Disaggregating by Geographic Location: Developing further guidance for the SDGs

Geospatial Roadmap

The Twelfth Session of UN-GGIM

Side Event Strengthening Statistical and Geospatial Integration – “the SDGs Geospatial Roadmap and the GSGF Implementation Guide”

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SDG Data Disaggregation

• Disaggregation by sex and gender
• Age
• Income
• Disability
• Ethnicity and indigenous status
• Economic activity
• Migration status
• **Geographic location**

Census are collected at each individual and household level. Usually, these statistical data are integrated with GIS point (H locations) or area data (Admin boundaries), so georeferenced census are generated and can be shown on map.

## Integrating geospatial and statistical data

<table>
<thead>
<tr>
<th>GIS Data</th>
<th>Statistical attribute data</th>
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</table>
| **Points** | Types of buildings (residential, commercial, Government etc.)  
- GPS coordinates for dwelling units, settlements  
- GPS coordinates of physical infrastructure (health facilities, schools etc.)  
- Health facilities with address (street name, number) |  
- Demographic and socioeconomic characteristics  
- Building/housing characteristics  
- Types of health facilities, service provided, number of bed, doctors, nurses, etc. |
| **Lines** | Types of roads, highway, paved, unpaved, Speed limit, U-turn limit, Road conditions  
- Transport networks,  
- Topography (rivers, terrain etc.) |  
- River types, e.g. streams, major rivers |
| **Polygons/Areas** | Aggregated indicator data at admin levels  
- Administrative boundaries  
- Enumeration area boundaries |  
- Aggregated indicator data at EA level |
High resolution population basemap

- Visualizing population (by age and sex) distributions on smaller geographic areas - higher spatial resolution levels, e.g. women, girls, older persons, and explore the spatial distribution characteristics.
- Providing population numbers to monitor SDG, ICPD progress, allow the integration of population with other data for various development issues.
Geospatial Solution for the 2020 Census Round

GIS, GPS and Satellite Imagery in ensuring the coverage of household listing and quality of enumeration area boundary delineation
Point-Level (household level) Population Basemap

Using **GPS coordinate** to locate individual or HH

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Mozambique household location (Gaza Province)

Combine point tabulated data with **address** and **GIS road** data using “geocode” locations
Linking boundary with tabulated data to generate aggregated pop by area. The smallest area unit is enumeration area (EA) where census are collected, the smallest administrative levels are usually neighborhood, village, ward, or municipality.
Integration of EA level population, building footprint, and other GIS data to estimate high-resolution population by 100mx100m grid
Geographic Disaggregation of SDG Indicators

- Enabling display of information on smaller geographic areas - Higher resolution thematic mapping e.g. numbers and percentages of child marriage
- Trend analysis for select geographic levels
- Enabling the integration of georeferenced census indicators with other geospatial data for various development issues, e.g. linking pregnant women with location of health services
Subnational mapping of SDG indicators

Total population at Ward Level (Zambia Census 2010)

Child Marriage (Percentage)

Child Marriage (Total Number)

Zambia
Harmonizing Boundaries

Example of tracking Nigeria family planning indicator (% of demand satisfied for family planning) from 1990, 2003, to 2013, by harmoning boundaries, i.e. through converting area-based indicator to gridded data, and re-aggregating using 2013 boundaries.
UNFPA Population Data Portal

https://pdp.unfpa.org/

+200 Population Indicators at Admin Level 0-2
Small Area Estimation of SDG Indicators

Linking census with survey and other data to estimate and map SDG indicators that are collected only via household surveys (e.g. DHS and MICS) at a small area level

Main Steps:
- Census and survey data assessment and harmonization
- Identify the best model based on survey data
- Apply the model to census data to predict individual-level estimates based on census data
- Aggregate the estimates from the individual-level to any level of geography (including small areas)
Small Area Estimation - example of family planning indicators in Nepal
Integrating georeferenced population with other geospatial data for local development

Linking people data to a place or geographic location, and its integration with geospatial information through the medium of "location", can result in an improved understanding of social, economic, and environmental issues.

Source: Draft Working PAPER - For EG-ISGI Consultation- UN Expert Group on the Integration of Statistical and Geospatial information
Linking population with health facility data for accessibility mapping

1. Mapping Distributions of SRH Services
2. Mapping SRH Service Coverage
3. Mapping Population’s Access to Services

Malawi
Linking population with other climate change data for vulnerability mapping

Population density in Mid-High flood and landslide zones in Semarang, Indonesia (2010 Census)
Towards the SDGs Geospatial Roadmap

- **Data**
  - Over 200 Census and Population *Indicators* at national and subnational levels

- **Analysis**
  - *Integration* of population data with other geospatial data on use cases at local levels

- **Visualization**
  - Data *Visualization* and *Dissemination*, while ensure data privacy and confidentiality

- **Capacity**
  - *Capacity Strengthening* on using GIS for SDG data disaggregation
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