

The 2010 Census – Successful Because of GIS

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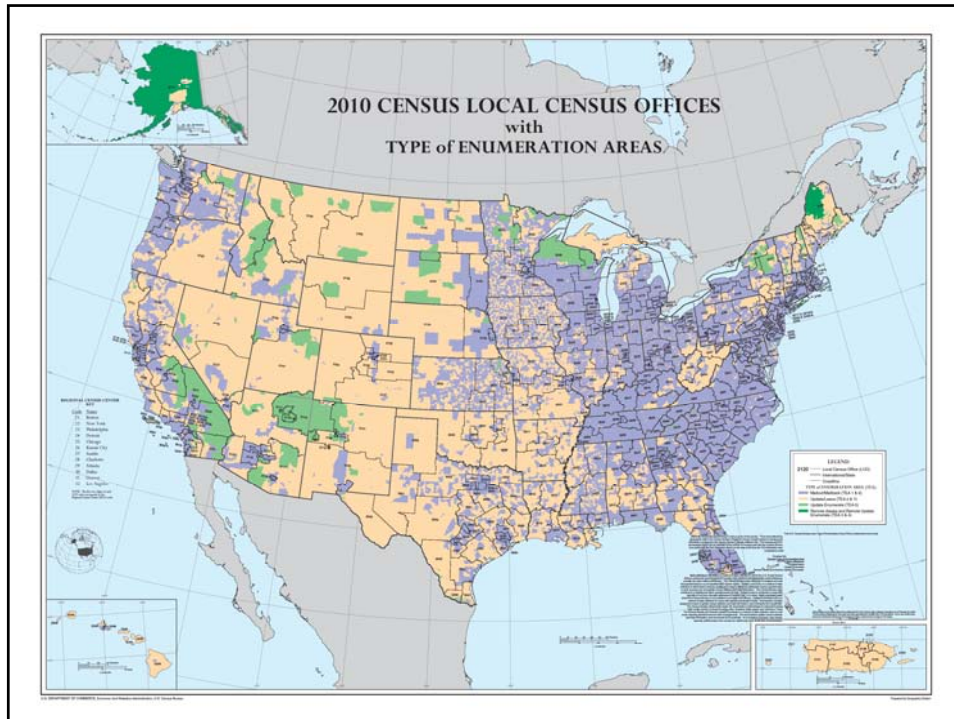
Establishing the Framework of the Operation

*Counting Everyone Once –
and Only Once – and In the Right Location*

- ↖ **Everyone** is associated with a Housing Unit (HU)
- ↖ **A Location** is an **address** or a location description
- ↖ The preferred method is to count people using a mailout/mailback system for the questionnaire
- ↖ Need to know the location of each address
- ↖ Some do not have a mailing address that can be assigned to a location
 - RFD #1
 - P.O. Box

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At headquarters...

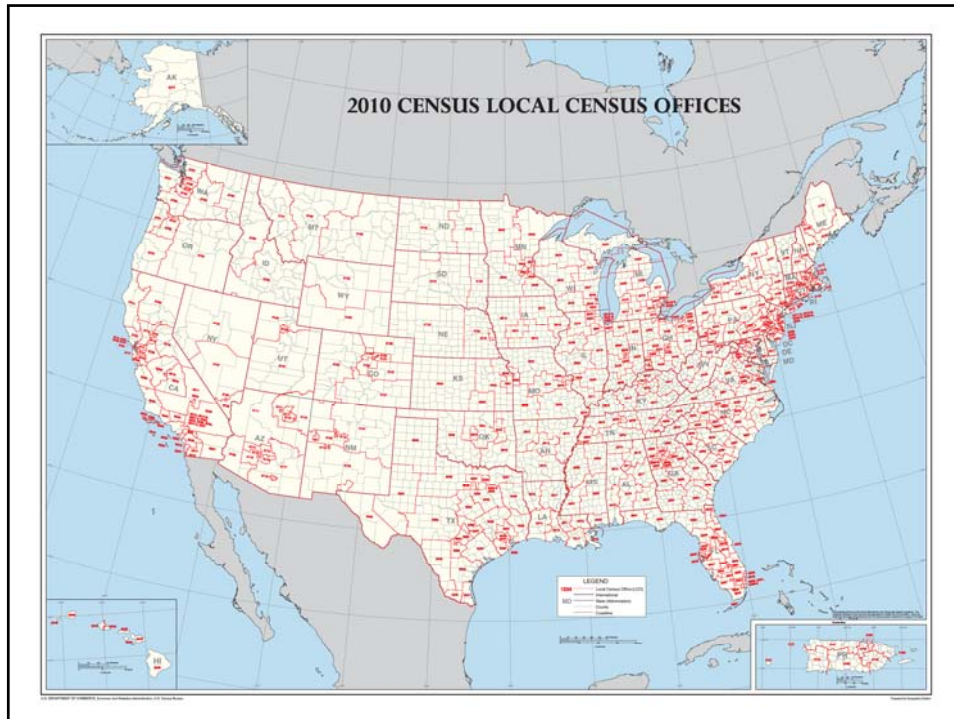
↳ Geography Division divides all of the U.S., P.R. and the Island Areas into geographic areas that help manage the census operations

- Collection blocks – bounded by visible features – 6,716,034
- Production Rate Areas
- Assignment Areas (AA) – 730,920
- Crew Leader Districts (CLD) / Field Office Supervisor Districts (FOSD) – number varies by operation
- Local Census Offices (LCO)- 494

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So how do we do this?

We use GIS to delineate geography and locate offices

↳ AAs

- Determine criteria
- Using ArcGIS we let the computer automatically draw the boundaries
 - Some didn't look too good
 - Some weren't practical
- Then geographers in the Regional Offices around the country reviewed and revised the boundaries to meet their local needs.

↳ LCOs

- Temporary office space was needed
- Location criteria
 - Reasonable distribution of workload
 - Central location
 - No LCO could be in more than one Congressional District

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Meanwhile ...

- ↖ We are hiring lots of people – 1.4 million temporary workers
- ↖ Will recruit over 3.8 million applicants
- ↖ Applicants will be geocoded to their home
 - This allows an enumerator to be assigned an area close to where they live and are familiar with

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Conducting the Address Canvassing Operation

- ↖ March 30 – July 17, 2009
- ↖ 140,000 enumerators walked every street in the U.S. to:
 - Verify their assigned address list
 - Add or delete new or non-existent addresses
- ↖ The field operation successfully completed one week early!

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Group Quarters Validation

↳ Mission

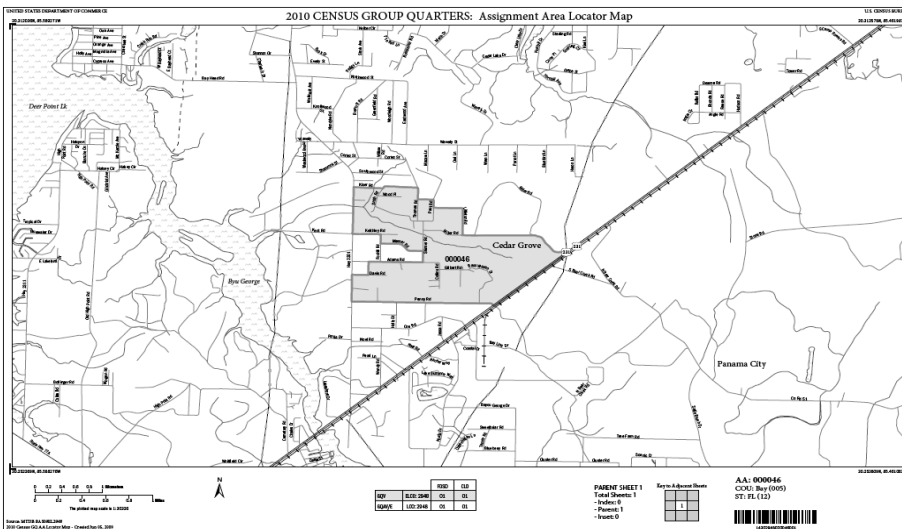
- Verify existing Other Living Quarter (OLQ) addresses
- Validate addresses
- Classify validated Group Quarters (GQ)

↳ Approximately 620,000 OLQ's

↳ Operation provides updated addresses and spatial information to the MAF/TIGER

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How do we do this?

- ↖ In the past enumerators had a paper map and an oversized address register
- ↖ For 2010 enumerators used a handheld computer (HHC)



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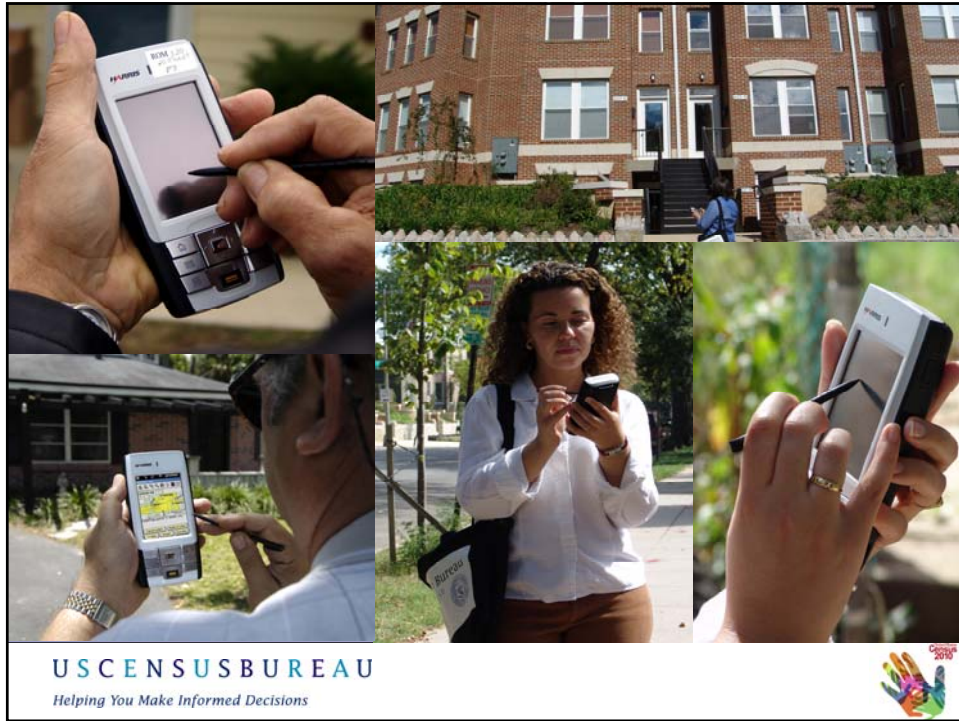
The Handheld Computers

- ↖ MAF/TIGER data was used for address and spatial data
- ↖ The device had the assignment area and the detailed information to get them to each address on the screen
- ↖ There is GPS capability to capture the location of each HU in the country
- ↖ Visualization of the data was done using ArcPad

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One device for...

The HHC was the enumerators one and only tool

- Wireless capability
- Allowed them to communicate with their Crew Leader via controlled text messaging
- Let them complete and transmit their timesheets each day
- And most importantly, the HHC allowed for the sending and receiving of assignment area data

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Now that the data has been transmitted back to HQ...

↩ Geography Division receives the HHC updates to MAF/TIGER

- Automated approach using our **Batch Feature Update Software**
- Sounds simple but there are lots of steps and pieces to manage

↩ Now we have an address list that goes to label tapes for the questionnaire mailout

↩ And spatial updates for use in subsequent operations

- GQV, GQAV/E, CCM, NRFU, FV, U/L, U/E, ETL

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Meanwhile...

During all of this time we are conducting a series of geographic partnership programs

- LUCA
- BAS
- PSAP
- TSAP
- New Construction
- School Districts
- Redistricting Data Program

We are providing spatial data (shapefiles) and tools for our partners

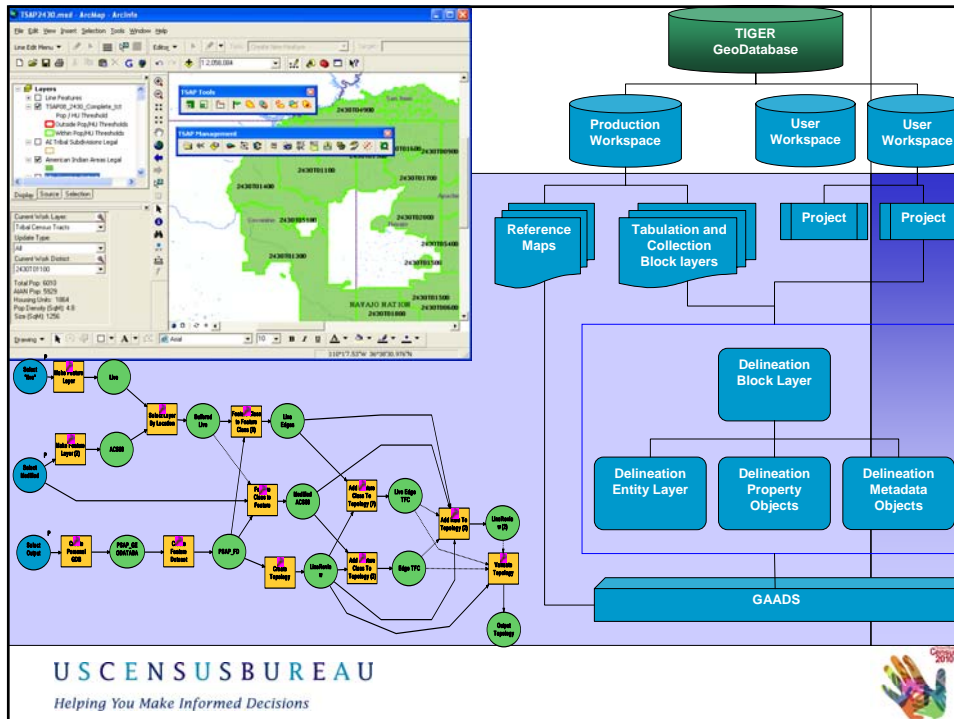
- MTPS (MAF/TIGER Partnership Software)
- ESRI ArcGIS Extension

BFUS prescrub

- Model Builder and ArcObjects

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Investment relationship with ESRI

- ↩ Enterprise license
- ↩ Enterprise contract
- ↩ On-site support contract

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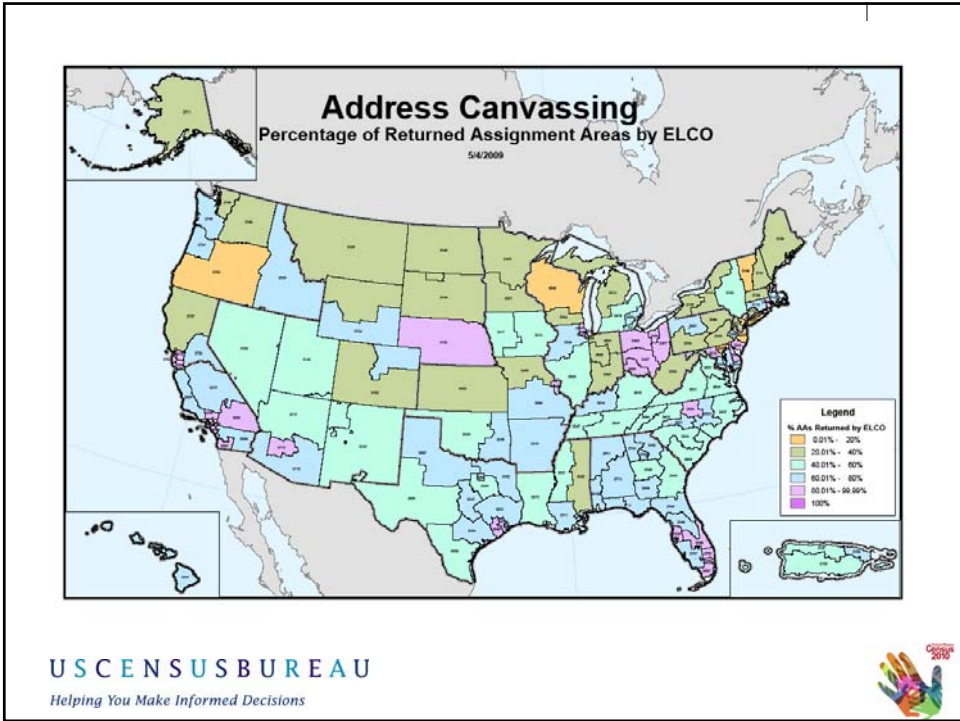
Management Tidbits for Census Operations

- ↩ Daily count of temporary hires
- ↩ Cost and Progress report daily
- ↩ Inventory management

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Unanticipated Events

- ↖ We have to have contingency procedures to deal with the unexpected
- Red River Flood
 - Water main break
 - Power outages

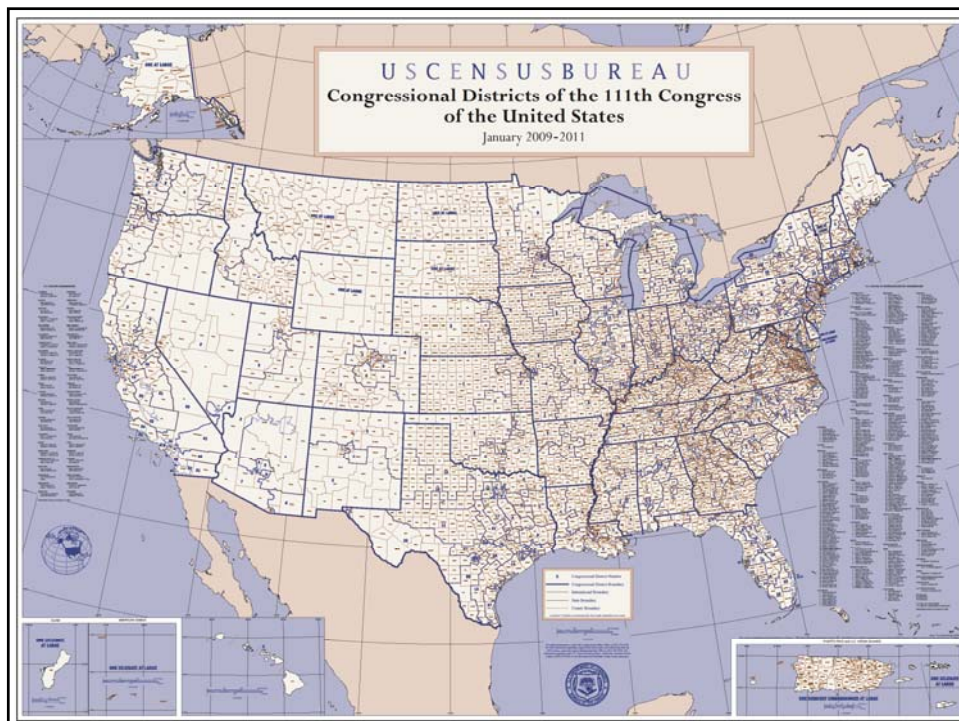
And now what?

- ↖ Lots of other operations
- ↖ Volume of work is variable
- ↖ Tabulation
- ↖ Reapportionment
- ↖ Dissemination
- ↖ Redistricting



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Commissions and Working Groups of the ICA

COMMISSIONS

Cartography and Children
 Digital Technologies in Cartographic Heritage
 Education and Training
 Generalisation and Multiple Representation
 Geospatial Analysis and Modeling
 Geospatial Data Standards
 Geovisualization
 History of Cartography
 Management and Economics of Map Production
 Mapping from Satellite Imagery
 Map Projections
 Maps and Graphics for Blind and Partially Sighted People
 Maps and Society
 Maps and the Internet
 Marine Cartography
 Mountain Cartography
 National and Regional Atlases
 Planetary Cartography

Theoretical Cartography
 Ubiquitous Mapping
 Underrepresented Groups and Cartography
 Use and User Issues

WORKING GROUPS

Art and Cartography
 Cartography in Early Warning and Crisis Management
Census Cartography
 GIS and Sustainable Development
 Mapping Africa for Africa
 Open Data Access and Intellectual Property Rights
 Tourist Cartography

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Census Cartography Working Group

↖ Mission:

- Shares and exchanges information on mapping methodologies that support censuses and statistical surveys
- Encourages the use of new technologies and approaches supporting census mapping
- Serves as a forum for census cartographers and organizations that promote census mapping activities

↖ Upcoming Events

- Business meeting at ICC 2009 in Santiago, Chile
 - November 15 - 21

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The World's geospatial solutions

24th
INTERNATIONAL
CARTOGRAPHY
CONFERENCE

NOVEMBER, 15 - 21, 2009
SANTIAGO, CHILE

icc2009
International Cartography Conference

The poster features a composite image of a rugged mountain range with snow-capped peaks and a topographic map overlay. The text is arranged in a clean, modern layout with a black background on the right side.