The Second United Nations Expert Group Meeting
on the Revision of the Principles and Recommendations for Population and Housing Censuses

Task Team 3: Use of geospatial information in census operations

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New York
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Outline

- Scope of work
- Members
- Timeline
- New sections/topics added
- Revised sections/topics
- Some applications of (integrated) geospatial information in Census
- Next steps

Scope of Work

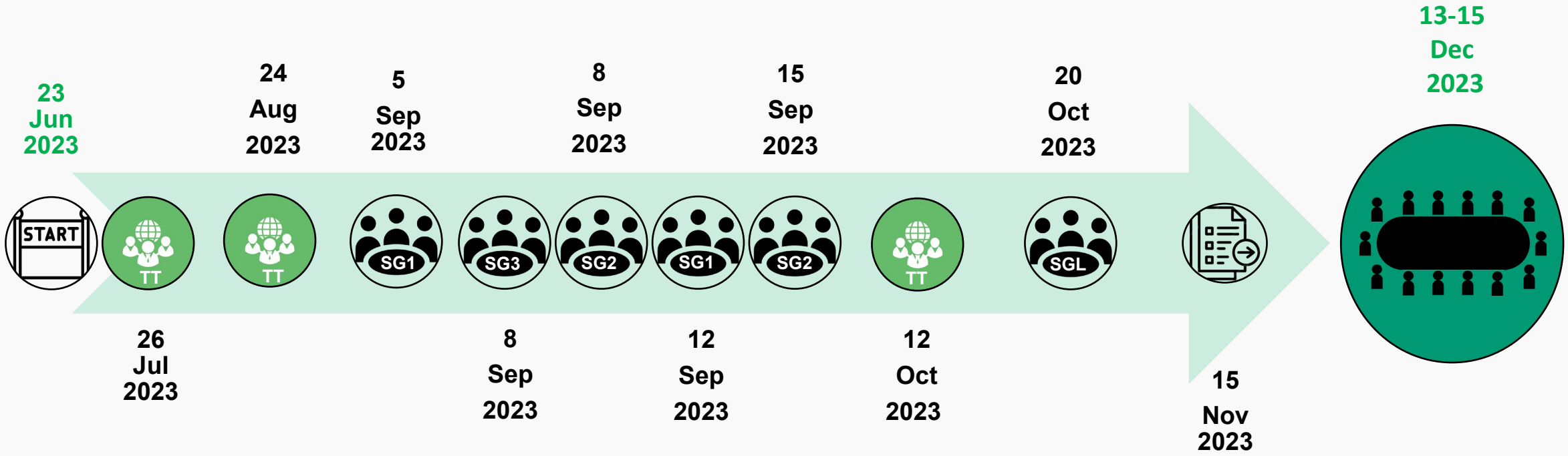
- Review and redraft relevant sections of Chapters IV (Mapping and geospatial data) and X (Census products, dissemination and utilization) of Part III of the P&R to **incorporate recent developments in conducting a geospatially integrated census**
- Address recent advances in technology and international policy that can be operationalized by countries to **geospatially enable the census**
  - introduce the **GSGF** and **UN-IGIF** framework
- Address the importance of the **national spatial data infrastructure (NSDI)** in providing a common base map to avoid the cost of duplicative efforts
- Address the **use of geospatial information in the planning and implementation of each stage of the census operation** (e.g., planning, organization and management of census operations, for logistics management, optimizing workloads and routes of enumerators, monitoring enumeration, analysis, dissemination, etc.)
- Address the **importance of the integration of geospatial information and census data**, with a view to **improving the usefulness of census data** for policy- and decision-making as well as **global comparisons**, and promote the **dissemination of geocoded census data**, including **grid-based census outputs**
- Address the concerns of **disclosure of confidential information** in the context of dissemination of census data integrated with geospatial information (**small areas**)

Task Team 3 Members

Countries:
Brazil
Colombia
Egypt
Indonesia
Kenya
Poland
Saudi Arabia
United States

Organisations:
European Commission
Eurostat
OECD
Red Académica para las Américas de Naciones Unidas
UNECLAC
UNFPA
UNHABITAT
World Bank

Timeline



START Establishment of TT3

SG1 TT3 Subgroup meetings

Draft sent to Secretariat

TT TT3 meetings

SGL TT3 Subgroup leaders meeting

2nd EGM on the Revisions of the P&R

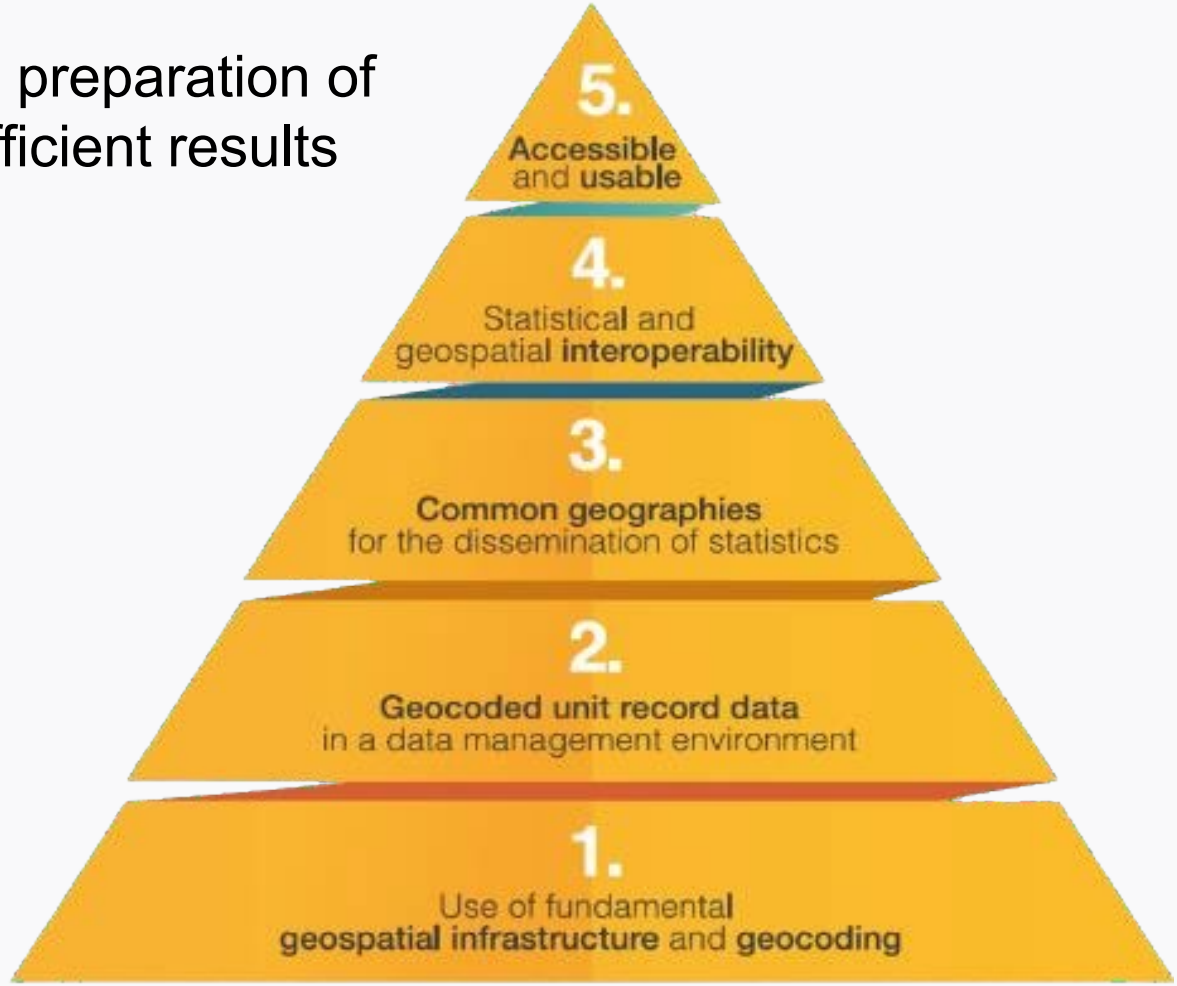
New sections/topics added

- **Chapter IV (Mapping and geospatial data) of Part III of the P&R**
  - Section A: Introduction
    - Introduce the Global Statistical Geospatial Framework (GSGF)
    - Benefits of the National Spatial Data Infrastructure (NSDI)
  - Section C: Integrating census statistics and geospatial information
    - Value of proper integration of census statistics and geospatial information, delivering interoperable and integrated statistical and geospatial datasets

- **Chapter X (Census products, dissemination and utilization) of Part III of the P&R**
  - Subsection 3: Geospatial information for analysis and dissemination
    - (a) Dissemination geography
    - (b) Spatial analysis
  - Subsection 6: Metadata
    - (c) Geospatial metadata
  - Subsection 4: Geographic products
    - (d) Grid based census outputs
    - (e) Innovative geospatial products - Smarter maps and geoportals & GeoAI and GeoBlockchain

The Global Statistical Geospatial Framework (GSGF) and its 5 principles

The **GSGF** is a fundamental framework in the preparation of an integrated census and will provide more efficient results at all stages of the census operation.



The United Nations Integrated Geospatial Information Framework (UN-IGIF)

The objective is for NSOs and Census Bureau to understand themselves as important producers and/or consumers of geospatial information and seek to integrate into the geospatial ecosystem and/or national spatial data infrastructure (NSDI) of their countries

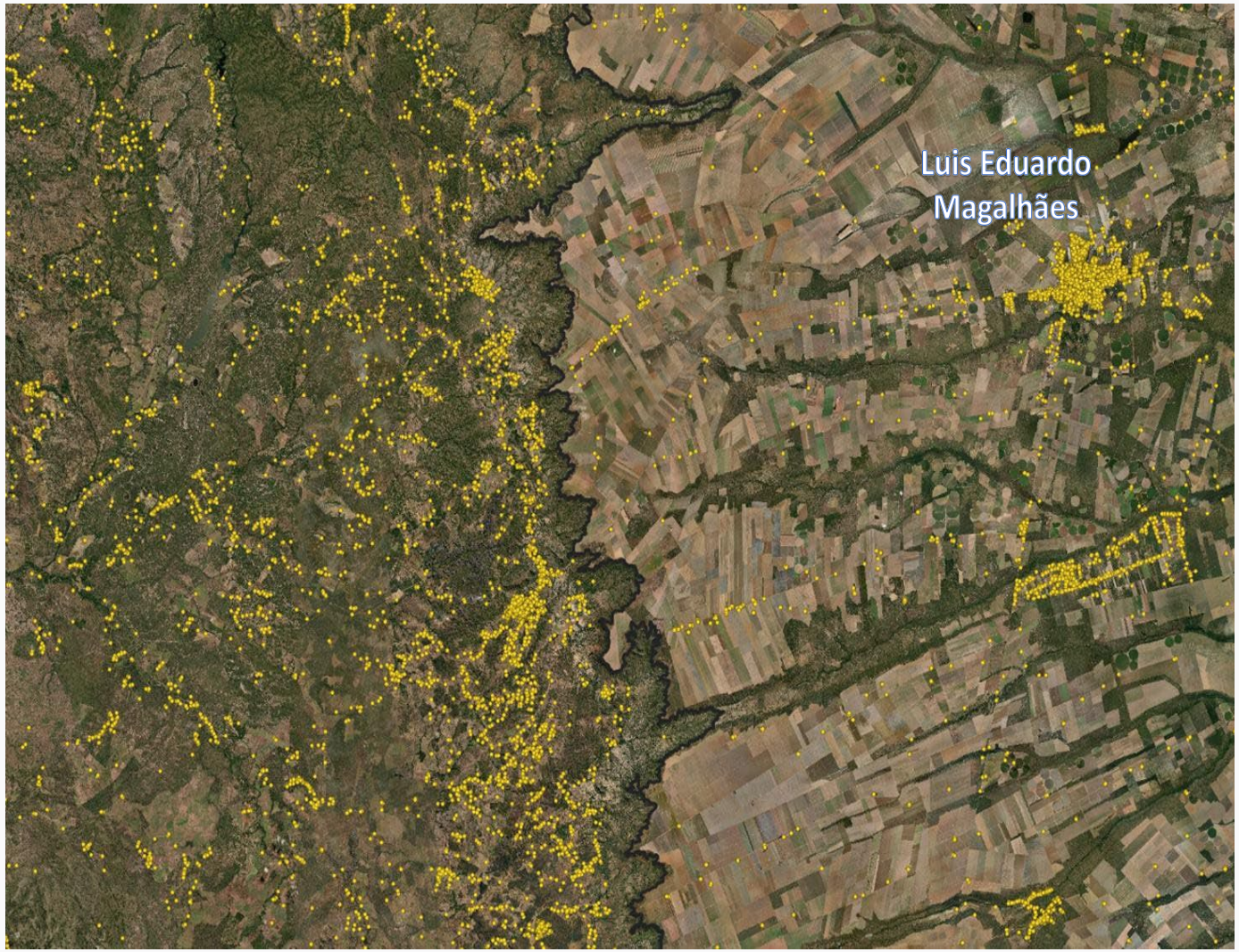
UN·IGIF
INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

Revised sections/topics

- **Chapter IV (Mapping and geospatial data) of Part III of the P&R**
  - ✓ Section B. The role of geospatial information in the census
  - ✓ Section D. Planning the census with geospatial information
    - Subsection 1: Strategic planning
    - Subsection 2: Census geography
    - Subsection 3: Technology for census geospatial information
    - Subsection 4: Geographic information systems
    - Subsection 5: Implementation of census geospatial information programme

- **Chapter X (Census products, dissemination and utilization) of Part III of the P&R**
  - ✓ Section B. Plans for census products and data dissemination
    - Subsection 5: Confidentiality and privacy
    - Subsection 3: Databases
      - (d) Graphing and mapping databases
    - Subsection 4: Geographic products
      - (c) Thematic maps

Some applications of (integrated) geospatial information in census operations



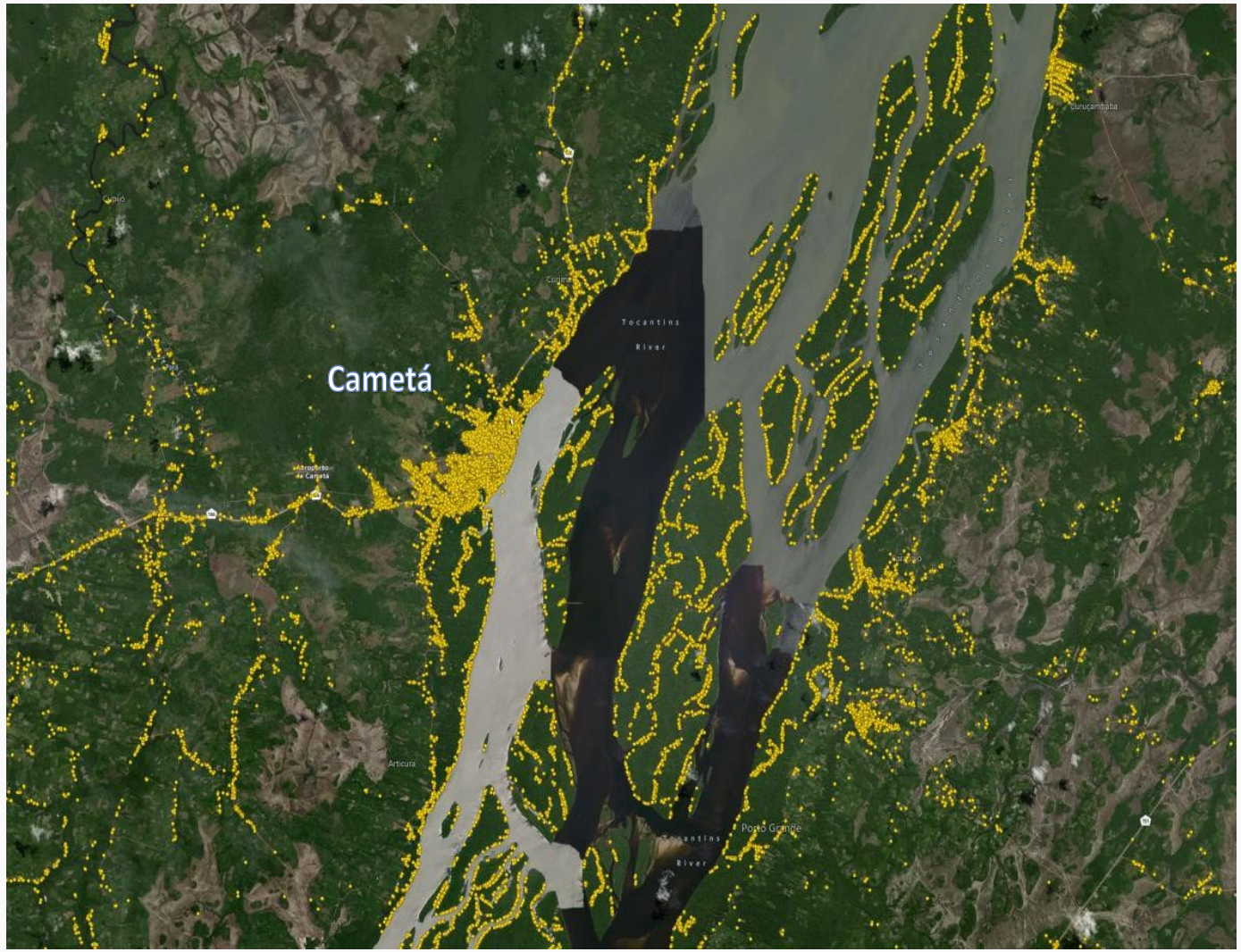
Source: IBGE, Brazil.

Provides a more accurate view of the distribution of people, households and human and natural phenomena in the territory, improving the allocation of human and financial resources

Distribution of households in Luís Eduardo Magalhães and surrounding areas, Brazil. This area is a large-scale soybean producer, on large mechanized properties. The rural population density is very low. On the other side of the escarpment, the density of rural occupation is significantly higher.

Yellow dots are coordinates collected in the 2022 Census in Brazil

Some applications of (integrated) geospatial information in census operations



Source: IBGE, Brazil.

Provides a more accurate view of the distribution of people, households and human and natural phenomena in the territory, improving the allocation of human and financial resources.

Distribution of households in Cametá and surrounding areas, state fo Pará, Brazil. It is possible to identify the **riverside population** on the islands in the Tocantins River and in the streams inside the islands

Yellow dots are address coordinates collected in the 2022 Census in Brazil

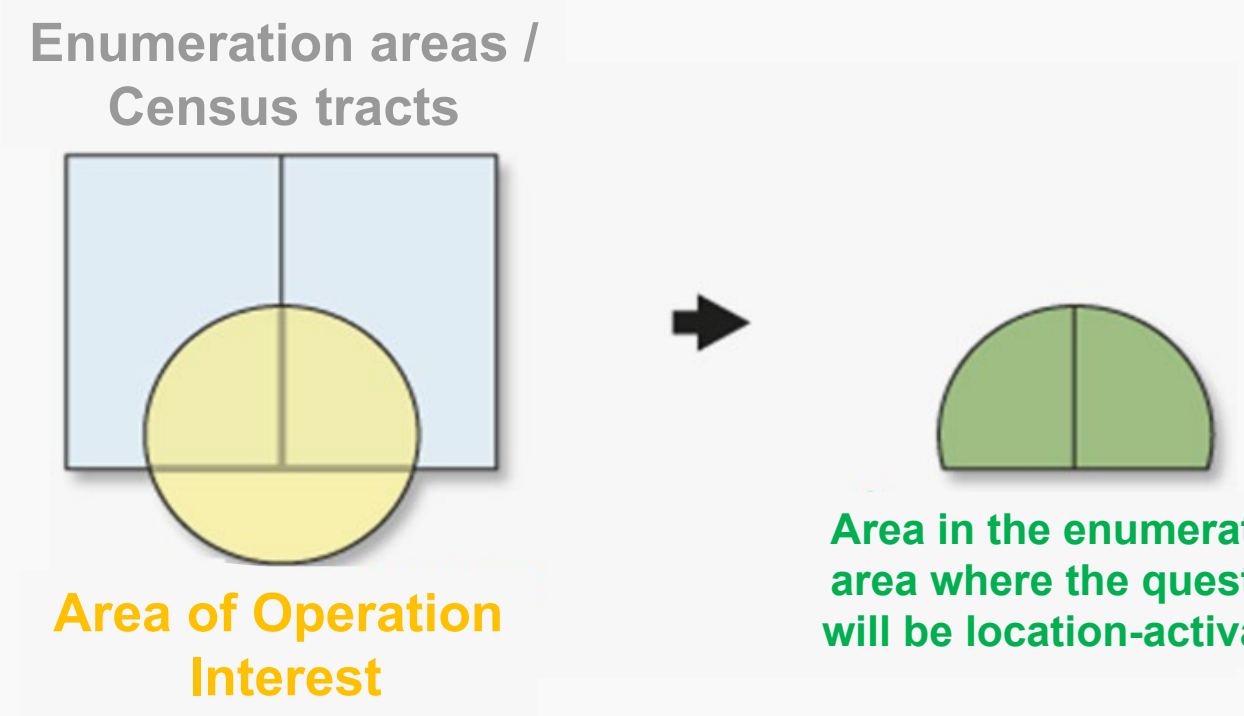
Some applications of (integrated) geospatial information in census operations

Areas of Operational Interest

Geospatial base independent of the enumeration areas/census tracts where specific questions will be geo-enabled via GNSS (at the time of the interview).

It can be used to ask specific questions for specific population groups.

It is already used in the US Census Bureau, ABS and IBGE.



Some applications of (integrated) geospatial information in census operations

Source: IBGE, Brazil.

Improves the quality of statistical data, through planning and supervision of field operations.

By **capturing coordinates** during a census operation, it is much easier to identify the parts of the city that have **already been visited** by enumerators and thus **correct possible omissions**.

Yellow dots are address coordinates collected in the 2022 Census in Brazil.

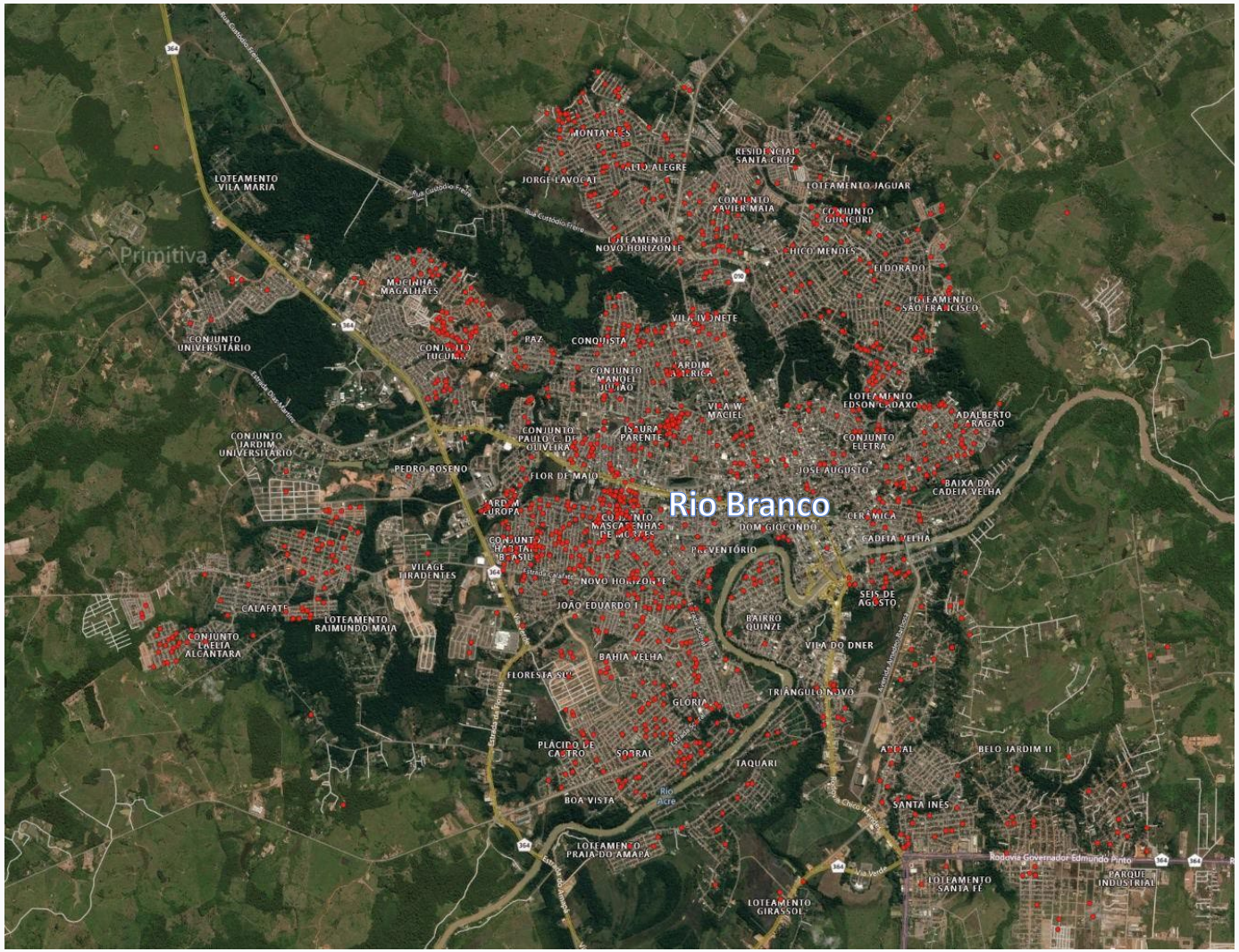
Some applications of (integrated) geospatial information in census operations

Source: IBGE, Brazil.

Improves the quality of statistical data, through planning and supervision of field operations

It is possible to compare the **information collected** in the field with **administrative records**, and thus guarantee coverage of the operation. In **blue**, addresses provided by electricity companies through the national electricity agency. In **yellow**, the households visited by the **2022 Census** (Brazil).

Some applications of (integrated) geospatial information in census operations



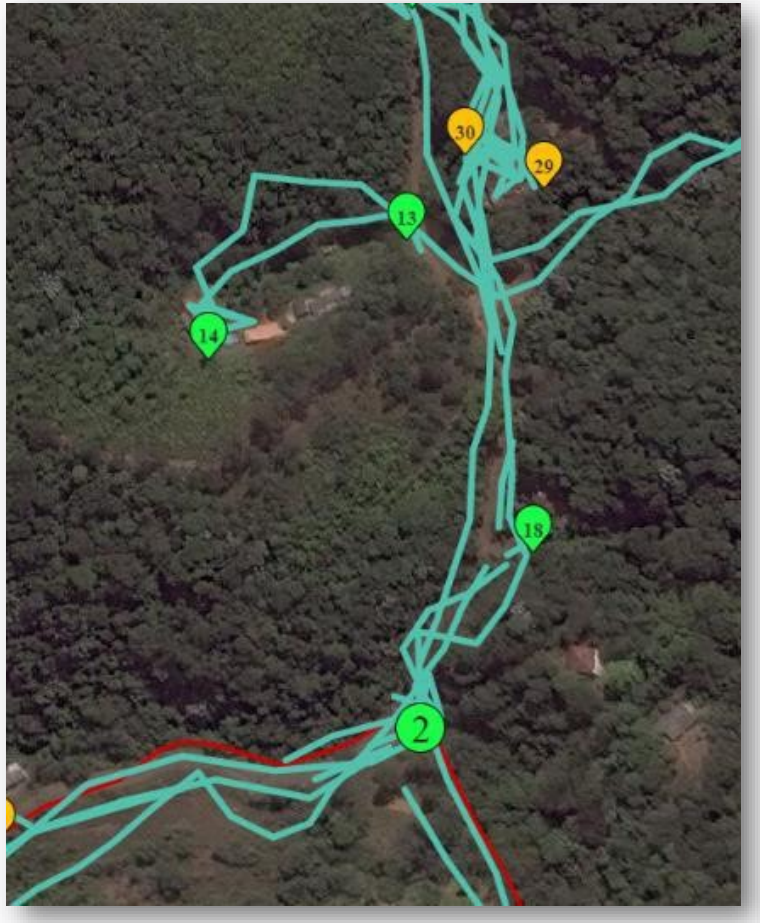
Source: IBGE, Brazil.

Improves the quality of statistical data, through planning and supervision of field operations.

On this map it is possible to see the households (**red** dots) that **refused to receive enumerators**, in the city of Rio Branco, state of Acre, Brazil.

This information was available in **real time** during the census operation, enabling the **development of strategies** that significantly **reduced the percentage of households that refused to respond** to the 2022 Census.

Some applications of (integrated) geospatial information in census operations



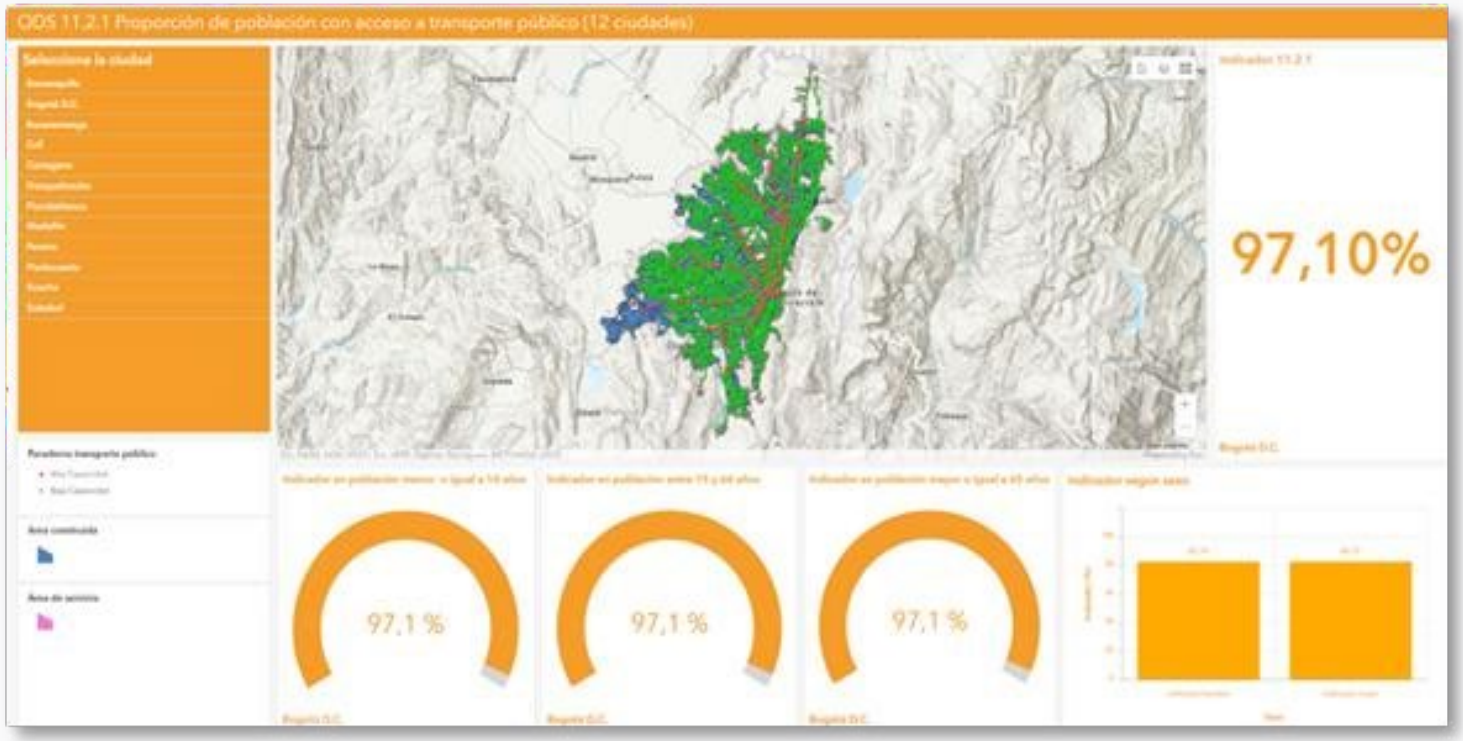
Source: IBGE, Brazil.

Improves the quality of statistical data, through planning and supervision of field operations.

Thanks to use of **geospatial information** during the 2022 Census operation, it was possible to **monitor the enumerators routes** in **real time** (through 3G, 4G networks), making it easy to **identify areas** of the territory **that had already been covered** and plan possible correction actions of coverage.

These tracks can be used to **improve road and waterway mapping**, especially in rural areas, after the Census.

Some applications of (integrated) geospatial information in census operations



Source: DANE, Colômbia

Provides new information, which can only be achieved when the **statistical and geospatial data are integrated**

Ex: SDG 11.2.1 - Proportion of the population that has convenient access to public transport. Need georeferenced information from Demographic Censuses and georeferenced information on public transport

Some applications of (integrated) geospatial information in census operations

Common geographies (Principle 3 of GSGF) may include geographies such as:

- Census Geographies
- **Municipalities**
- **States and Provinces**
- **Urban agglomerations**
- **Watersheds**
- **Biomes**
- **Statistical grid**
- **Etc.**

They provide greater **meaning** to statistical information and allow **integration** between different types of information such as **remote sensing** and **demographic data**.

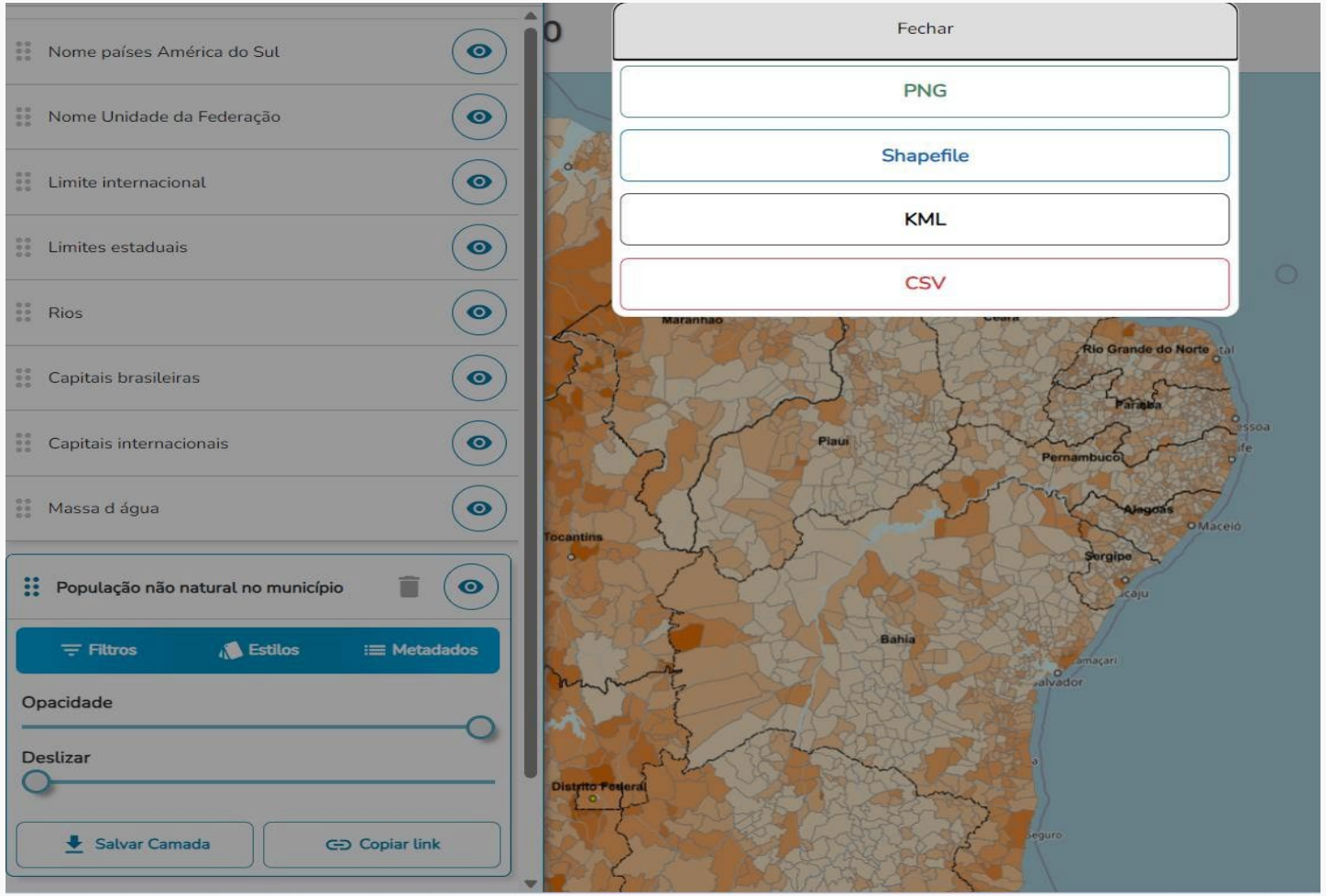
Some applications of (integrated) geospatial information in census operations

Source: US Census Bureau, USA

Enables production of information for **small areas**.

In order to leave no one behind, it is necessary that the information be made available to small areas. An efficient public policy needs this kind of geographic disaggregation.

Some applications of (integrated) geospatial information in census operations



Provides **interoperability**, easy **access** and **usability** of **integrated information**.

Based on international standards, information can be made available in an accessible and in a **interoperable** way.

Source: IBGE, Brazil

Next steps

- ✓ Focus the refinement of the review on bringing geospatial information in a more holistic and integrated way
- ✓ Guide and demonstrate the importance of using geospatial information in all phases of the census operation
- ✓ Review other parts and topics of the P&R where geospatial information is mentioned or could be mentioned
- ✓ If possible, bring good practices and case studies (box in the document, attachments or accessory documents)

Suggested further revisions

❑ **PART TWO. PLANNING, ORGANIZATION AND MANAGEMENT**

- Discuss the role and use of geospatial information in:
  - Overall census planning
  - Logistics management
  - Quality assurance

❑ **PART THREE. CENSUS OPERATION ACTIVITIES**

- Discuss the role and use of geospatial information in:
  - Building census infrastructure
  - Living quarters and household listing
  - Field enumeration
    - Management and supervision
  - Evaluation of census results
  - Overall evaluation of the census (operations)

Thank you!

IBGE
Instituto Brasileiro de Geografia e Estatística

10th anniversary
UN·EG-ISGI
UNITED NATIONS • EXPERT GROUP ON THE INTEGRATION OF STATISTICAL AND GEOSPATIAL INFORMATION