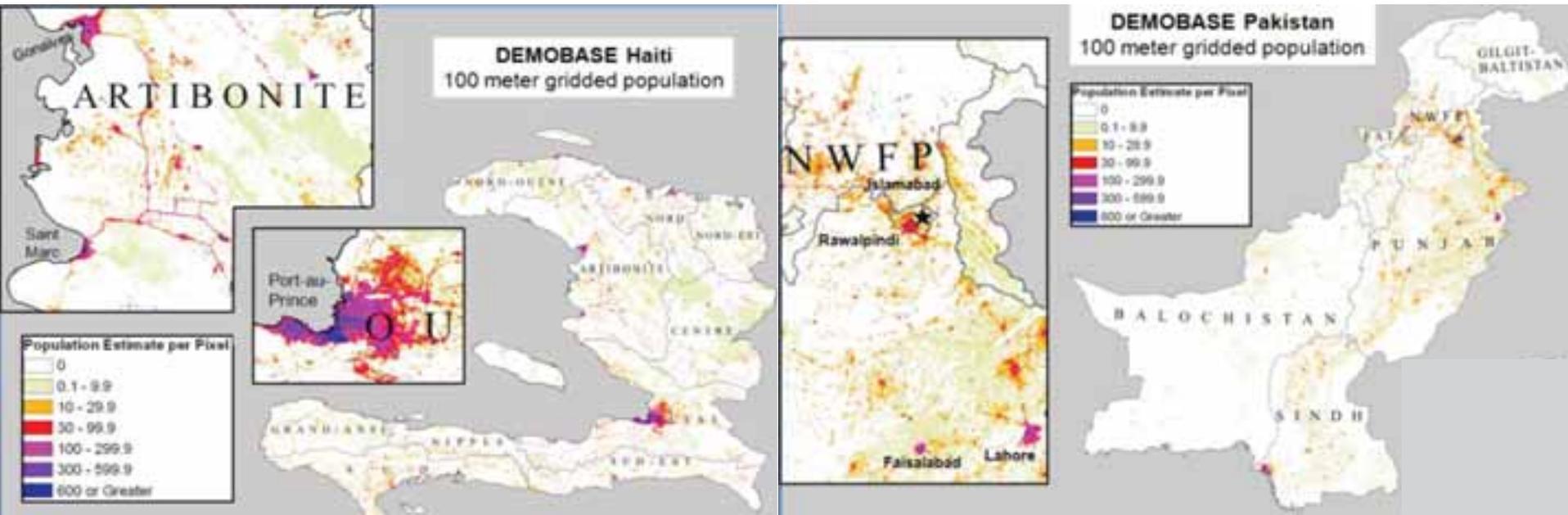


Impetus for Subnational Work

- Research needs identified by National Research Council report in 2007
 - *Tools and Methods for Estimating Populations at Risk from Natural Disasters and Complex Humanitarian Crises*
 - Humanitarian assistance community needs **improved and easily accessible** subnational population estimates
 - Recommended the Census Bureau produce data
- **Our goal:** Global, online, and frequently updated demographic GIS data **available before, during, and after humanitarian crises**

Demobase

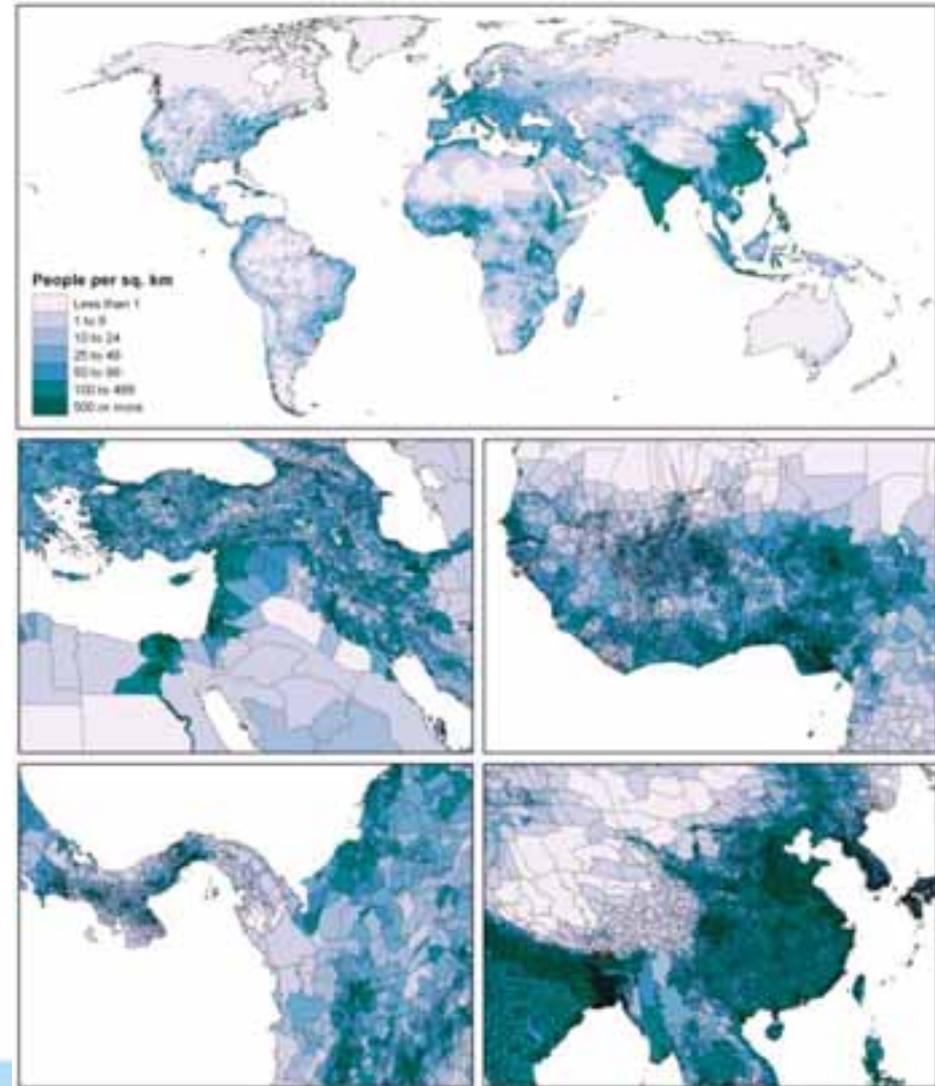
Gridded population estimates (100 meter) derived from satellite measurements of built-up area



Available for download on our website

Global Population Geodatabase

- Available for **264 countries/territories**
- Wall-to-wall coverage of about **70,000** subnational areas
- **Recent population estimates** controlled to IDB
- Broken down by five-year age/sex groups
- GIS formatted for **spatial analysis**
- Accessible **online**



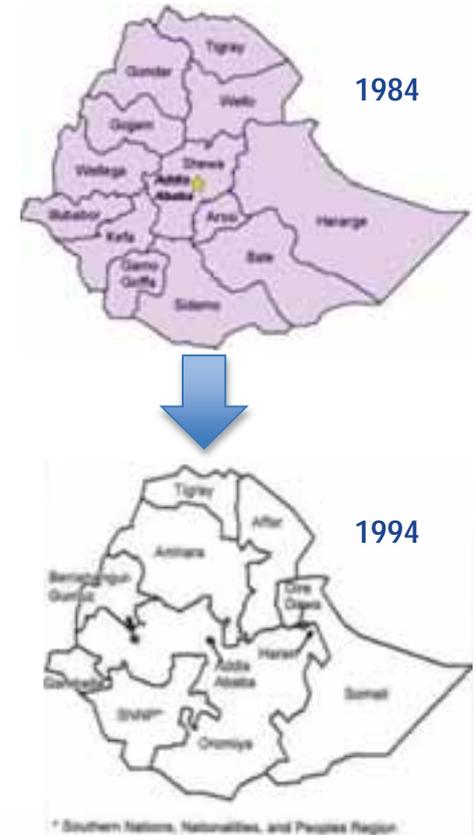
Methods: Find Base Data

- **Population data**
 - Almost exclusively **censuses** from national governments
 - In a few cases, official estimates
- **Geographic data**
 - National governments
 - Regional/International organizations and NGOs
 - Open-source/free datasets available online
 - U.S. government agencies
 - Commercial datasets
- Always searching for data available at the **lowest administrative level**
 - E.g., counties, townships, enumeration areas
 - **Please send us your data!** 😊

Methods: Reconcile

- GIS boundary data **must match one-to-one** with census tabular data
- **Usually needs substantial research/editing to reconcile**
 - Census and GIS data are often not released at the same time
 - Changing administrative boundaries create major problems (square peg, round hole)
 - Some countries treat census/boundary data as state secrets

Ethiopia Boundary Changes



Methods: 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 as base data for greater local variation in projections

Integration into Global Dataset

- **Problem:** We have data for whole world, but not in one dataset
 - International boundaries **did not coincide** since datasets are from many different sources
 - Had to find a **reliable source** of international boundary data



Integration into Global Dataset

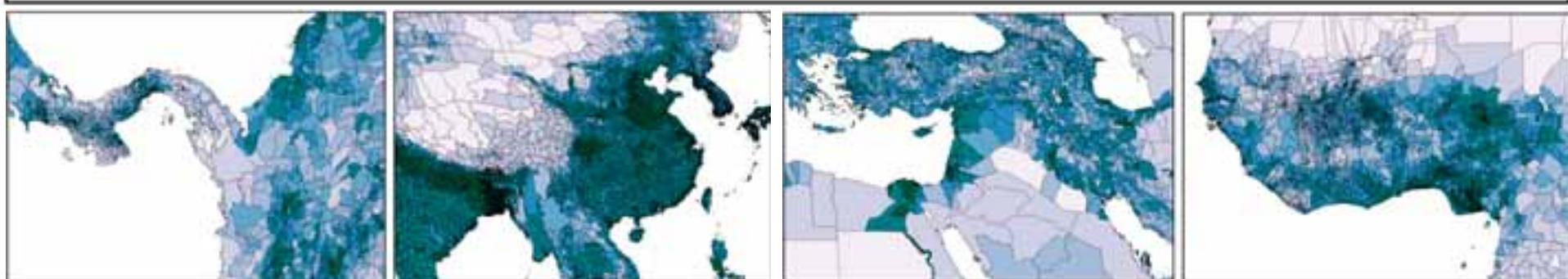
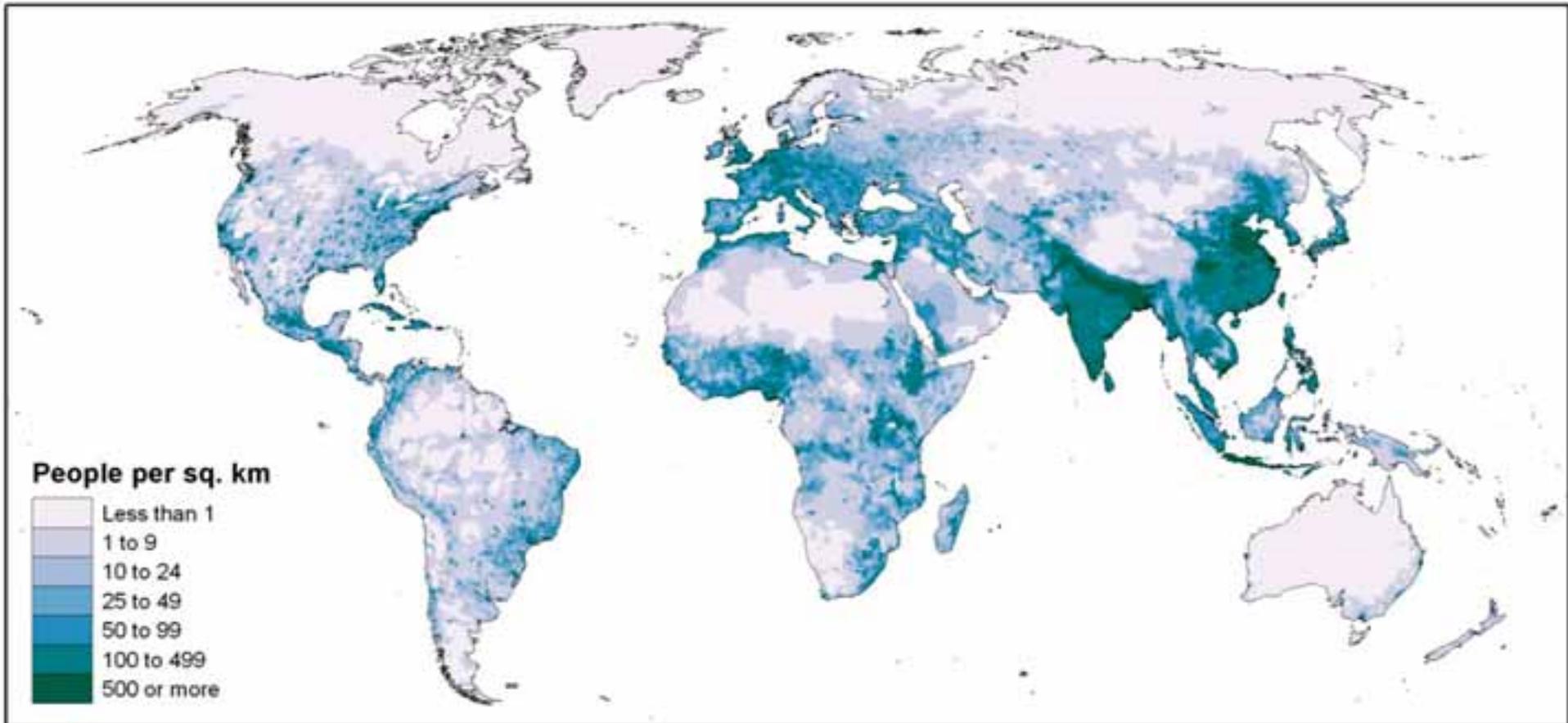
- **Solution:** Large-Scale International Boundaries (**LSIB**) dataset
 - Produced by State Dept. Office of the Geographer & Global Issues (hiu.state.gov/data)
 - **Authoritative** and reflects U.S. Government policy where needed
 - Generally **accurate** to within 1 km



Global Subnational Boundaries



Population Distribution of the World



Population Distribution of the World

A world map where the density of white dots represents population. The dots are most concentrated in East Asia (China), South Asia (India), and Europe. Other significant concentrations are seen in North America and parts of Africa and South America. The map uses a dark blue background for the oceans and a lighter blue for the continents. A legend at the bottom center states 'One dot represents 50,000 people'.

One dot represents 50,000 people

Data Dissemination: Available Now

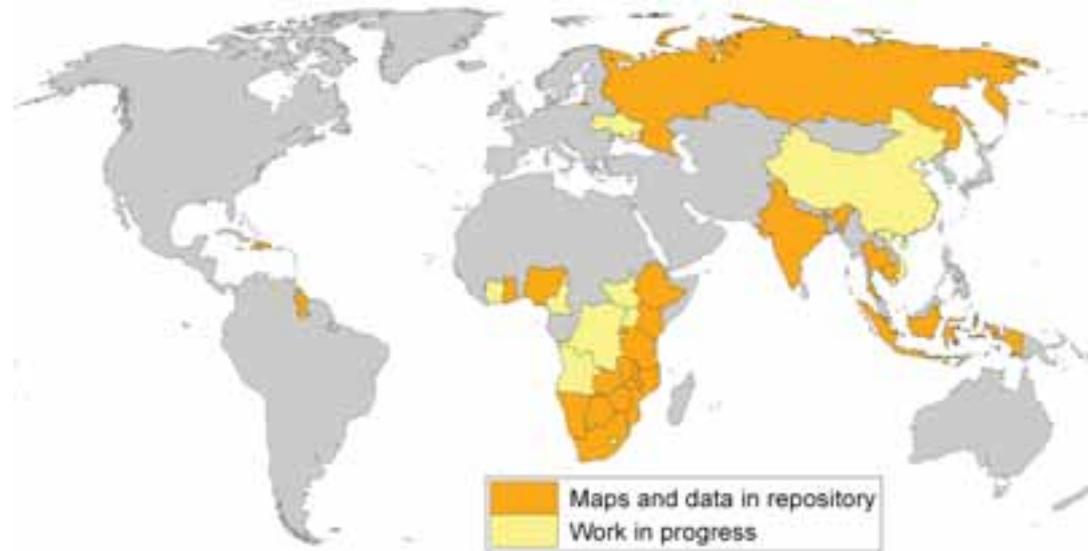
- **Spatial Data Repository (SDR)**

- We contribute subnational population estimates and projections to this online database for over 30 countries of interest

- hivspatialdata.net

- **Demobase**

- Available on our website for Haiti, Pakistan, Rwanda



Data Dissemination: Future

- Ideal dataset is **global, online, and frequently updated**
- Fundamental demographic data (total population, age/sex groups) for **smallest administrative units**
- **Free** to download
- Accessible to both **experts** and the **general public**
- Expands to other variables where possible, including **ethnicity, literacy, education**



Thank You

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Visit us online!

census.gov/population/international/data/mapping