

North Carolina Geographic Information Coordinating Council

Census Bureau Geographic Partnership Programs

Introduction – Greg Hanks

Geographic Support System Initiative (GSS-I) - Peter Virgile

Local Update of Census Addresses Program (LUCA) - Brian Timko

Participant Statistical Areas Program (PSAP) - April Avnayim

Redistricting Data Program (RDP) - James Whitehorne

Boundary and Annexation Survey (BAS) - Laura Waggoner

May 15th, 2014

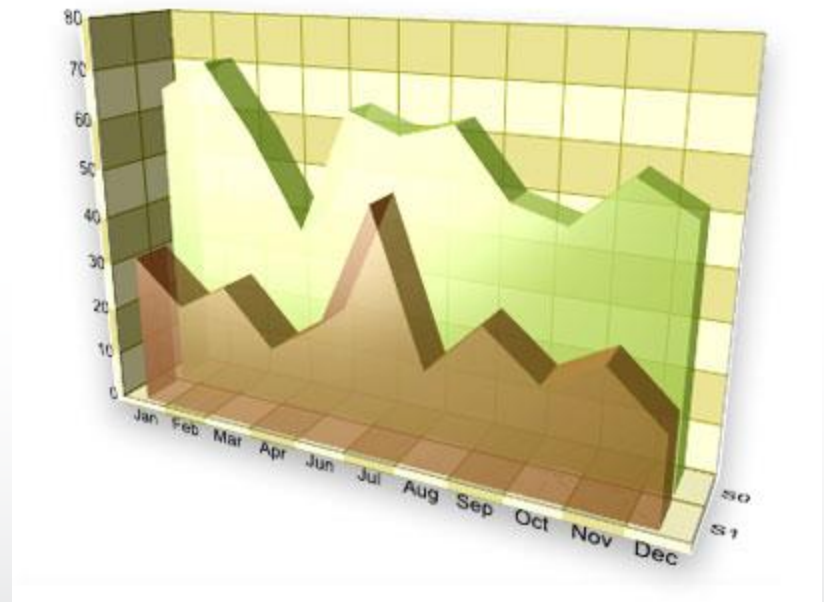
The Decennial Census

- Count of the entire U.S. population
- Mandated by the U.S. Constitution
- Conducted every 10 years (since 1790)
- Data determines the number of seats in the House of Representatives



How Census Data is Used

- Apportionment of Congressional seats
- Appropriation of Federal funds to state, tribal, and local governments
- State funds distribution
- Accurate local statistical data
- Data for community



Geography Supporting the Census

- Requires quality geographic information to conduct censuses and surveys
- Includes boundaries, residential and commercial addresses, and street centerlines
- The Geography Division is primarily responsible for collecting and maintaining this information for the Census Bureau
- A key source of this geographic information is tribal, state, and local government partners



The GSS Initiative: Expanded Partnerships Lead to Improved Data Quality

North Carolina Geographic Information Coordinating Council

Peter Virgile

May 15th, 2014

Key Components of the GSS-I

An integrated program that utilizes a partnership program for:

- Improved address coverage
- Annual, transaction-based address and spatial feature updates
- Enhanced quality assessment and measurement

Address Updates



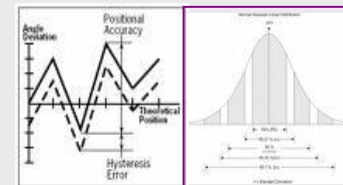
123 Testdata Road
Anytown, CA 94939

Lat 37 degrees, 9.6 minutes N
Lon 119 degrees, 45.1 minutes W

Street/Feature Updates



Quality Measurement



The GSS-I Partnership Program

- Launched in October 2012
- Opportunity for tribal, state, county, and local governments to continually exchange address & spatial data with the Census Bureau
- Recognizes partner governments as a definitive authority for quality address and street data within their communities
- Leverages the Census Bureau's broad partner network to encourage participation

Benefits of Participation

1. Expanded ROI – encourages re-use of local government geospatial data investment
2. Reduces redundant federal data collection efforts and increases usage of high-quality local government data for multiple federal programs, including the 2020 Census and the USGS National Map
3. Provide maximum input into the American Community Survey and closes the gap between partner addresses and Census addresses for LUCA 2020.

What is the Basic Process?

1. Acquire partner data and perform Content Verification to determine general usability
2. Crosswalk, standardize, match, and geocode partner addresses and structure points using the Master Address File (MAF)
3. Match street centerline data to identify differences, calculate spatial accuracy (CE95 method) of partner data using GPS control points
4. Ideal Scenario: new addresses are added to the MAF, new streets are added to TIGER, address and spatial inconsistencies are submitted for resolution

Targeted Canvassing in 2019?

2009

Address Canvassing

100% Canvassing

VS

2019

Targeted Canvassing



Data Content Guidelines

- The Census Bureau has released Data Content Guidelines to describe the minimal and optimal information required for Addresses (including structure points), Street Centerlines, and Metadata provided by partners for the GSS-I
- Data Content Guidelines are located at:

<http://www.census.gov/geo/www/gss/gdlns/addgdln.htm>

Partner Data Acquisition and Content Verification

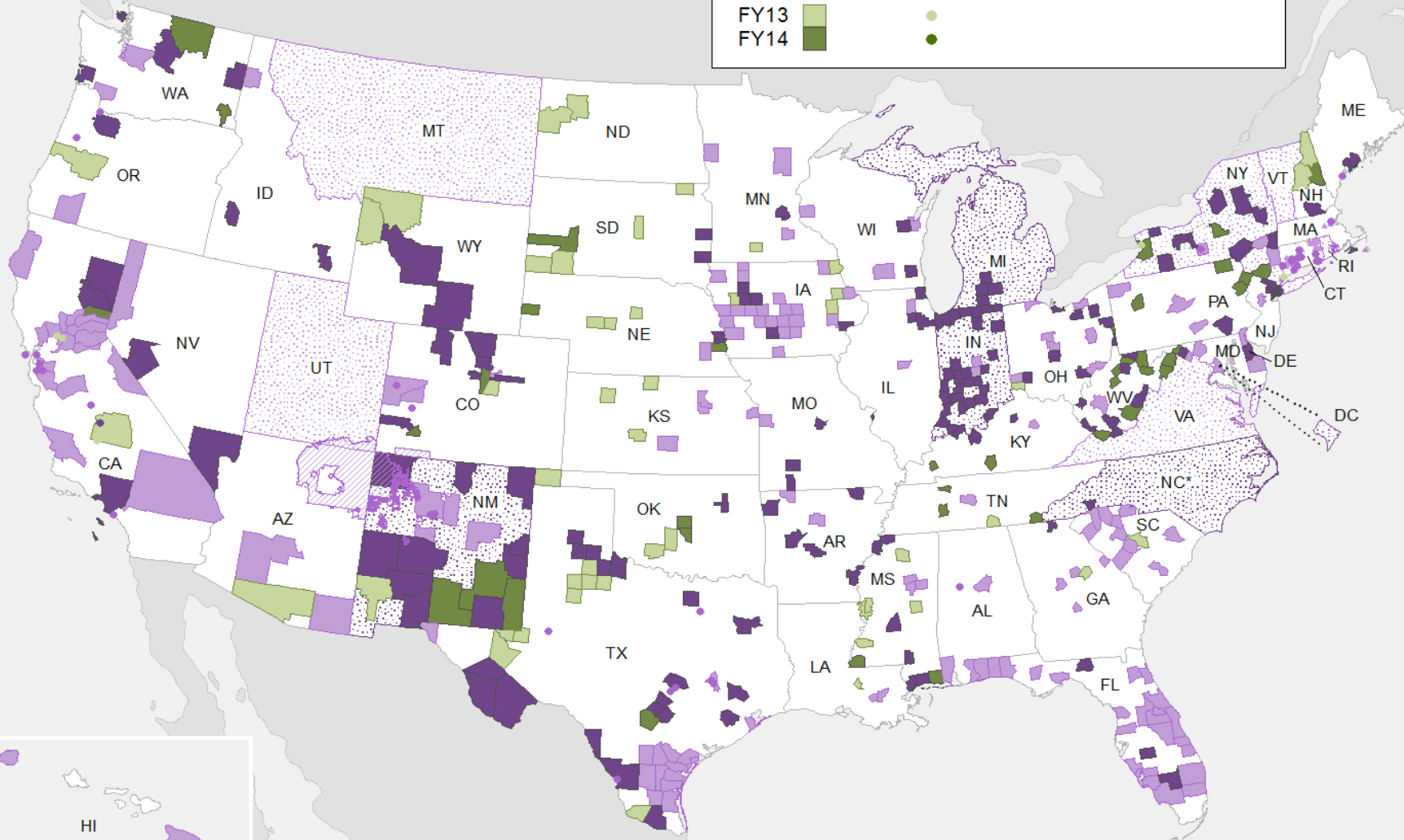
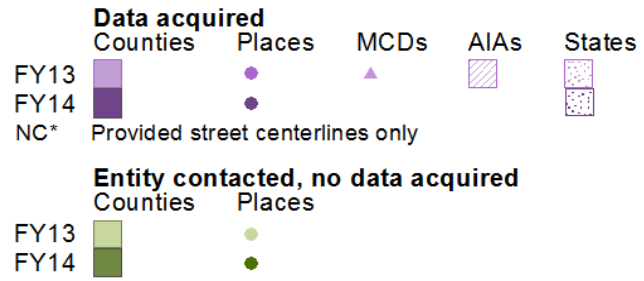
Partner Data Acquisition

<i>Data as of May 5, 2014</i>	Partners Contacted	Partners Providing Files	Address List Acquired	Structure Coordinates Acquired	Street Centerlines Acquired	Partner Files Processed
TOTAL	482	313	177	622	691*	859**

* Some counties provided multiple partial-coverage street centerline datasets (i.e., cities vs. balance of county)

** Includes feature and address files processed through the MAF/TIGER system update process

GSS Initiative Participants



Problems Found in Content Verification

- Frequent call-backs for explanations and missing data – i.e., missing Interstate Highway layer, cryptic building use codes, etc.
- Incomplete metadata – projection, datum, data dictionaries, etc.
- Coverage gaps – some counties excluded data for incorporated cities within their legal jurisdiction

Partner Address Matching & Geocoding

Minimum Address Guidelines - GEOCODING

In order to update the location (geocode) for an existing MAF address, the partner address must meet the MATCHING requirements above, and also provide one of the following data items:

- Address Coordinate (latitude/longitude) or
- Census 2010 Tabulation State, County, Tract and Block Code

This minimum information allows the Census Bureau to assign a location to previously ungeocoded addresses, to compare source geocodes to existing MAF geocodes, and to correct geocodes on MAF records where necessary.

C) In order to ADD new records to the MAF, the submitted record must meet the requirements of “A” above, and additionally must include an Address Feature Type indicator identifying the address as residential, commercial, utility, etc.

Minimum Address Guidelines - MATCHING

To successfully match to the MAF, a partner address must include:

- Complete Address Number
- Complete Street Name

and AT LEAST ONE OF THE FOLLOWING:

- Address Coordinate (latitude, longitude)
- ZIP Code
- Postal City and State
- Census 2010 Tabulation State, County, Tract and Block Code

This minimum information allows the Census Bureau to update the source data for an existing MAF address record, adding to our confidence that the address is valid.

Minimum Address Guidelines – ADDS

To ADD new partner addresses to the MAF, the partner address must:

- meet the MATCH requirements above,
- and
- include an address type indicator identifying the address as residential, commercial, utility, etc.

and

- not already exist in the MAF

Minimum Address Guidelines – WITHIN UNIT IDENTIFIERS

For residential addresses with multiple units (i.e., apartments, condos, etc.), the partner address data should provide:

- a unique Within Structure Identifier (apartment #, unit #, etc.) to distinguish each unit from other units at the same Basic Street Address (BSA).

or, if a Within Unit Identifier is not available or does not exist:

- The number of units at the BSA (i.e. “123 Main Street - 25 Units”)

and

- A flag indicating which addresses are multi-unit structures

Minimum Address Guidelines – GROUP QUARTERS

For Group Quarters addresses (i.e., dormitories, prisons, residential medical facilities, etc.), the Census Bureau requests the following information in addition to the address information required for MATCHING and GEOCODING:

- NAME (i.e. Shady Acres Retirement Home) of the Group Quarters and
- TYPE (i.e., Hospital, Prison, College Dormitory) of Group Quarters

Minimum Address Guidelines – NON CITY-STYLE ADDRESSES

The Census Bureau currently does not attempt to match or add any address records that contain only Non-City-Style Addresses, such as:

- Rural Route Addresses (i.e. RR 3 Box 725 Anytown, ST 12345)
- Post Office Box Addresses (i.e. P.O. Box 12374 Anytown, ST 12345)
- Highway Contract Addresses (i.e. HC 3 Box 330 Anytown, ST 12345)
- General Delivery (i.e. General Delivery Anytown, ST 12345)
- Location Descriptions (i.e. Brick House at intersection of 1st and Main Streets)
- Address Coordinates ONLY

Total Partner Addresses Received (6/20/13)	28,673,572		
Duplicates Identified within Partner Datasets		1,148,866	4%
Total Unduplicated Partner Addresses		27,526,810	96 %
Total Partner Addresses <u>Matched</u> to Master Address File (MAF)	24,336,743		88% of Total
Addresses in Same Block as MAF		22,526,027	93% of Matched
Addresses in Different Block than MAF		1,410,562	6% of Matched
New Geocode Attained		140,427	1% of Matched
Addresses w/ Same Address Class as MAF (residential, etc.)		12,397,201	51% of Matched
Addresses w/ Different Address Class than MAF		494,185	2% of Matched
Addresses w/ No Address Class Identified		11,445,357	47% of Matched
Total Partner Addresses <u>Unmatched</u> to MAF	3,190,067		12% of Total
Unmatched Class Residential		952,003	30% of Unmatched
Unmatched Commercial/Other/Unspecified		2,238,064	70% of Unmatched

Block Level Address Feedback

Consists of block tallies detailing:

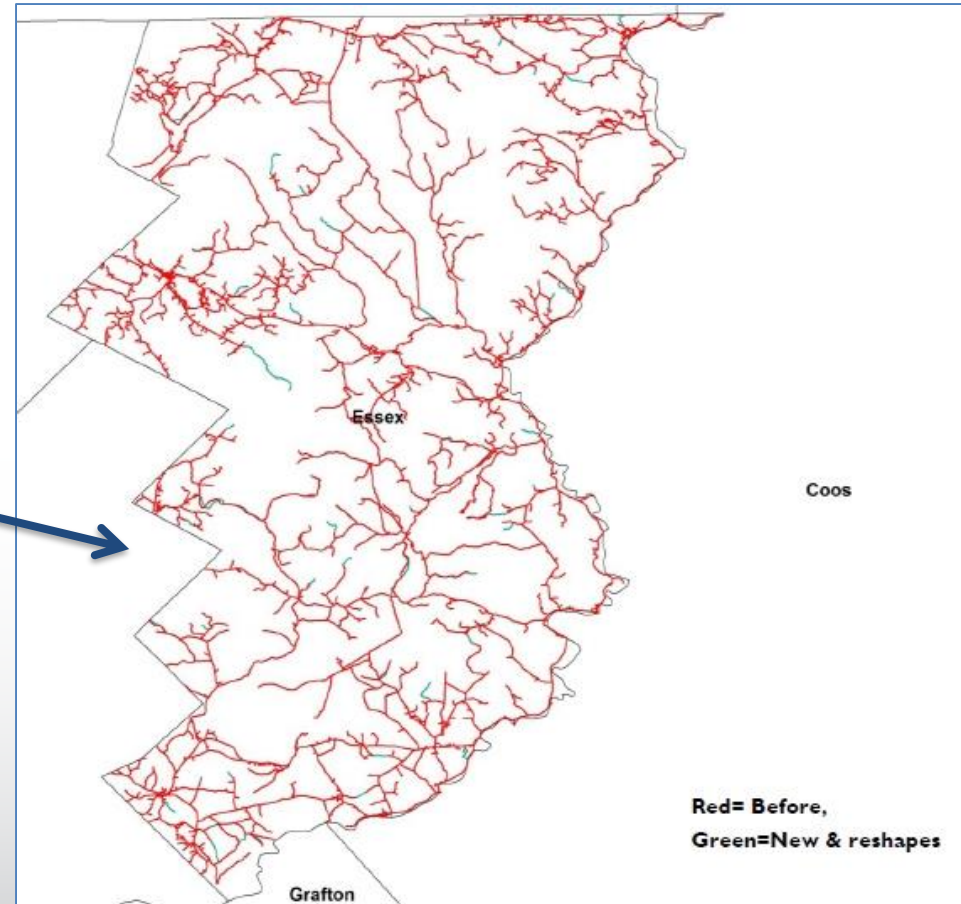
- What the partner provided
- Number of records matched or added to the Census address list
- Number of records not accepted
- Total number of residential records currently in the MAF

Block	GEOID	Total Addressess	Total Residential	Total Non-residential	Total Other	Total Matched	Total Added	Total Coordinates Used	Total Not Accepted	Total Not Accepted Duplicate	Total Not Accepted Incomplete	Total Not Accepted Other	Residential Currently in MAF
1000		6	0	0	6	6	0	5	0	0	0	0	5
1001		1	0	0	1	1	0	1	0	0	0	0	1
1002		26	0	0	26	26	0	26	0	0	0	0	27
1003		18	0	0	18	18	0	18	0	0	0	0	18
1004		17	0	0	17	17	0	15	0	0	0	0	17
1005		35	35	0	0	35	0	35	0	0	0	0	35
2000		7	7	0	0	5	0	5	2	0	0	2	6
2001		48	45	2	1	47	0	47	1	0	0	1	45
2002		65	65	0	0	48	0	48	17	0	0	17	64
2003		1	0	0	1	-	-	-	-	-	-	-	-
2004		1	0	0	1	-	-	-	-	-	-	-	-
2005		2	0	0	2	-	-	-	-	-	-	-	-
2006		1	0	0	1	-	-	-	-	-	-	-	-
	Unable to Geocode	-	-	-	-	-	-	-	-	-	-	-	-
		228	152	2	74	203	0	200	20	0	0	20	218

Street Centerline Evaluation and Update

Interactive Review and Update

- Digitizers interactively review the potential new and misaligned streets using the partner data and current imagery
- In this example, the **green-blue** lines indicate street updates made by the Census Bureau based on the partner data
- The Census Bureau added 39 miles of new streets and modified 115 miles of misaligned streets based on this partner's street centerline data



Street Centerline Updates

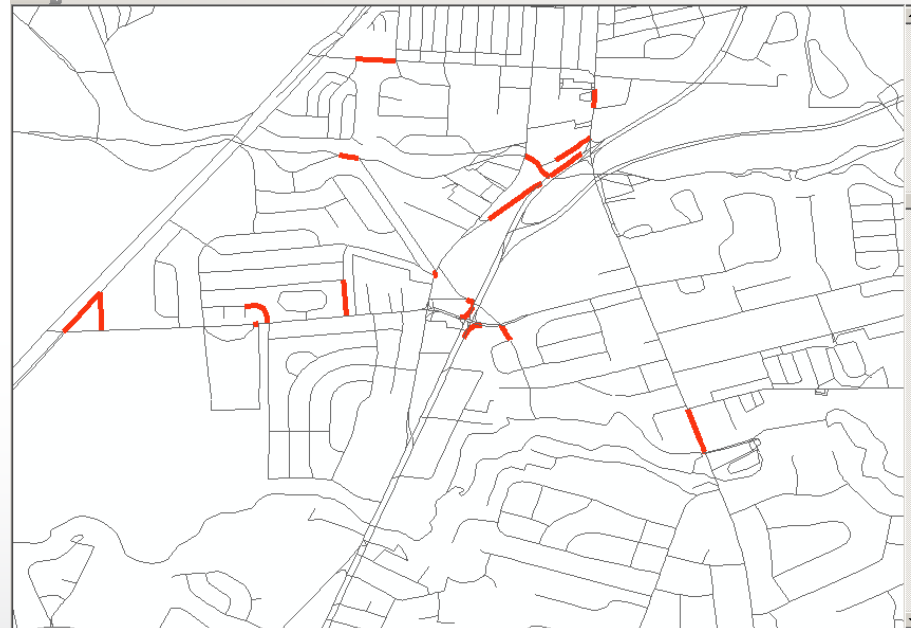
- 3,105 Miles of new roads added
 - Raleigh, NC to San Miguel, El Salvador
- 8,887 Miles of updated roads
 - Raleigh, NC to Rio de Janeiro, Brazil
- 11,992 total miles of feature updates
 - Raleigh, NC to Rio de Janeiro, Brazil
to Lima, Peru!

Feature Feedback

Adding a date of last update field to the partnership shapefiles:

live_2014_edges_10001

	MTFCC	FIDELITY	FULLNAME	SMID	MTUPDATE
	S1200	Y	Rd 4	4379	1/2/2013
	H3010	Y	Hudson Br	5364	1/2/2013
	H3010	Y	Meredith Br	5364	1/2/2013
	S1400	Y	Dupont Hwy	4379	1/2/2013
	H3010	Y	St Jones Riv	5364	1/2/2013
	S1200	Y	E Lebanon Rd	0	1/2/2013
	S1400	Y	Green Acres Dr	4379	1/2/2013
	S1200	Y	E Lebanon Rd	4379	1/2/2013
	S1400	Y	Court St	4379	1/2/2013
	S1630	Y		0	1/2/2013
	S1630	Y		0	1/2/2013
	S1200	Y	Korean Veterans Memori	4379	1/2/2013
	H3010	Y		5364	1/2/2013
	H3010	Y		5364	1/2/2013
	R1011	Y	Conrail RR	0	1/2/2013
	S1400	Y		0	1/2/2013
	R1011	Y	Conrail RR	0	1/2/2013



For more information, please visit:

<http://www.census.gov/geo/www/gss/>



Thank you!

peter.virgile@census.gov

301.763.9246

Local Update of Census Addresses (LUCA) Program

North Carolina Geographic Information
Coordinating Council

May 15, 2014

Brian Timko

Tribal Local Geographic Partnerships Branch

Outline

- Introduction/Background
- LUCA 2010 Numbers (Nationally and North Carolina)
- LUCA 2020 Improvement
- Questions/Comments?

Background

The LUCA program is made possible by the [Census Address List Improvement Act of 1994 \(Public Law 103-430\)](#) which provides an opportunity for designated representatives of local, state, and tribal governments to review the addresses used to conduct the Census.

Background (continued)

LUCA 1998/99: Review and comment on our address list.

2010 LUCA: Three participation options:

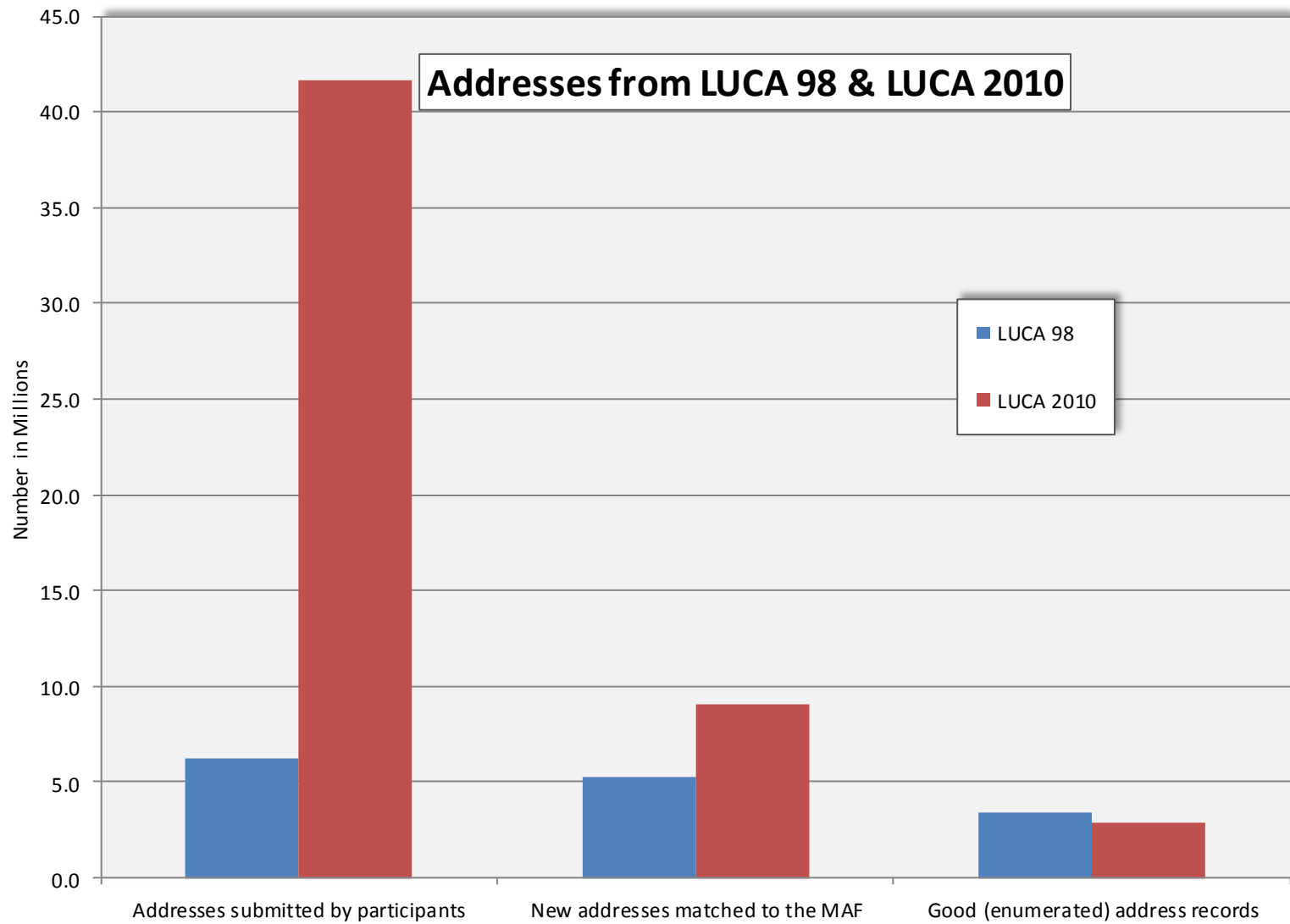
- Option 1: Title-13 Full Address List Review (similar to LUCA 98)
- Option 2: Title-13 review, full address list submission
- Option 3: Non-Title-13, full address list submission

LUCA 1998 by the numbers

- 6.2 Million addresses submitted by 6,230 participants
- 0.9 Million matched to existing MAF records
- 5.3 Million new addresses added to the MAF
 - 3.4 Million good (enumerated) addresses
 - 63.2% Enumeration rate

LUCA 2010 by the numbers

- 41.7 Million addresses submitted by 7,641 participants
- 32.6 Million matched to existing MAF records
- 9.1 Million new addresses added to the MAF
 - 2.9 Million good (enumerated) addresses
 - 31.8% Enumeration rate



North Carolina 2010 LUCA Participation

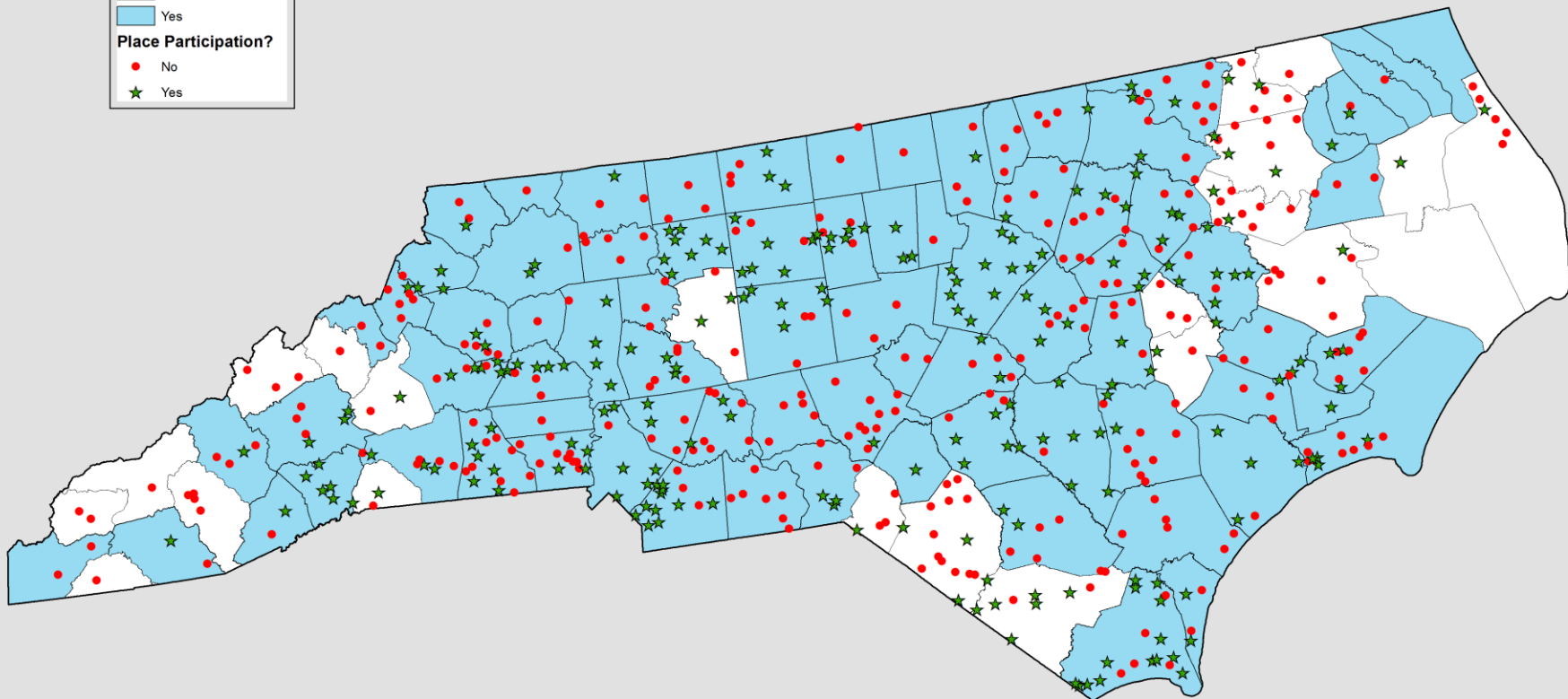
Legend

County Participation?

- No
- Yes

Place Participation?

- No
- Yes



	Total Eligible	Total Registered	Participation Rate	Address Records Processed
National	39,329	11,500	29.2	41,686,242
North Carolina	649	311	47.9	2,620,894

North Carolina 2010 LUCA Participation

LUCA Participation Options:

Option 1: Title-13 Full Address List Review - 210

Option 2: Title-13 review, full address list submission - 73

Option 3: Non-Title-13, full address list submission - 28

Address List Types:

Paper - 84

MAF/TIGER Partnership Software - 48

Electronic (txt file)- 179

Map Types:

Paper Maps - 132

MAF/TIGER Partnership Software - 48

Shapefiles – 131

Note: 3 participants selected shapefiles (maps) and paper address list

North Carolina 2010 LUCA Participation

- 2.6 Million addresses submitted by 311 participants
- 2.1 Million matched to existing MAF records
- 542,770 new addresses added to the MAF
 - 148,741 good (enumerated) addresses
 - 27.4% Enumeration rate

2020 LUCA Improvement Research

- To develop potential alternative designs for LUCA 2020 based on research by sub-teams
 - Looking Back at 2010 (assessments, surveys, lessons learned, etc...)
 - GSS-I's impact on LUCA (utilizing software and processes for LUCA)
 - TAC impact on LUCA (in-house validation)
 - Focus Groups

2020 LUCA Draft Timeline

- Advanced Notice Mailing - Winter of 2016/2017
- LUCA Invitation Mailing – Summer of 2017
- LUCA Materials Mailing – Fall 2017 to Spring of 2018
 - Census Bureau Processes and Validates LUCA Updates – Fall of 2017 to Summer of 2019.
- LUCA Feedback Materials (and Appeals) – Late Summer/Fall of 2019

How Can You Help?

- Encourage the development/use of within structure identifiers (Apt 101, Unit B etc...)
- Encourage the development and use of structure type codes in address development (residential, commercial, etc...)

Questions or Comments?

Brian Timko

Tribal/Local Geographic Partnerships Branch

brian.kevin.timko@census.gov

Current Plans for the 2020 Participant Statistical Areas Program

April Avnayim

Geography Division, U.S. Census Bureau

May 2014

Participant Statistical Areas Program (PSAP)

- Statistical areas updated in the PSAP :
 - Census tracts
 - Block groups
 - Census designated places
 - Census county divisions

Census Tracts

- Small, relatively permanent statistical subdivisions of a county (or equivalent entity) - consistent boundaries over time
- The first tracts were delineated in NYC for the 1910 Census
- Population/housing unit thresholds:
 - Minimum: 1,200 pop/480 HUs
 - Maximum: 8,000 pop/3,200 HUs
 - Optimum: 4,000 pop/1,600 HUs

	2000 Census	2010 Census	Increase
North Carolina	1,563	2,195	29%
U.S.	66,438	7,3057	9%

Block Groups

- Block groups nest within census tracts
- Smallest area for American Community Survey (ACS) sample data tabulation
- Continuity and comparability from one census to another much less of a concern as compared to census tracts
- Population/housing unit thresholds:
 - Minimum: 600 pop/240 HUs – but lowest recommended for ACS is 1,200 pop/480 HUs
 - Maximum: 3s000 pop/1s200 HUs

	2000 Census	2010 Census	Increase
North Carolina	5,271	6,155	14%
U.S.	211,827	217,740	3%

Census Designated Places (CDPs)

- Represent communities that are: closely settled, unincorporated, locally and regionally recognized, identifiable by name
- Intended to be comparable with incorporated places. Not meant to represent individual “neighborhoods” or “subdivisions” if a part of a larger place
- Have some housing units, and most often mix of residential and commercial and/or community development
- Cannot overlap with incorporated places or other CDPs

	2000 Census	2010 Census	Increase
North Carolina	115	186	38%
U.S.	5,977	9,721	36%

NOTE: in 2010 there were 553 incorporated places in NC, with an increase of 13 (total) from 2000

Participation for 2010 PSAP

- All digital – for the first time!
- Review/delineation phase and verification phase
- Participation open to all interested organizations and individuals
- Primary participants: Census 2000 participant; regional, multi-county organizations; local government agencies (county or city governments); State Data Centers (SDCs); state-level organizations; and Regional Census Center geography staff
- For 2010, PSAP primary participants in NC counties were Councils of Governments and County Governments – only 6 counties (of total 100 in NC) were covered by the Charlotte RCC

2010 PSAP Successes

- Stayed on schedule
- Eliminated paper maps
- MAF/TIGER Partnership Software (MTPS) standardized submissions
 - Guide through work
 - Built in edits
 - Overall improvements
- Online imagery, other digital data, and GIS helped in the review of submissions

2010 PSAP Challenges

- Many participants unable to conduct the amount/level of review desired – many only focused on tracts where resources were limited
- New tools resulted in more debate over final delineation – improved imagery, digital spatial data, and GIS tools allowed us to identify new and preexisting problems
- Internally too much focus on technology, not enough focus on the concepts
- Stricter enforcement of thresholds in support of the ACS
 - Difficult to persuade some participants to merge low population tracts and block groups
 - More need for education on ACS and Economic Census

Looking Towards the 2020 PSAP

- No significant criteria changes – simply clarifications to existing criteria and guidelines
- Continue all digital approach, but make improvements
 - Make PSAP plan communication and data sharing easier for participants among colleagues and constituent communities, e.g., creation of PSAP plan PDF maps
 - May be primarily or completely over the web
- One “phase” – not two (delineation and verification)
 - More of a rolling process - vision is that updates will be loaded onto the web and can be viewed and changed prior to the census
- Reasons for participation remain the same, primarily:
 - Statistical areas are used to qualify for government funding,
 - Decennial Census, American Community Survey, and other census and survey data published for these geographies
 - Affect other geographic area delineations, including census blocks and geographies built on census blocks (ZIP Code tabulation areas (ZCTAs), Traffic Analysis Zones (TAZs), urban areas, Public Use Microdata Areas (PUMAs)

Planned High Level PSAP Schedule

- 2016 – proposed 2020 PSAP criteria published in the Federal Register and on Bureau website
- 2016/17 – final criteria published
- 2017 – outreach and determining the PSAP “primary” participants
- 2018 –PSAP participants will begin working on the PSAP and CDP programs – at the earliest
- 2020 – all geographies “locked down” for 2020 Census

Comments and Suggestions?

April Avnayim

april.l.avnayim@census.gov

Josh Coutts

joshua.j.coutts@census.gov

Vince Osier

vincent.osier@census.gov

301.763.3056