BRAZILIAN APPROACH FOR GEOGRAPHICAL CLASSIFICATION AND DISSEMINATION OF STATISTICAL DATA

Global Forum on The Integration of Statistical and Geospatial Information

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ABOUT BRAZIL

BRASIL	
Land area	8 515 767 km^2
Sea area	3 600 000 km^2
States	27
Municipalities	5 570
Population (2010 Demographic Census)	190 755 799

The Institute integrates geography and statistics information and covers a great diversity of themes

IBGE Structure

- ✓Headquarters: Rio de Janeiro
- ✓27 state Offices
- ✓583 local offices
- ✓About 6.500 permanent employees
- ✓220 thousands temporary employees during last census operation

Federal Institution responsible for:

- ✓Official statistics
- ✓Official reference cartography and Geodesy
- ✓Geographic and environmental information
- ✓78 years working with Geography and Statistics toguether

IBGE NETWORK

Brazil is one of the few countries that gathers in a single institution the task of producing and disseminating both geospatial and statistical informations.

This fact represents a huge incentive and opportunity in the efforts of integration between geospatial and statistical information and metadata, and also in **the production of a accurate geographical framework for the record, dissemination and analysis of statistical research**.

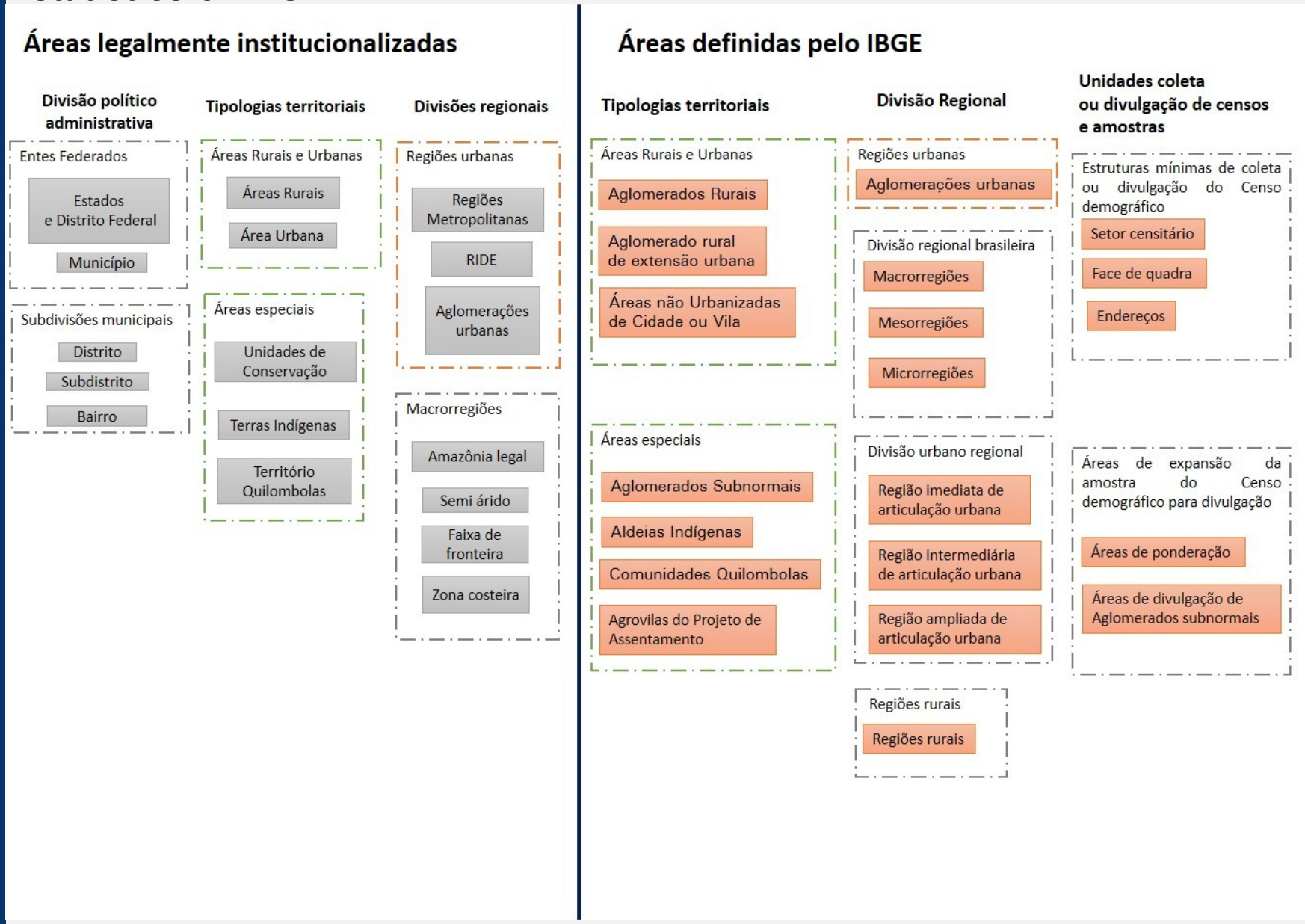
ADVANTAGES OF INTEGRATION OF GEOSPATIAL AND STATISTICS

Some advantages of integration of Geospatial and Statistics:

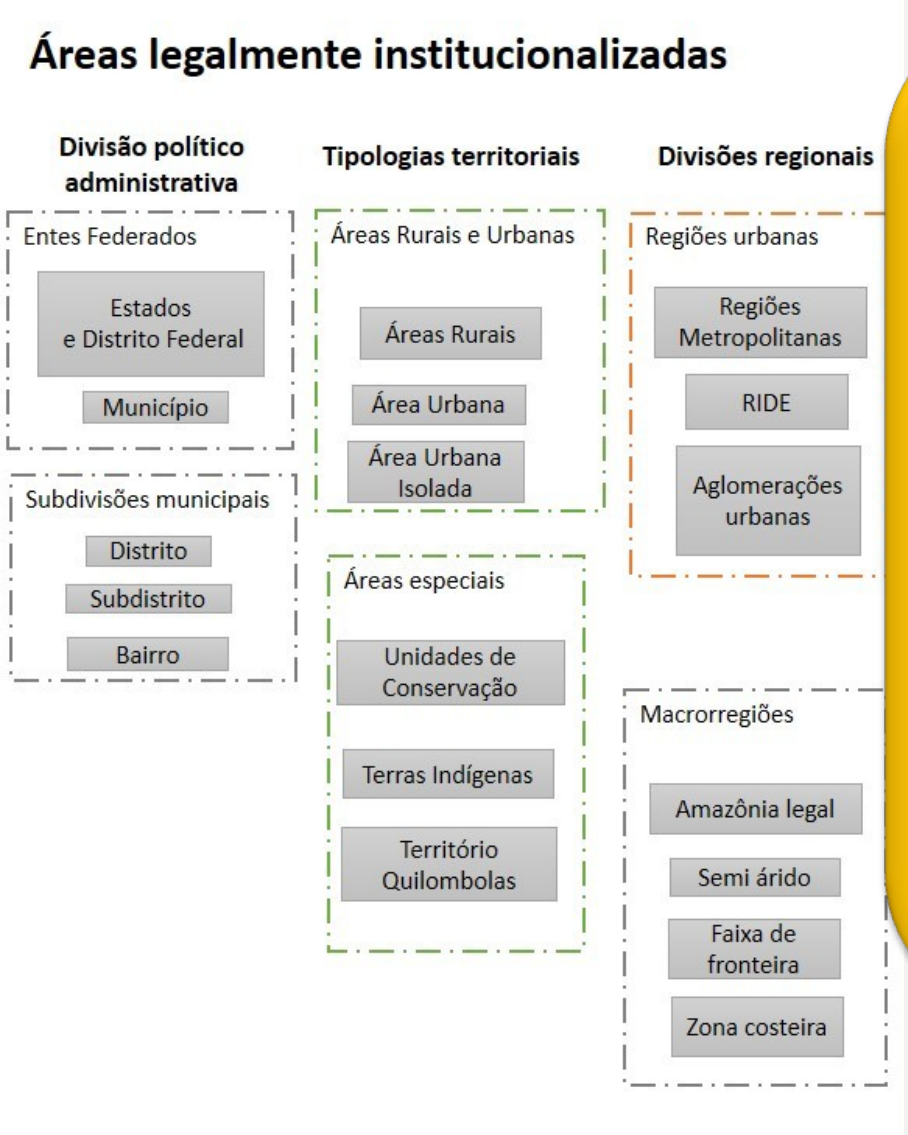
- Identification and delimitation of adequate territories to improve the enumeration, analyzes and dissemination, like:
  - Slum areas
  - Indian territory
  - Urban and rural areas
  - Urban agglomerations

- Better cartographic accuracy
  - Possibility to cross the census data with other sources
  - Cartography features improve the quality of the census maps

Territorial framework for calculating and disseminating the statistics of IBGE

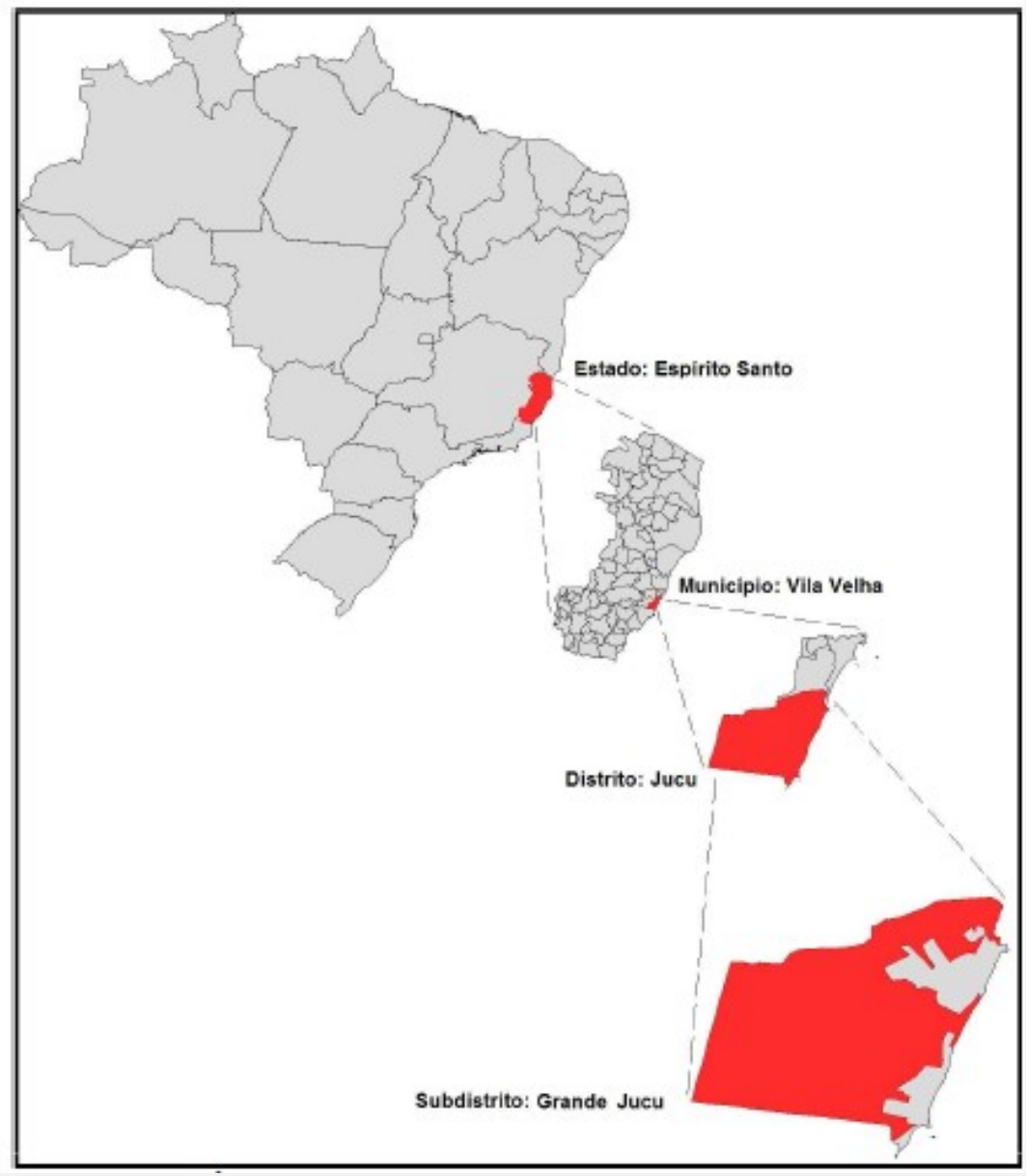


TERRITORIAL FRAMEWORK FOR CALCULATIONS AND DISSEMINATING THE STATISTICS OF IBGE



Legally institutionalized areas – These are areas that follow the political and administrative boundaries of Brazilian Federation in its three levels: federal, state and municipal. They are also relative to other officially demarcarted areas due to cultural and environmental conservations purposes or linked with political process, such as indigenous land, conservation areas, slave descendants lands, metropolitan areas etc.

LEGALLY INSTITUTIONALIZED SPACES – Political and administrative division

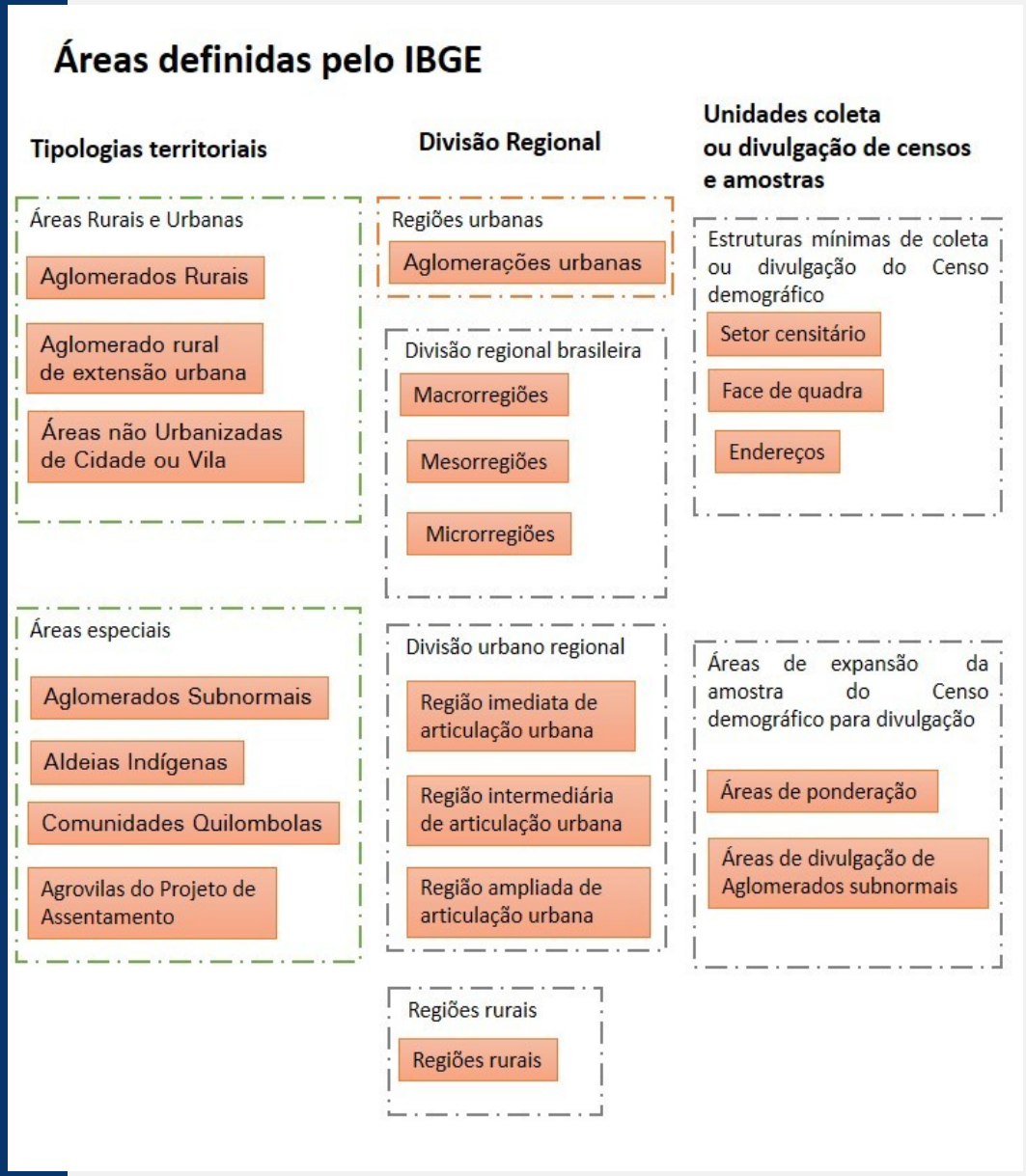


Political and administrative division

Brazil is a federation composed by autonomous entities, namely the Union, States and Municpalities.

The political and administrative division encompasses the external borders of the country, the state divisions and the municipal, district and subdistrict limits.

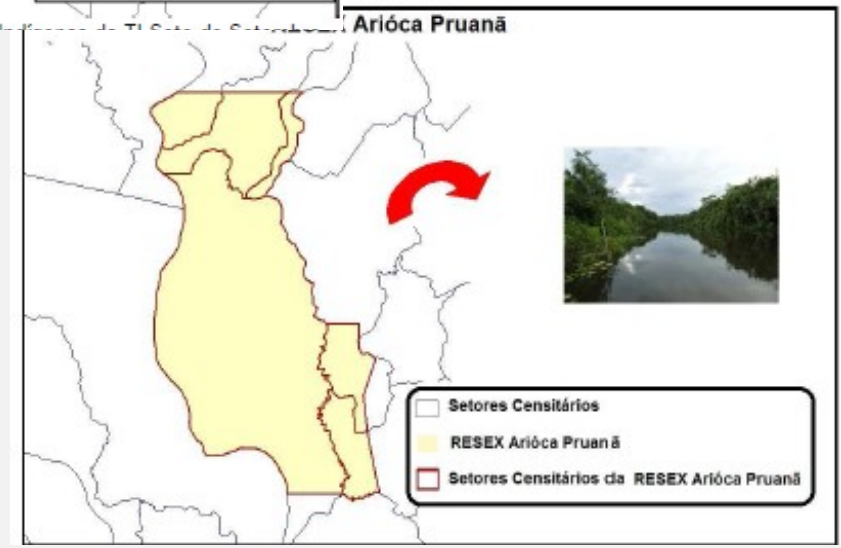
IBGE APPROACH TO STATISTICAL DATA DISSEMINATION AND GEOGRAPHIC CLASSIFICATION



IBGE defined areas for calculating and disseminating statistics - *These areas are limited* ones, for collection, counting and analyzing statistical data in order to meet the increasing demand for more accurate geographic areas, enabling a better interpretation of the complex territorial reality.

TERRITORIAL TIPOLOGIES

The classification of the territory is in different themes in order to identify spatial patterns to the dissemination of statistics, meeting several demands of the general public

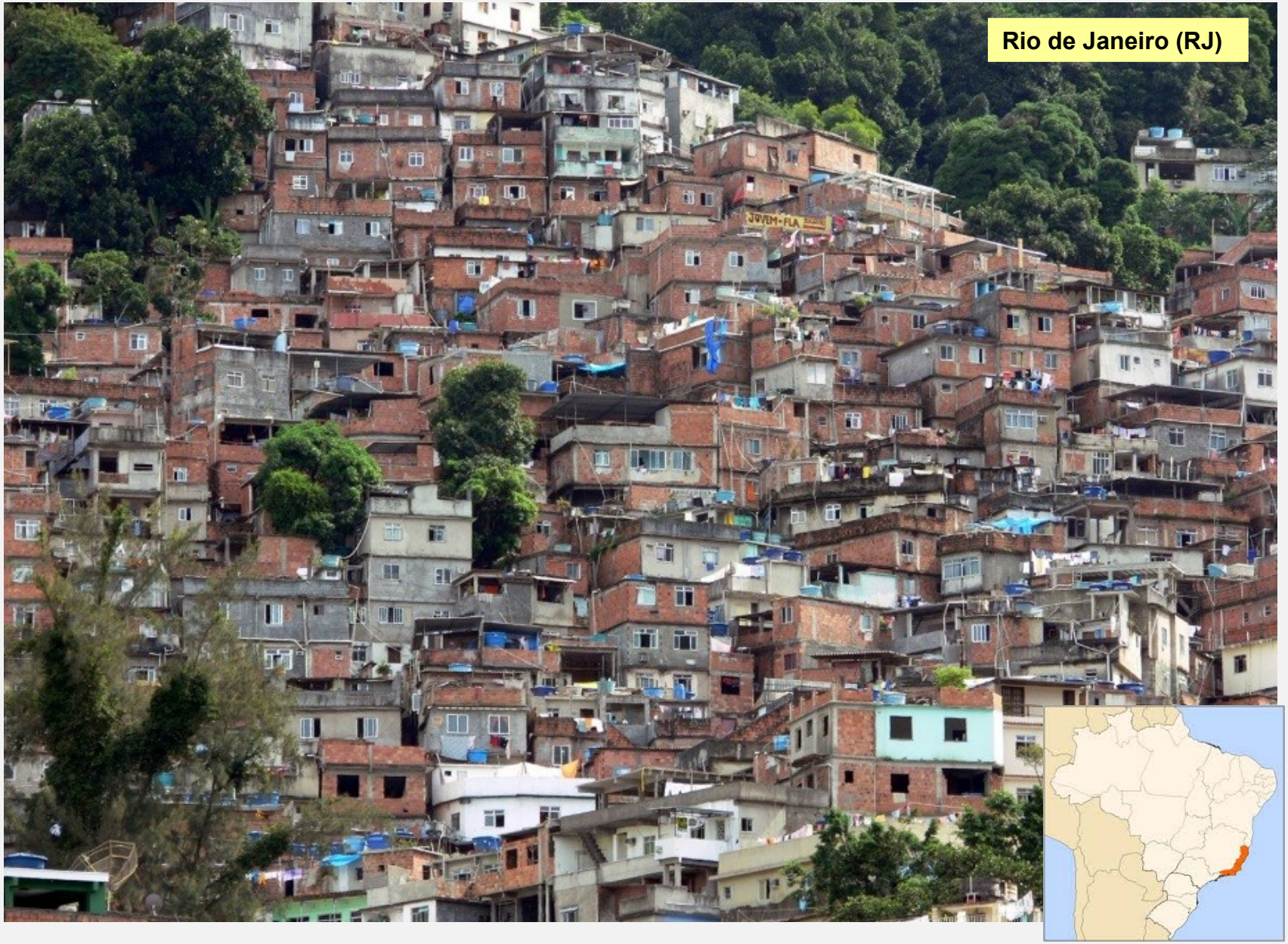


Slum Areas

They are zones of special social interest with important demand for statistical information. It is necessary to stablish geographic criteria to identify its limits and allow its association to statistical data

TERRITORIAL TIPOLOGIES

Slum Areas



TERRITORIAL TIPOLOGIES

Slum Areas

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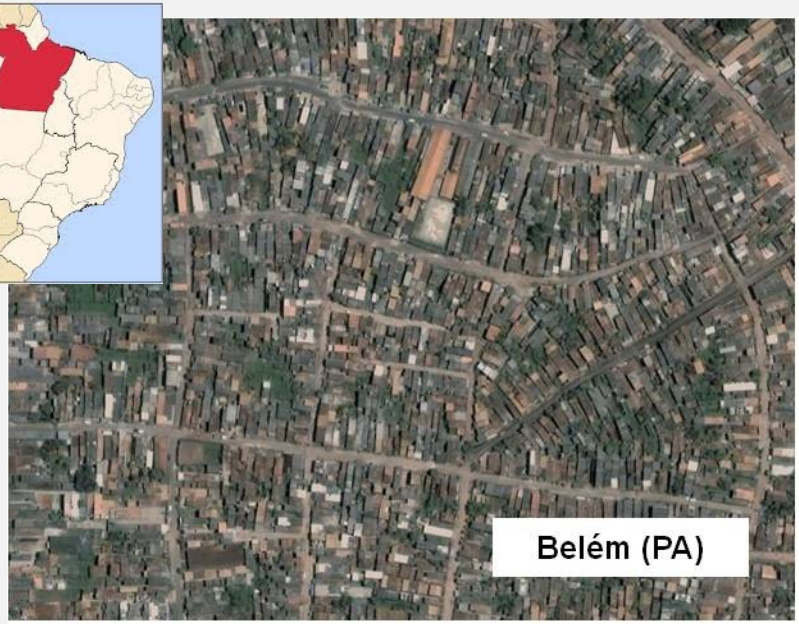
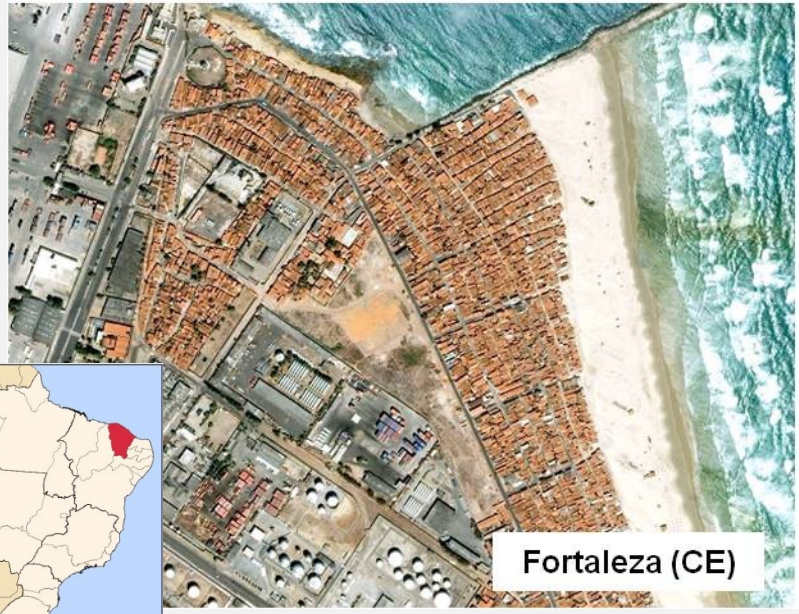
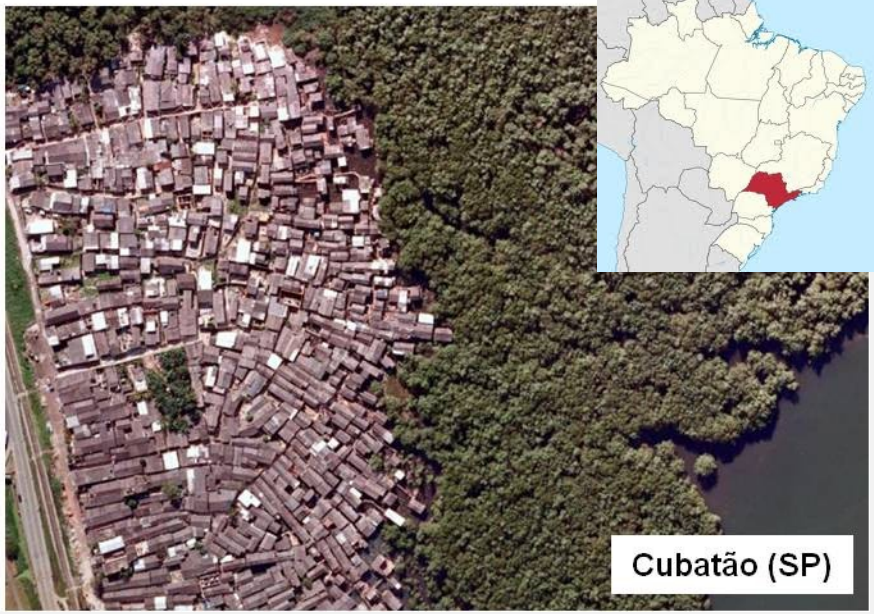


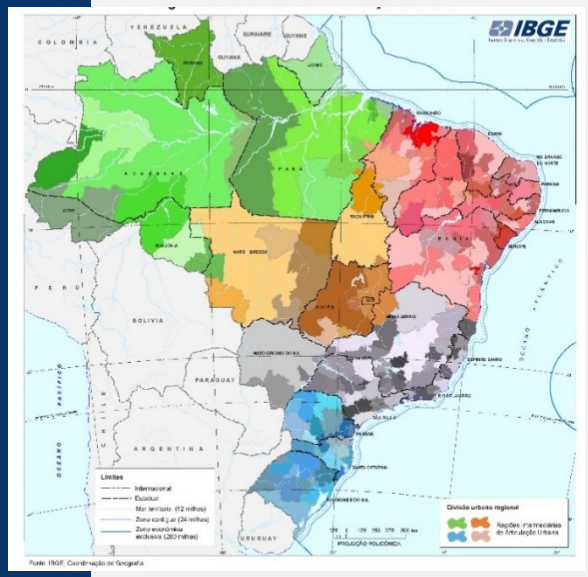




REGIONAL DIVISIONS

Geographical units formed by the grouping of municipalities, encompassing a synthetic regional setting or a specific criteria setting, such as those based on urban system or predominant rural activitiy

Mesorregiões

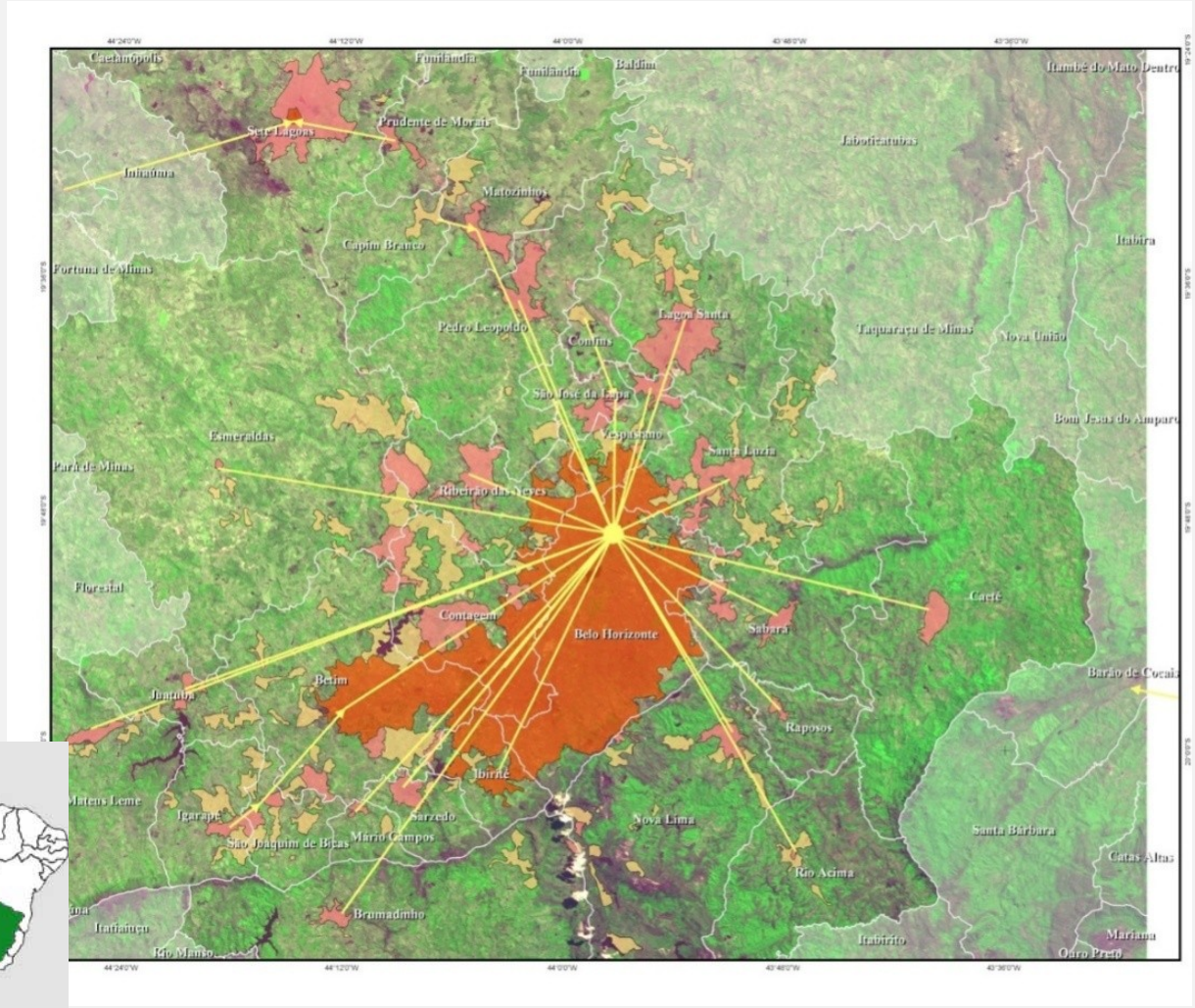


Divisão urbano regional

Semiárido e regiões metropolitanas

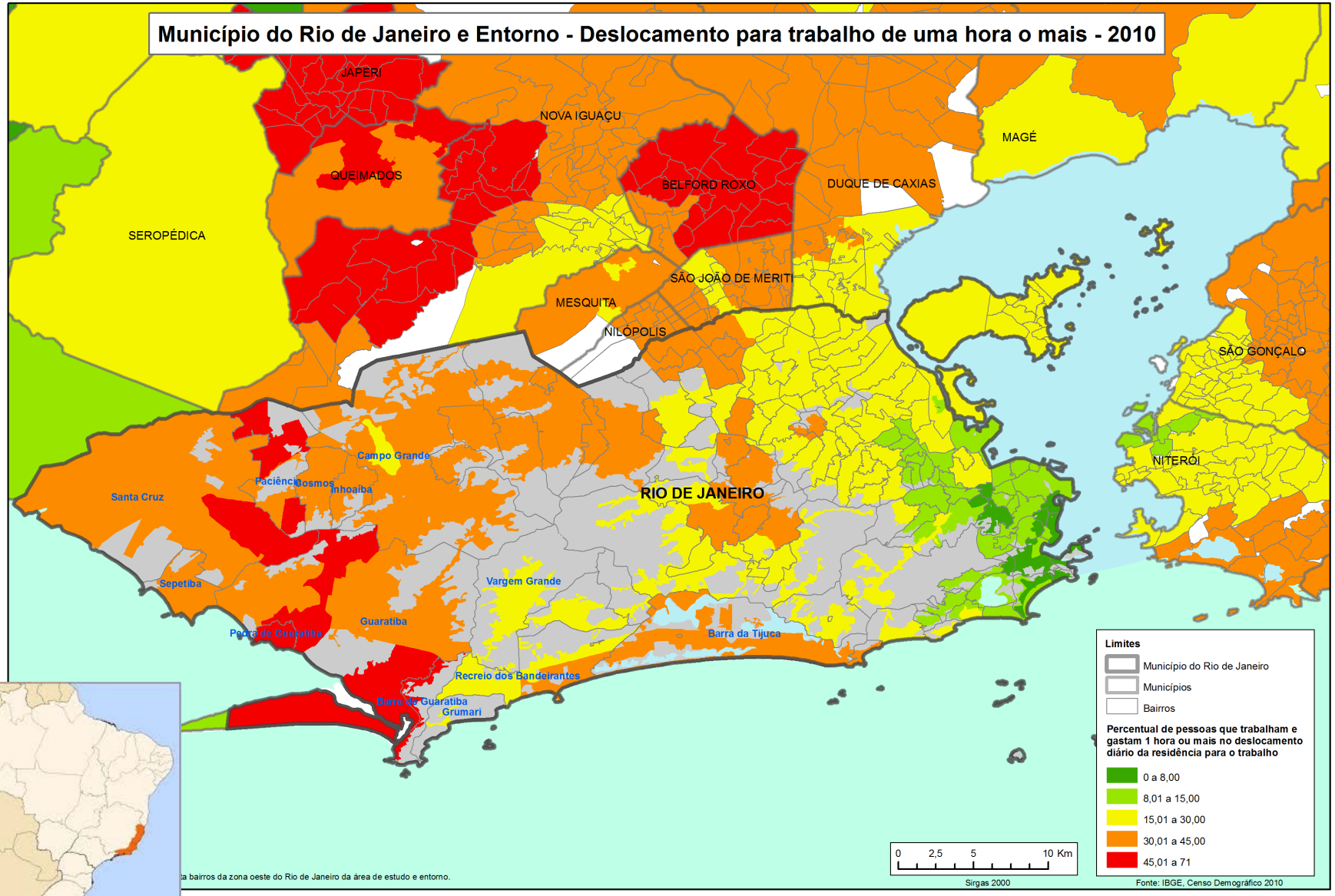
REGIONAL DIVISIONS – Urban Concentrations

In a national scale urban perspective, IBGE sets criteria for the identification of urban concentrations, allowing statistical information analysis in varied contexts and geographic scales.



Urban concentration in Belo Horizonte

REGIONAL DIVISIONS – Urban Concentrations



RECORD AND DISSEMINATION UNITS OF CENSUS AND SAMPLES

The structure of IBGE's recording for household surveys includes georeferencing by the sides of urban block adresses and point geographic coordinates in the rural enumeration areas. They both form the National Register of Adresses for Statistical Purposes.

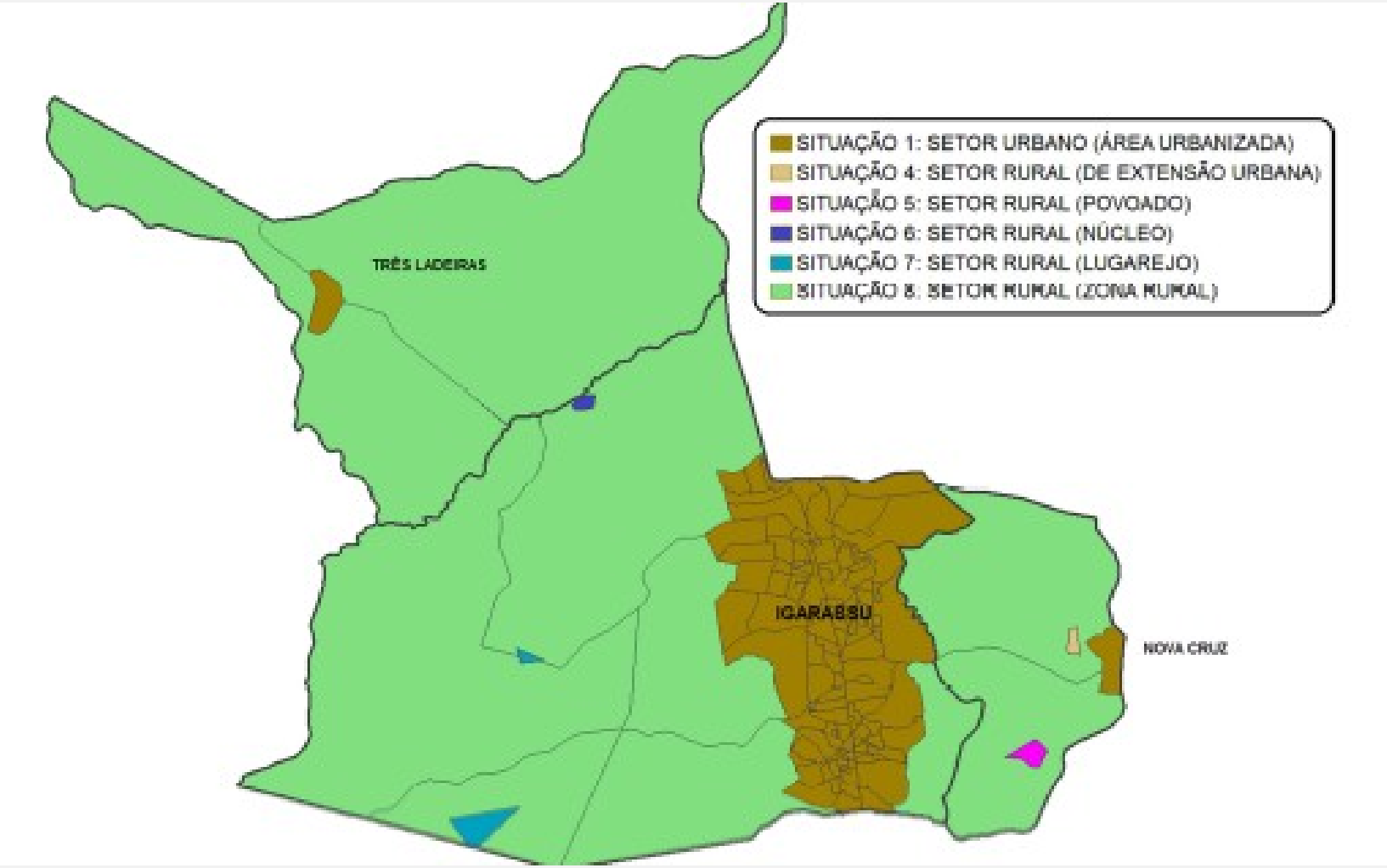
Satellite imagery

Field Surveys

Orthoimages

RECORD AND DISSEMINATION UNITS OF CENSUS AND SAMPLES

The basic spatial feature in the household surveys is the enumeration areas, the territorial unity for verifying and disseminating the statistical datasets

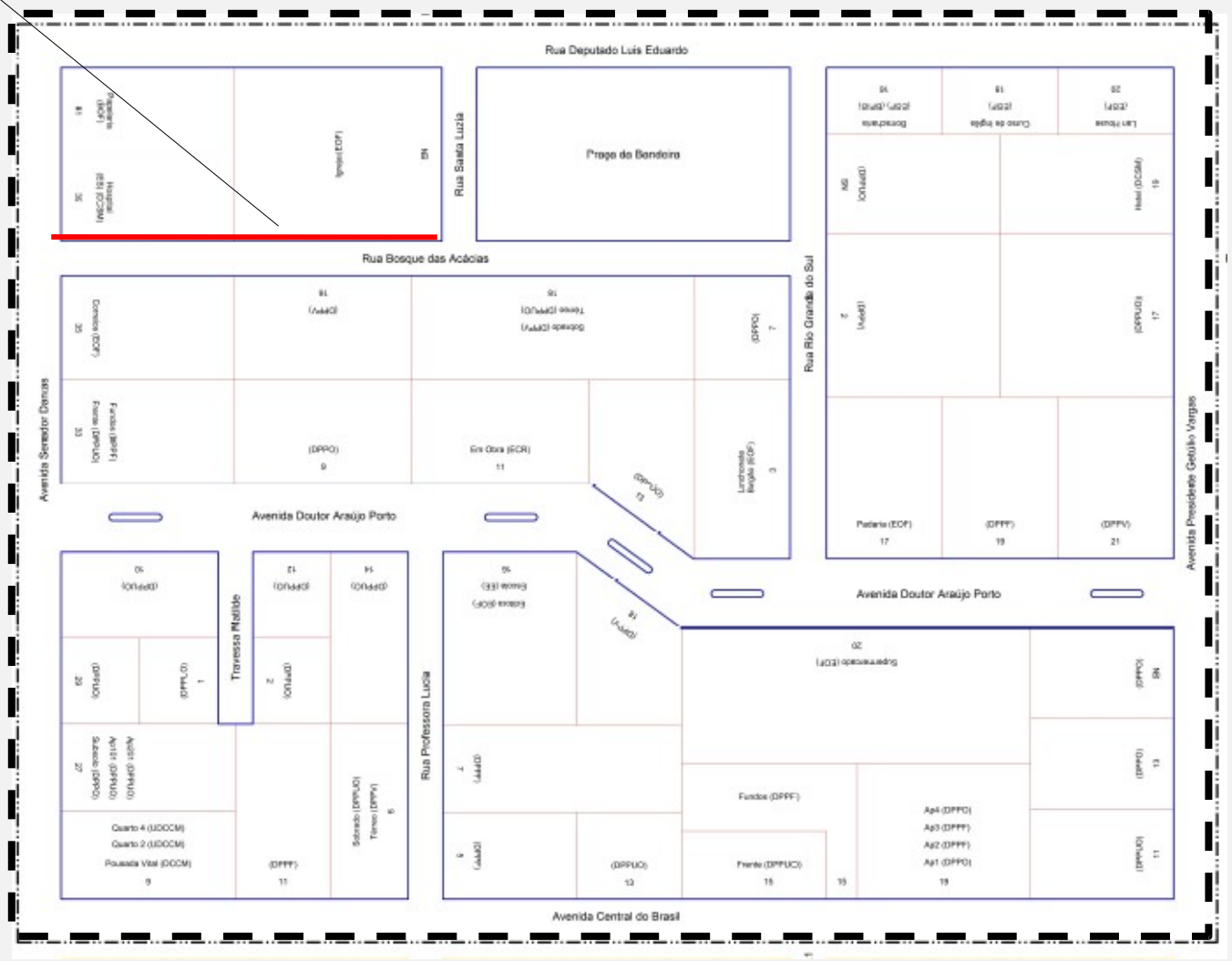


Census tracts

RECORD AND DISSEMINATION UNITS OF CENSUS AND SAMPLES

Side of urban block

enumeration areas



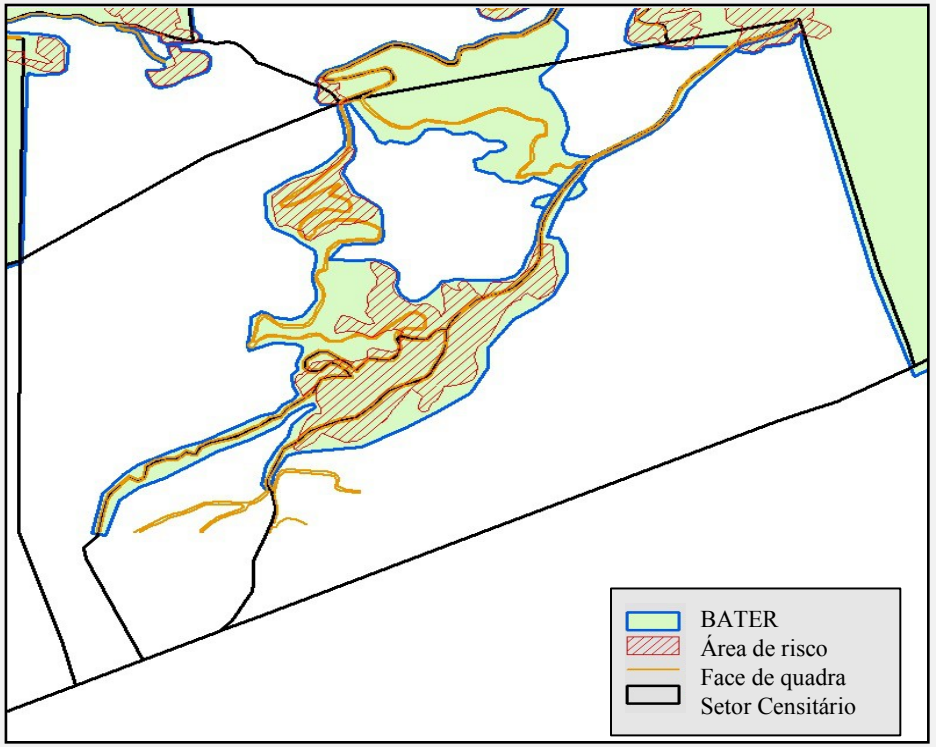
RECORD AND DISSEMINATION UNITS OF CENSUS AND SAMPLES

There are on demand custom features of territorial delimitations accounting for a more flexible statistical dissemination than the simple enumeration areas aggregation

Example: demographic census data aggregation for natural disasters susceptible areas

RECORD AND DISSEMINATION UNITS OF CENSUS AND SAMPLES

Example: use of urban block sides for the creation of a new territorial delimitation to link to demographic census data



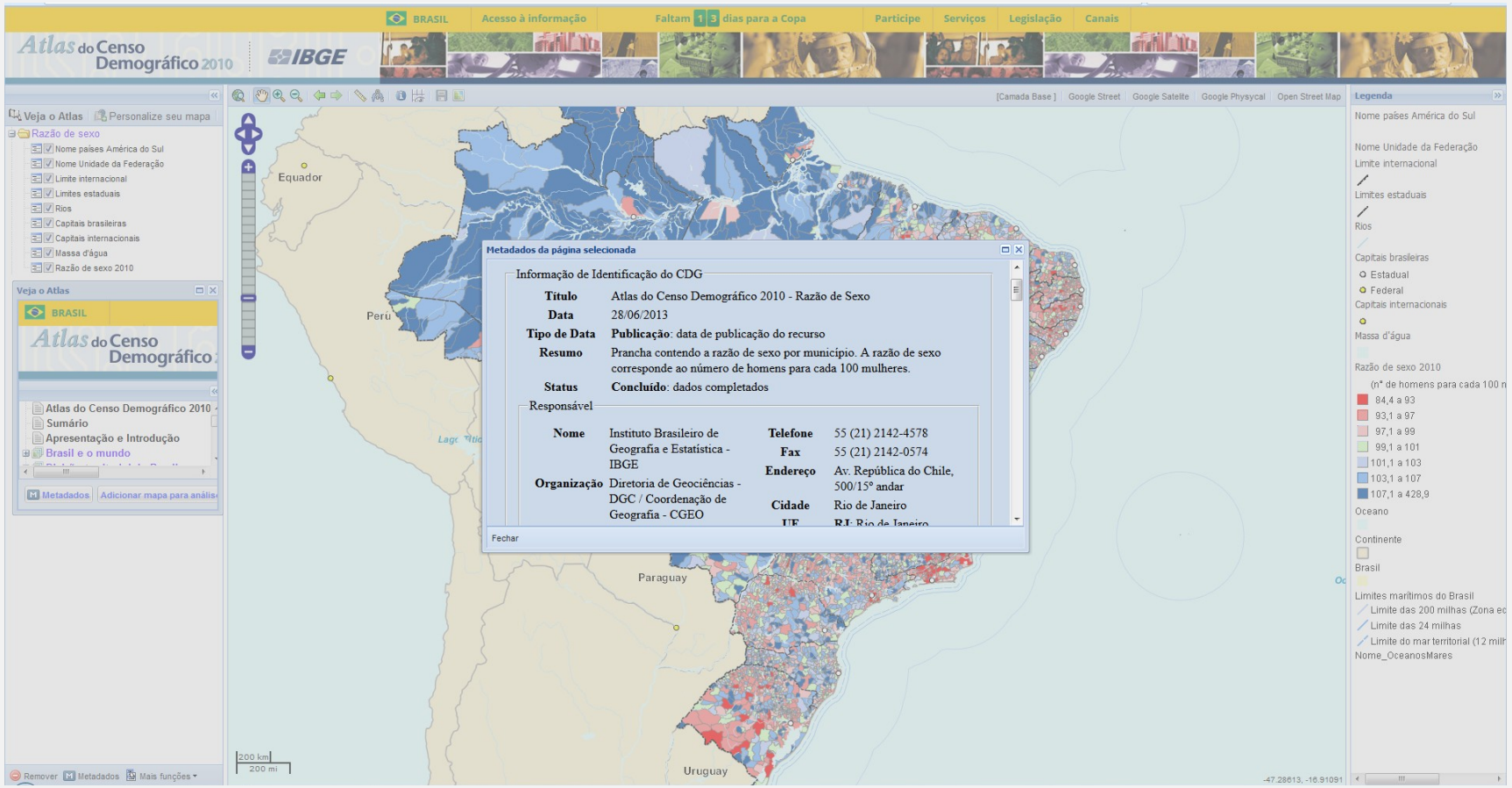
IBGE PRODUCTION AND DISSEMINATION POLICY TO GEOGRAPHIC INFORMATION

Grant public and free access to geospatial and statistical databases;

- Dissemination of the databases of all created maps;
- Statistical and geospatial metadata integration based on Spatial data Infrastructure (SDI)
- Dissemination the integrated geospatial-statistical information through a Spatial data Infrastructure standards web services

IBGE PRODUCTION AND DISSEMINATION POLICY TO GEOGRAPHIC INFORMATION

Since 2013 all geographical products released by IBGE are conform to INDE's standards and they are disseminated as location-based databases. Example: Atlas of Demographic Census 2010



DATA AND METADATA INTEGRATION

The summarized MGB profile is used to the thematic information, which is conformed to the ISO 19.115 normatization.

The file comprises:

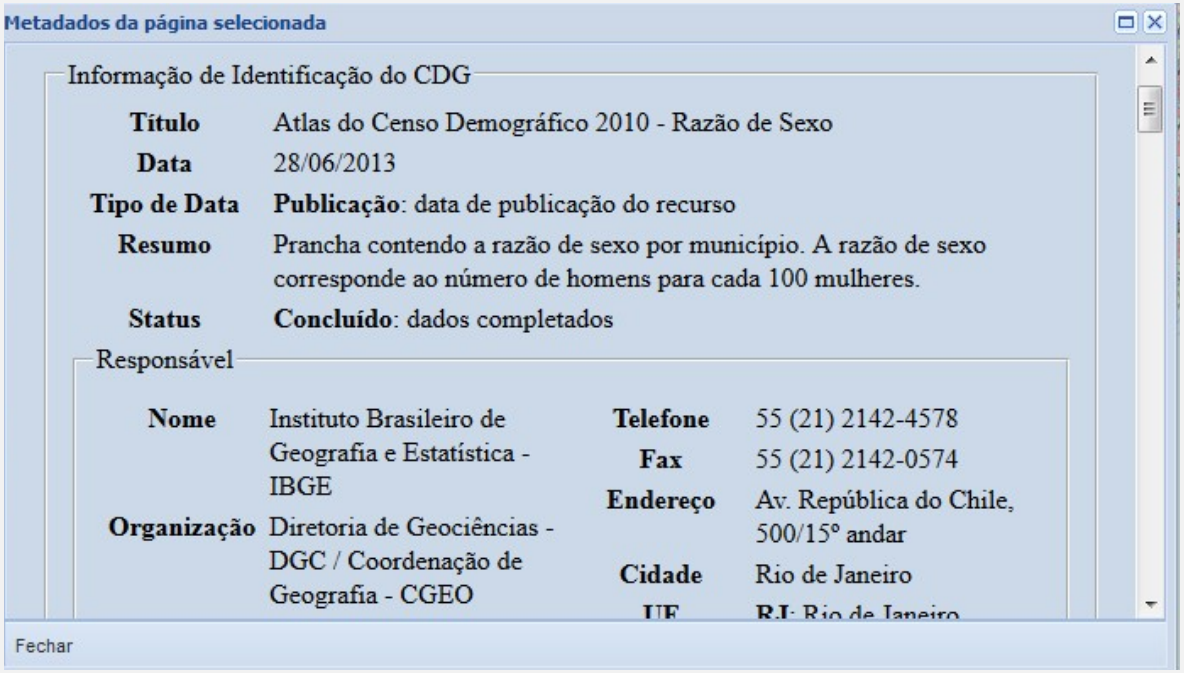
Title

Reference date

Summary

Statistical metadata

Geospatial metadata



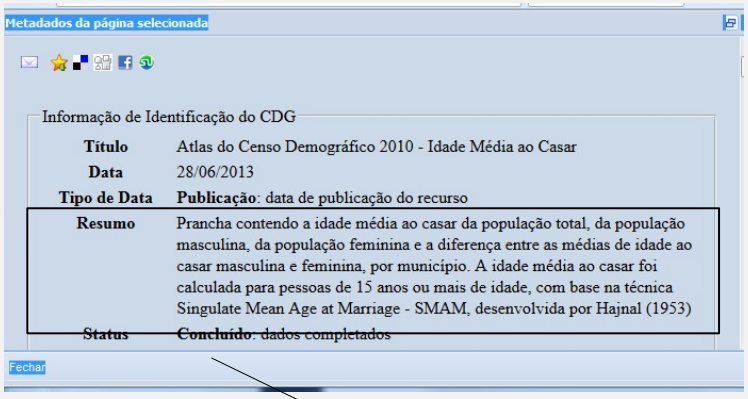
DATA AND METADATA INTEGRATION

The spatial metadata **SUMMARY** field allows the linking of statistical e geospatial metadata as a first step of the integration process.

This field has the following features:

- full name of the variable/indicator: name with exact description, following the research documentation
- calculation formulas
- notes: existing comments on the published map that are relevant to the understanding of the variable/indicator
- explanation of the terms: includes all definitions of all variables used in the mapped theme
- data source

DATA AND METADATA INTEGRATION



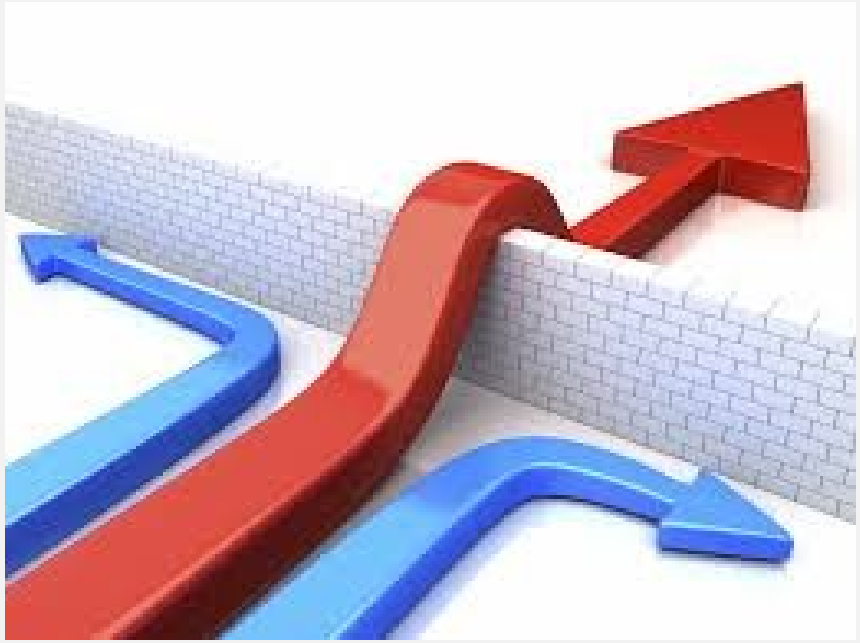
Summary field

Map containing the median age at first marriage of the total population, of the male population, of the female population and the difference between the mean age of the male and female married, by municipality.

The median age at first marriage was calculated for persons aged 15 years or older, based on the technical named Singulate Mean Age at Marriage – SMAM, developed by Hajnal (1953)

FUTURE PERSPECTIVES IN IBGE

- ✓ To continue with the policy of releasing all geospatial data as a geospatial data service attached to NSDI
- ✓ Integration of the IBGE Automatic Retrieval System (SIDRA) to the production of geospatial data service according to the SDI standards
- ✓ To improve the integration between statistical metadata and geospatial metadata.
- ✓ To develop new territorial delimitations for statistical census and sample surveys dissemination, e.g. watershed limits
- ✓ To develop grids for statistical dissemination.
- ✓ Challenge: the creation of a international standard of a integrated statistical and geospatial metadata



Thank you!