

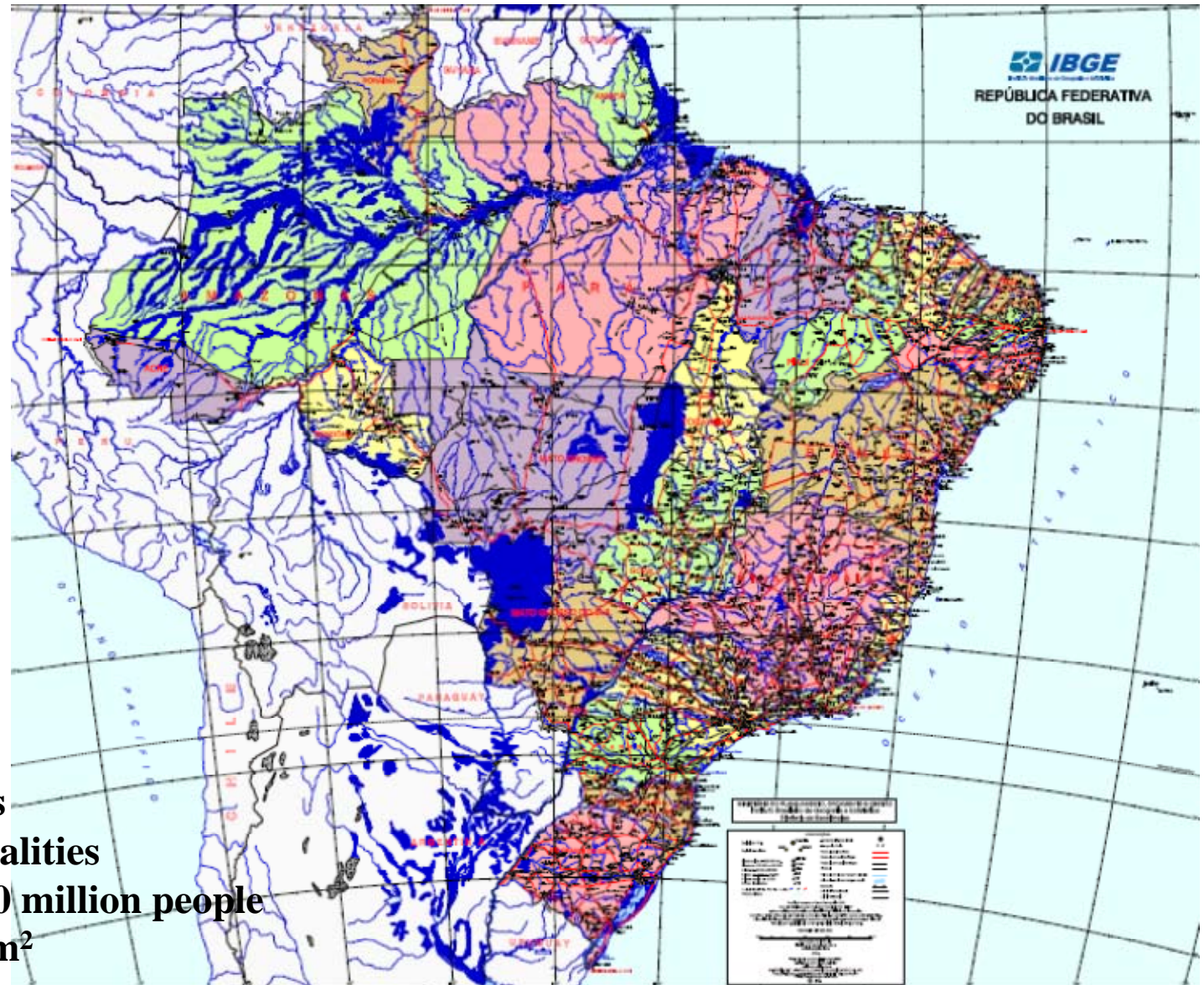


Instituto Brasileiro de Geografia e Estatística

# **2010 Brazilian Population Census Quality Control : strategy and tools**

Statistical Conference of Americas of ECLAC  
6<sup>th</sup> meeting – Dominican Republic \  
*November 16<sup>th</sup>, 2011*

# BRAZIL



- 27 State Units
- 5565 Municipalities
- more than 190 million people
- 8.5 million Km<sup>2</sup>

## TECHNOLOGY

Computer assisted personal interviews was carried out using handheld computers equipped with a GPS receiver



## INFRASTRUCTURE

Integrated digital mapping to the National Addresses File

## PROCESS

Pre-Census Operation

**new**

Data Collection: face to face interview and Internet

**new**

**Control and supervision of collection**

Sampling fractions

**news possibilities**

## Territorial Database

27 Federation Units  
(States)

5,565 Municipalities

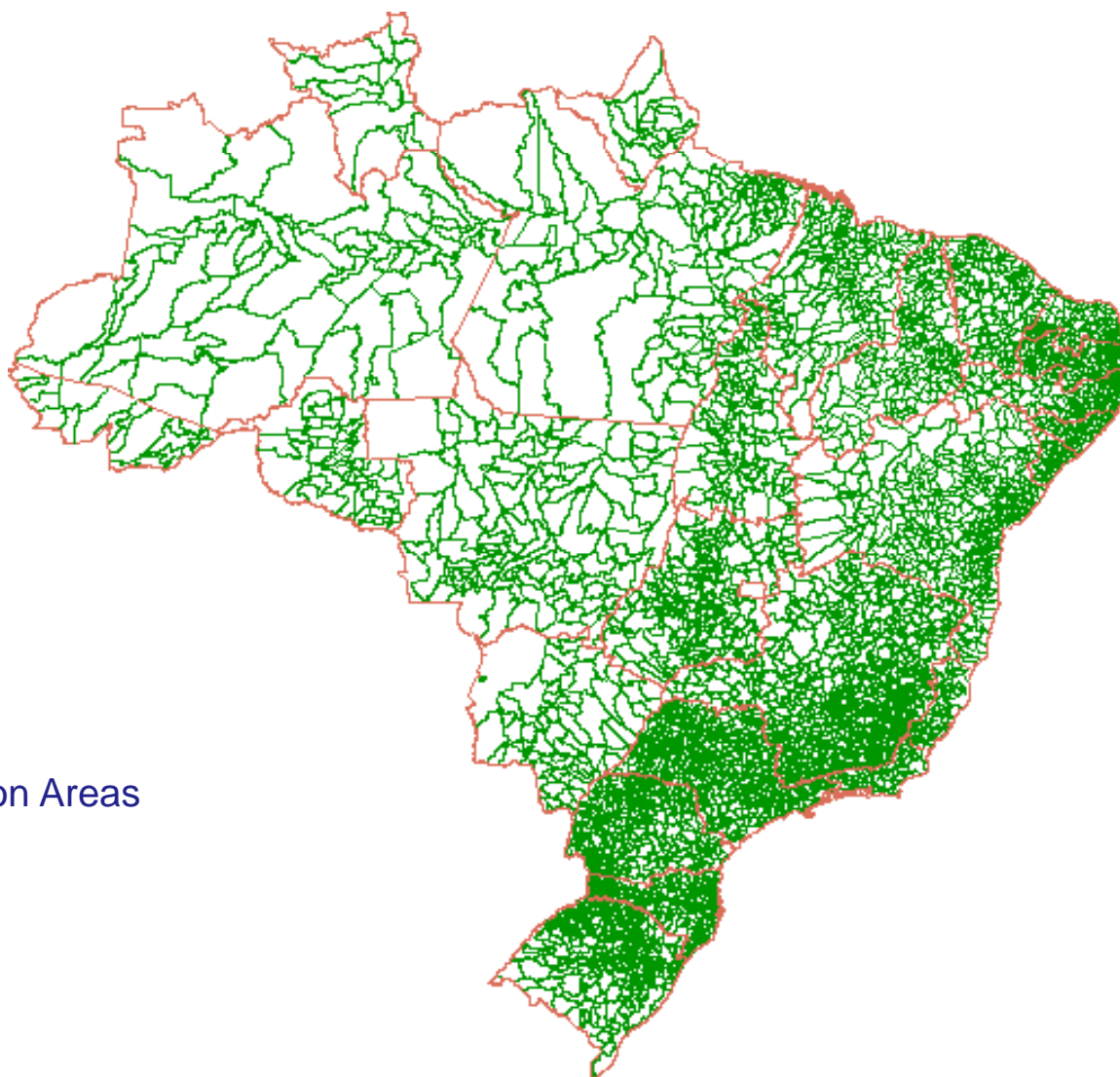
10,283 Districts

662 Subdistricts/R.A.

316,574 Enumeration Areas

240,382 urban EAs

76,192 rural EAs





## SHORT-FORM

Questions:

14 – person

23 – household



## LONG FORM

Questions:

71 – person

37 – household



- Data collection was carried out using handheld computers in a face to face mode interview (CAPI) and concurrently the National Address File for Statistical Purposes (CNEFE) was updated.
- IBGE staff was responsible for the development the Information and Communication Technology (ICT) for 2010 Census.
- 
- There was no paper questionnaire.

- Each handheld computer was equipped with:
  - Enumeration Area Map
  - list of addresses developed during pre-census operation (for the EA that this operation was done)
  - short and long form questionnaires
  - GPS
  - summary information collected to facilitate monitoring enumerator's work.
- The GPS receiver allowed the georeferencing of units in the rural areas as well the monitoring of the field operation.

- 150,000 LG-750Q, smartphones locked (Phone, 3G) to be used solely as data collection equipment and programs certified by the IBGE
- 70,000 PDA MIO-P550B (already used in 2007 Censuses)





Table – Some figures related to the 2010 Census operation

Description	Figures
Handheld computers (for data collection and supervision)	220,000
LG-750Q (smartphones locked - Phone, 3G)	150,000
MIO-P550B (already used in 2007)	70,000
Laptops	8,700
Printers	7,000
Regional Coordination	
State Units	27
Operational Area Coordinators (technical; operational; administrative and ICT)	220
Subarea Coordinators	1,281
Data Collection Stations (spread over 5,565 municipalities)	7,000

- The operation involved about 230 thousand people all over the country, including those hired on a temporary basis by means of selection processes, and employees from the permanent staff of IBGE.
- Specific training chain, from a small group of instructors to the thousand of enumerators.
- Trainees made extensive use of handheld computers, being able to develop skills related to use of such equipment as a tool.
  - digital inclusion of thousands of enumerators and Census agents

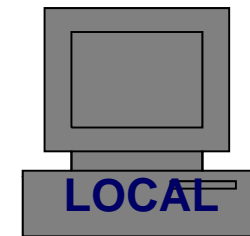
- The electronic collection allowed the introduction of editing routines implemented at the moment of the interview, contributing to the quality assurance process in data collection.
- After completing an interview, data were encrypted and could only be transferred to the IBGE through a secure network.
- Field works: 1st August to October 2010
- Last quality control of field operation: November 1st - 24th, 2010

- **7,000 Data Collection Stations**
  - ✓ Each Data Collection Stations was equipped with notebooks to operate autonomously, connected or not, to the Internet.
  - ✓ Interaction of PDAs was made solely on the notebooks of the Collection Station.
  - ✓ From this station data were send to the Central Processing.
  - ✓ In Data Collection Stations without Internet connection, communication with the Central Processing was done through USB drives (flash drives) physically carrying lots of information to some other point of Internet access.
  - ✓ One printer and WiFi router were installed in each Data Collection Station.

# **Control and supervision of collection**

- The **Management System for Data Collection Station (SIGPC)** was run on the notebook to support all decentralized operations

- to registrate enumerators
- to associate enumerator's workload
- to download collected data from the handheld computer
- to transfer data to Central Processing
- to summarize the quantitative of data collected

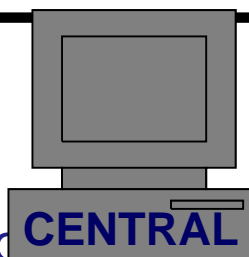




## ➤ **SIGC – Data Collection Management Indicators System**

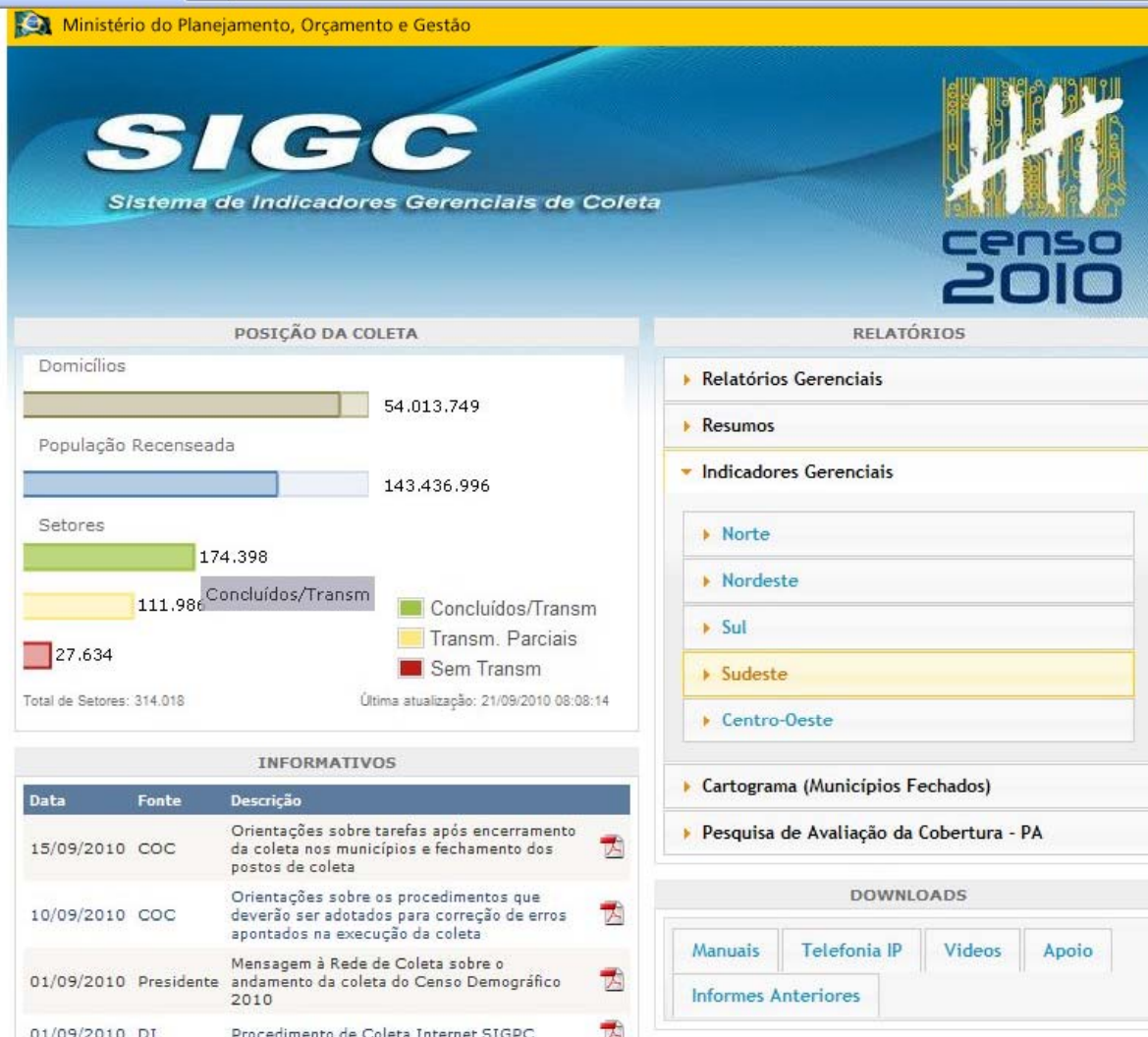
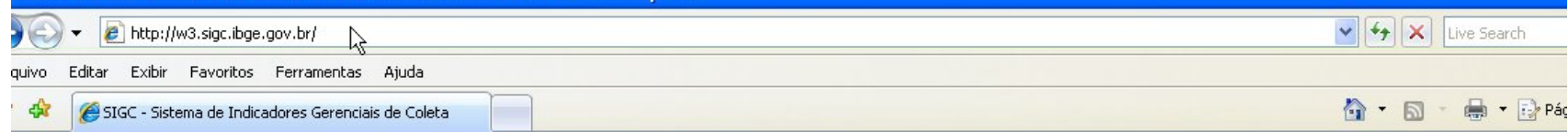
System for monitoring the data collection processing the info transmitted by SIGPC

- The evolution of fieldwork: status of EA, quantities of housing units and population enumerated
- Real time analysis enabled decision for related adjustments on operational aspects of collection process.
- Web application running in the main Datacenter that allowed to create management reports, summaries, indicators and cartograms.



- In process data collection
  - People counted per day
  - Average of people per housing unit
  - Rate of men on the total counted
  - Occupied private housing units
  - Rate of occupied private housing units in the sample
  - Difference between average of people in housing unit and out of the sample
  - Rate of people who informed the month and year of birth
  - Rate of people under 3 and over 69 years old on the total of counted people
- Concluded data collection
  - Occupied private housing units
  - Number of unities registered (residential or not)
  - Rate of occupied private housing unit without interview and vacant
  - Rate of dwellings of “occasional use”

SIGC - Sistema de Indicadores Gerenciais de Coleta - Windows Internet Explorer



## Programmed Supervision - automatic procedures



- A supervision system was developed providing a tool for evaluating the enumerators' work quality
- This task was performed by the Supervising Census Agent.
- The system periodically was fed by collection-produced information. The programmed supervision automatic selection of housing units was run on the handheld computer
- The supervisor did up to 3 request per Enumeration Area, depending on the type of EA (1 to 3 in urban area and one at the end of the data collection in rural area), the management indicators and the results of previous visits

### Indicators

- Visited Units
- Components of Address: included, excluded and confirmed
- Summary dwellings: Occupied, closed, vacant and occasional use
- Questionnaires: short and long form
- People Registered: Total persons, sex, age (<3, >69),
- Results of Supervision: Interviews, units confirmed, inclusions and omissions
- Internet Data Collection

- Through the access code on SIGPC, the EA was chosen
  - Print out of data collected by the enumerator: address, type of unity, type of form (long or short) and people by sex.
  - The supervisor returned to the area to check the information
  - In case of divergence the information is corrected and added on the PDA



### Indicators

Visited Units

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Internet Data Collection

- Protocol - Management report
  - Analysis and evaluation of field operation for each municipality
    - summary of population and housing units indicators
    - demographic analysis and comparisons with previous Censuses
  - Signed by the technical coordinator
- Presentation the preliminary results to the Municipal Commissions of Geography and Statistics (CMGEs)
  - a channel of communication and dialogue between IBGE and local administrators, giving greater transparency to the work of the 2010 Census
- Brazilian Population
  - First results released: Nov 29<sup>th</sup>, 2010 – Population: **190,732,694**
  - Final results released: April 29<sup>th</sup>, 2011 – Population: **190,755,799**

# Conclusion on the Municipality



http://w3.sigc2010.ibge.gov.br/N2010-RJ.nsf/11b5678e277a74ec03256d080065efaa/e5f0d576e8336fb983 - Windows Internet Explorer

http://w3.sigc2010.ibge.gov.br/N2010-RJ.nsf/11b5678e277a74ec03256d080065efaa/e5f0d576e8336fb9832577880039e27d?OpenDocument

Arquivo Editar Exibir Favoritos Ferramentas Ajuda

http://w3.sigc2010.ibge.gov.br/N2010-RJ.nsf/11b56...

Censo 2010

**ENCERRAMENTO DA COLETA NO MUNICÍPIO** Cancelar

UNIDADE DA FEDERAÇÃO RIO DE JANEIRO	CÓDIGO DA UF 33
MUNICÍPIO APERIBÉ	CÓDIGO DO MUNICÍPIO 00159
STATUS DO MUNICÍPIO Concluído	

**RELATÓRIOS**

(É obrigatório visualizar o relatório gerencial)

RELATÓRIO GERENCIAL

**OBSERVAÇÕES - COORDENAÇÃO TÉCNICA**

**ASSINATURA COORDENADOR**

sigc Censo2010

Fecha Municipio? ☐ Sim ☒ Não

# Closing Municipality

## Indicadores Gerenciais Municipais

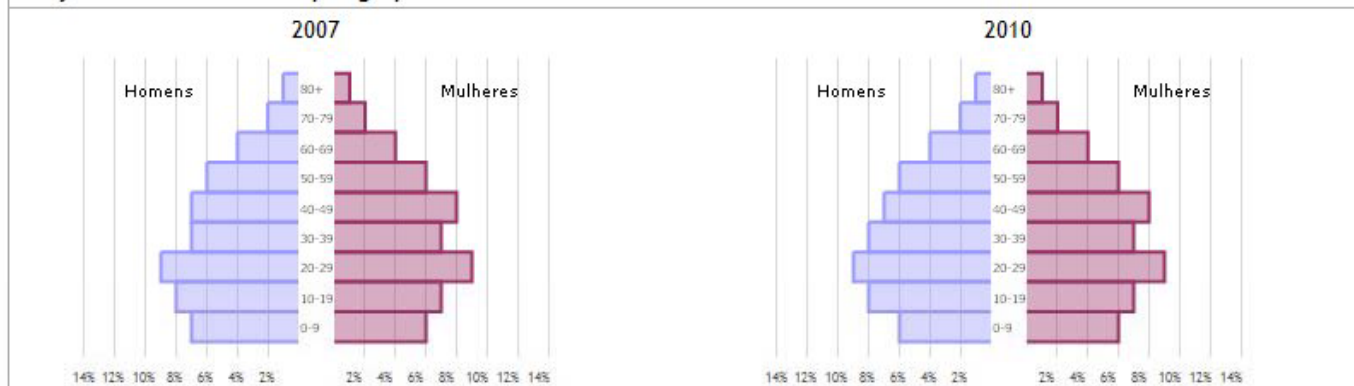
Município: 3300159 - APERIBÉ

Subarea: 33031

Setores por Status na Coleta						
Total	Não Inic.	Em andam.	Paralisado	Conduido	Supervisionado	Liberado ACM.
16	0	0	0	0	0	16
-	0%	0%	0%	0%	0%	100%

	TOTAL	%
<b>População Recenseada</b>	10.064	-
<b>População recenseada por sexo</b>		
Homens	4.950	49,19
Mulheres	5.114	50,81
<b>População recenseada por tipo de questionário</b>		
Básico	8.026	79,75
Amostra	2.038	20,25

Gráfico - Pirâmide Etária por grupos decenais



<b>Taxas e Indicadores Demográficos</b>	1991	1996	2000	2007	2009	2010
População total	0	7.197	8.018	8.820	9.556	10.064
Média de moradores por domicílio	0	3,43	3,21	3,05	-	2,95
Razão de sexo	0	98,65	97,73	99,25	-	96,79
Razão de dependência	0	0,55	0,48	0,43	-	0,43
Taxa de crescimento anual	-	-	2,74	1,6	-	4,5
Taxa de urbanização	0	0,71	0,85	0,61	-	0,87
Percentual de pessoas com mais de 69 anos	0	5,21	5,76	6,39	-	6,53
Percentual de pessoas menores de 3 anos	0	5,67	8,15	5,01	-	3,03



<b>Domicílios Particulares</b>	1991	1996	2000	2007	2010
Domicílios Particulares Permanentes Ocupados	0	2.097	2.457	2.889	3.406
Domicílios Particulares Improvisados Ocupados	-	2	0	15	7
Domicílios Fechados	0	0	3	3	5
Domicílios Vagos	0	283	455	474	238
Domicílios de Uso Ocasional	0	45	108	121	101
<b>Domicílios Coletivos</b>					
Domicílios Coletivos com Morador	0	1	5	1	1
Domicílios Coletivos sem Morador	-	-	-	-	1

<b>Questionários</b>	Básico	Amostra	Total
Em Domicílio Particular Ocupado (Permanente e Improvisado)	2.721	692	3.413
Em Domicílios Coletivos com Morador	7	2	9
Total de Questionários	2.728	699	3.422
	Total	%	
Questionários com preenchimento pendente	0	0	

Population	190,755,799
Housing units surveyed	67,569,688
Occupied housing units (with interview)	56,573,419
Non-interviewed housing units	899,152
Not occupied housing units	6,163,846
Seasonally vacant housing units	3,933,271



## ➤ November, 2011

- 2010 Population Census: characteristics of the population and of the households: results of the universe
- 2010 Population Census: municipal social indicators
- 2010 Population Census: results by enumerating area
- 2010 Population Census: preliminary results of the sample
- 2010 Population Census: results viewed in web application
- National Address File for Statistical Purposes

## ➤ December, 2011

- 2010 Population Census: “aglomerados subnormais”

- 2012 – Dates will be published until the end of 2011
  - 2010 Population Census: characteristics of the urban households and their surroundings
  - 2010 Population Census: sample results
  - 2010 Population Census: microdata of the sample
  - 2010 Population Census: Atlas
  - 2010 Population Census: characteristics of the indigenous people
  - 2010 Population Census: sample results - thematic volumes
  - 2010 Population Census: Atlas (sample results)
  - 2010 Population Census: Methodology

**Gracias!**