

Contemporary developments in census-taking

the 2010 Brazilian Census and beyond

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Outline

- About Brazil and IBGE
- The 2010 Census
 - Census in figures
 - Innovations
 - ICT model
 - Use of handheld device
 - Internet data collection
 - Data Collection Management Indicators System
- Beyond 2010
- Cost reduction Considerations
 - In what extent does technology help to reduce cost of Census?
 - Strategizing choice of tools

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About Brasil

- Federation: 26 states and a DC
- Area: 8,5 million km²
- Forrest area: 61% of the territory
- Population in 2014: 202 million
- Density: 22.48 inhab/km²

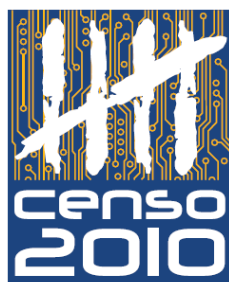
About IBGE

- Brazilian Institute of Geography and Statistics
- Federal Government institution
- Production, analysis and dissemination of statistical and geographic information
- Coordinator of the Statistical System
- National School of Statistical Science
- Natural Reserve (Roncador)



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The 2010 Census in figures

UNIVERSE TO BE ENUMERATED: the whole Brazilian territory

MUNICIPALITIES: 5,565

HOUSING UNITS: 67,5 million

ENUMERATION AREAS: 314,018 enumeration areas

HIRED AND TRAINED PERSONNEL

- more than one million persons enrolled in the selective process
- about 230 thousand hired (for collection, supervision and administrative support)

TECHNOLOGY:

- 220 thousand handheld computers equipped with GPS receivers
- 8,700 laptops
- broadband communication system

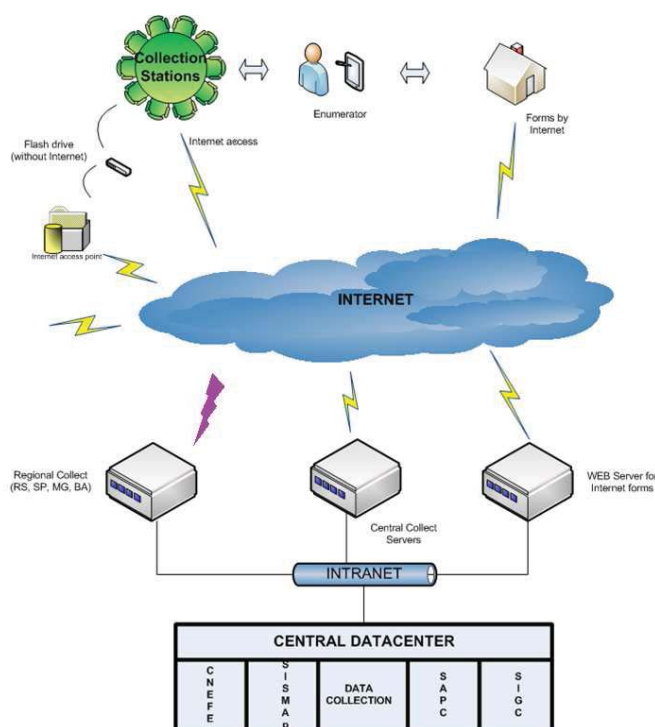
CENSUS OPERATING UNITS:

- 27 state units
- 222 Areas
- 1 281 Sub-area Coordinating Departments
- about 7 thousand digitized data collection units

Innovations

- Census mapping was changed from analog to digital.
- Use of GPS to reference buildings and other physical elements.
- Integration of cartography and address file.
- Handheld devices for data collection and supervision.
- Internet data collection.
- Data Collection Management Indicators System

ICT model



Handheld devices for data collection and supervision

- Immediate quality control at the moment of data entry
- Control of questionnaire filling (automatic jumps and compulsory items)
- Allow use of GPS
- Help automatic coding
- Reduce burden/cost of printing/transportation of questionnaires and data capture
- Allow controlling sample fraction



- Increase need of skilled enumerators
 - Add in the content of training
 - Dependent on internet connection
- High cost to be used only in a census
 - Become obsolete rapidly

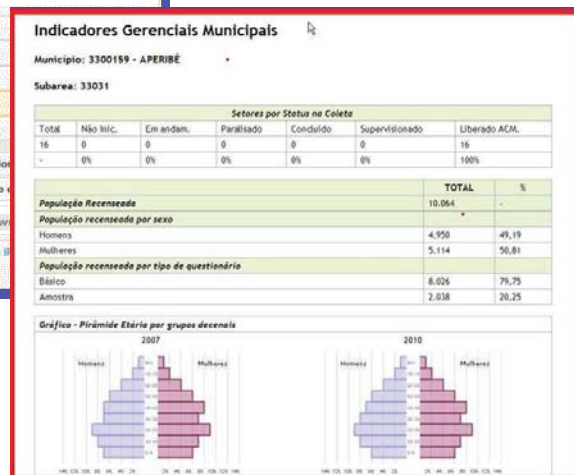
Internet data collection

- Developed as a complementary system for housing units where meeting residents were difficult
- The enumerator delivered the info and access code to the online questionnaire (long or short form)
- Requires a sophisticated control system to avoid duplications and underenumeration.



35,000 questionnaires
(102,000 person)
were collected via Internet

Data Collection Management Indicators System



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Beyond 2010

Pilot Test of a Rolling Census + Continuous National Household Survey

- Keeping improving technology

2015 Agriculture Census and 2016 Population Count

- New handheld devices (bigger screen, faster, more memory etc.)
- New application systems (friendlier design, selected indicators etc.)
- Data transfer directly to Central Data Center
- More intensive use of internet data collection

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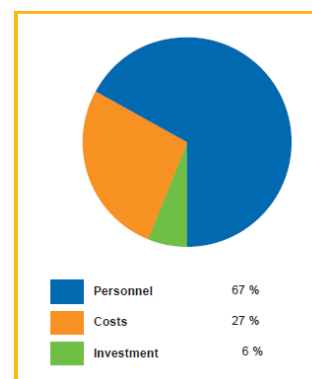
In what extent does technology help to reduce cost of Census?

Save money in...

- Planning: virtual meetings, cost of communication
- Printing and transportation
- Training: allow self-learning
- Collection in remote areas (allow to assign more than one EA per enumerator)
- Supervision and controls: reduces need of field work
- Dissemination = more + better + cheaper

However...

- In practice may not reduce personnel



Cost of 2010 Brazilian Census
US\$889 million (US\$ 4.70 per person)

Strategizing choice of tools

- Using enumerators own device
 - Feasibility: 70% of the Brazilians have cell phone (2011)
 - Application developed in house = flexibility
 - Security of the OS and security due to multiple applications running
 - Interest: may be planned reuse devices in public schools, health agents etc.
- Using Free Software
 - Free tools for the whole operation, but do they meet the needs?
 - Vulnerability of the system
 - Risk of clash: instability of the application
 - Lack of support
 - Government policy, already existing licenses/contracts

Thank you!

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