

Revised Approaches to Address Canvassing and Frame Development in 2020

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Presentation Topics

- 2010 Address Canvassing
- 2010 Group Quarters Validation
- Intercensal Address Frame Maintenance
- 2020 Local Update of Census Addresses
- 2020 Address Canvassing
 - MAF Coverage Study
 - In-Office Address Canvassing
 - In-Field Address Canvassing
- 2020 Operations Providing Updates to the Census Frame

2010 Address Canvassing

Operation Overview:

- Provided the primary address list validation and update activity for the 2010 Census enumeration frame
- Deployed a national-level, automated, paperless data collection and transmission process using a hand-held computer and application provided by Harris Corporation
- Managed by 150 Early Opening Local Census Offices (LCOs) in 12 Regional Census Centers
- Conducted between March 30, 2009 through July 10, 2009 by over 150,000 field staff
- Used GPS to collect structure coordinate locations, also known as map spots or MAF Structure Points (MSPs) in the field
- Conducted the Large Block Address Canvassing (LBAC) operation using laptop computers for blocks that contained more than 1,000 addresses (LBAC occurred from February 2, 2009 to June 17, 2009)

2010 Address Canvassing

Group Quarters (GQs) in 2010 Address Canvassing:

- The Census Bureau defines GQs as living quarters where people live, stay, or could live or stay in a group living arrangement managed or owned by an entity or organization that provides housing and/or services for residents
- GQs include college residence halls, residential treatment centers, skilled nursing facilities, group homes, correctional facilities, and workers' dormitories, among others
- 2010 Address Canvassing included housing units (HUs), GQs included in the Census 2000 inventory, and potential GQs from other sources, such as administrative records
- Address Canvassing listers marked addresses that were not HUs as Other Living Quarters (OLQs) and those addresses were included in the 2010 Census Group Quarters Validation (GQV) operation universe

2010 Group Quarters Validation

Group Quarters Validation (GQV) had specially trained staff that used the GQV Questionnaire to:

- Verify the address had the correct census geography
- Determine the status of the OLQ address as one of the following: GQ, HU, Transitory Location (TL), Non-residential, Vacant, or Nonexistent
- Classify the type of GQ
- Collect the maximum number of residents who could live or stay at the address, if validated as a GQ
- Add GQs, HUs, and TLs not already included on the address list

Intercensal Address Frame Maintenance: Master Address File

Master Address File:

- The Master Address File (MAF) is a continuously updated, nationwide file of addresses that have been geographically referenced to the Topologically Integrated Geographic Encoding and Referencing (TIGER) database
- The MAF was originally created for Census 2000 in 1998-99
- The Address Control File from 1990 and the United States Postal Service's Delivery Sequence File formed the basis of the original MAF, along with tribal, state and local partner address data

Intercensal Address Frame Maintenance: The Census Address List Improvement Act of 1994

The Census Address List Improvement Act of 1994 (Public Law 103-430):

- Changed the Census Bureau's address list development procedures by expanding the methods allowed to exchange information with tribal, state, and local governments in order to support its overall residential address list development and improvement efforts
- Authorized the Census Bureau to share residential individual addresses with officials of tribal, state, and local governments who agreed to pledges and conditions of confidentiality
- The Census 2000 marked the first decennial where residential address lists could be shared with tribal and local governments, provided they signed the required confidentiality agreement

Intercensal Address Frame Maintenance: USPS Files

USPS provides three files to the Census Bureau twice a year:

- Delivery Sequence (DSF) File:
 - A database of all addresses used and maintained by the USPS
- Locatable Address Conversion Service (LACS) File:
 - Shows before and after linkage of a mailable address experiencing address system conversions
- Zone Improvement Plan (ZIP) Move Engineering File:
 - A list of ZIP Codes and the Plus 4 codes served

Intercensal Address Frame Maintenance: USPS Files

USPS “DSF Refresh” Process:

- MAF/TIGER ingests and processes the DSF, LACS, and ZIP Move Engineering file bi-annually
- The DSF Refresh process includes the following general steps:
 - Download and ingest of the latest version of the USPS DSF, LACS and ZIP Move Engineering Files
 - Match the new DSF file to the MAF to:
 - update existing MAF addresses with DSF source information and
 - add new, unmatched, DSF addresses to the MAF
 - Process the ZIP Move Engineering file to update existing ZIP codes for all addresses on the MAF, even those addresses that did not originate from the DSF
 - Process the LACS file to account for address conversions
 - Assign DSF addresses to a state, county, tract, and census block by running geocoding processes

2011-2020 Intercensal Address Frame Maintenance: Geographic Support System Program

Geographic Support System (GSS) Program:

- An integrated program of improved address coverage, continual spatial feature updates, and enhanced quality assessment and measurement
- Census Bureau funds this program separately from decennial and current survey programs
- Program focused on measuring and improving data within the MAF/TIGER database
- The largest component of the 2011-2020 GSS was the acquisition and ingest of data from partners through the GSS Partnership Program

2011-2020 Intercensal Address Frame Maintenance: Geographic Support System Program

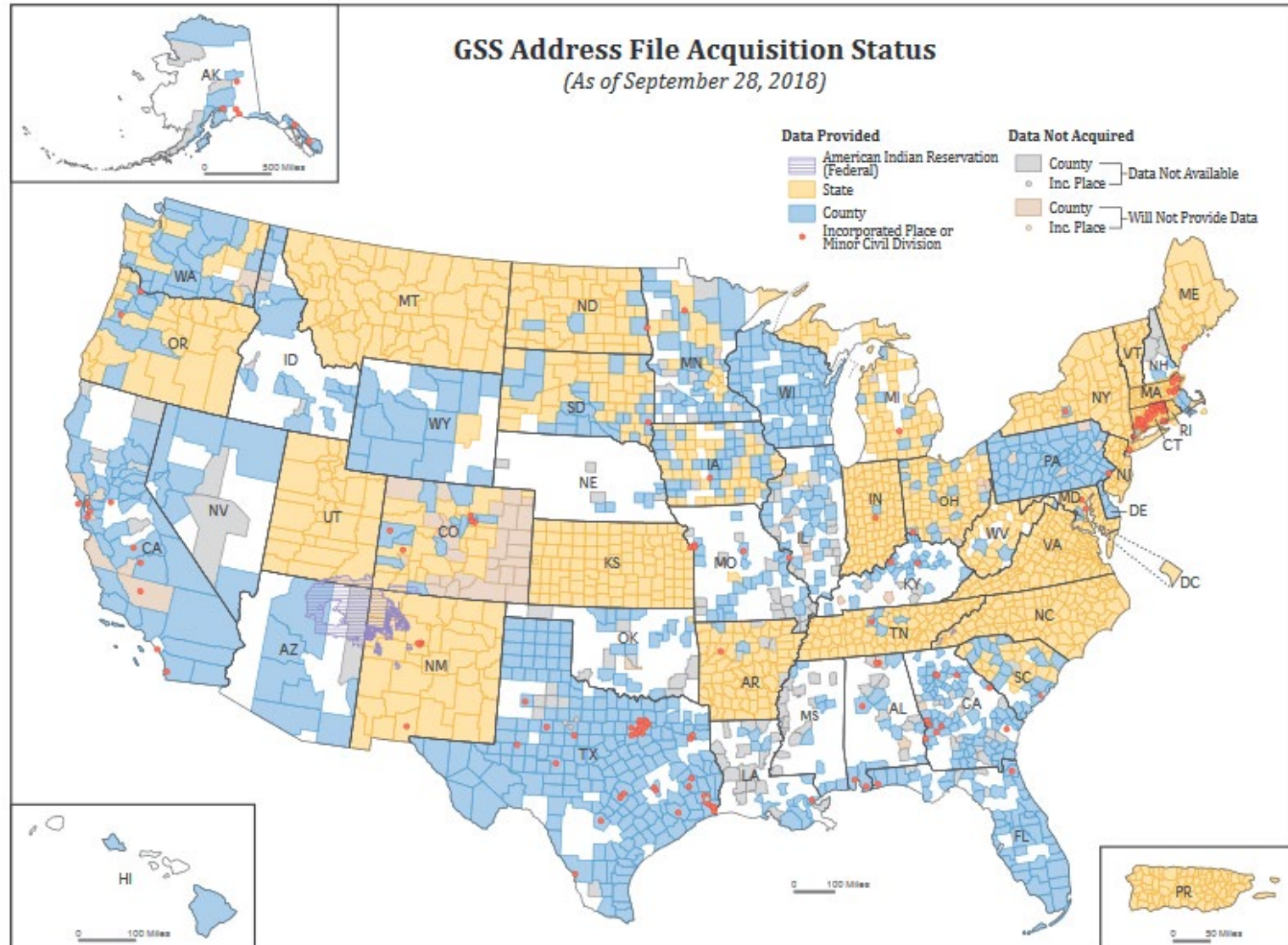
GSS Partnership Program:

- Solicited address ,road, and imagery data from tribal, state, and local governments
- Evaluated the data and used data to update the MAF/TIGER system
- Conducted robust checks and matching on all address and feature additions using new technology and techniques (i.e., FME, Conflation, improved address matching and evaluation routines)
- The Geographic Support Program goal for Fiscal Years 2013 – 2017 was to attempt to acquire address and spatial files for every census tract in the United States and Puerto Rico.
- The Geographic Support Program goal for Fiscal Year 2018 was to attempt to acquire address and/or roads data for 15,000 census tracts located within governmental entities (counties, cities, or towns) that were not participating in the Local Update of Census Addresses Program.

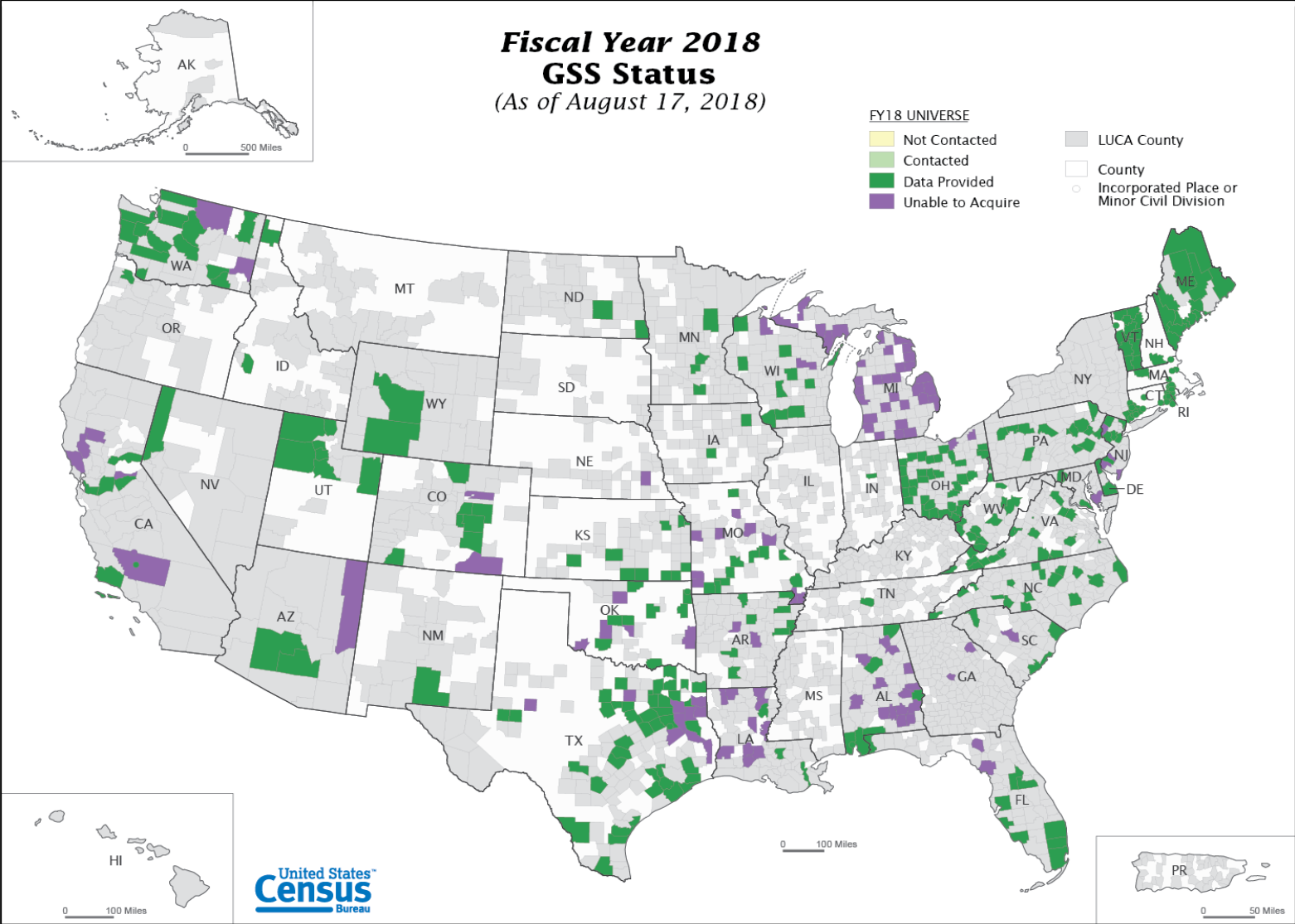
Other GSS MAF Maintenance Activities:

- MAF un-duplication and hygiene
- Using DSF to Update MAF in Puerto Rico for the first time
- Exploration of how to process and match GQ files

Geographic Support Program Acquisition Status for Fiscal Years 2013 - 2018, by Data Provider



Geographic Support System Outreach for Fiscal Year 2018 with LUCA Participation



2020 Local Update of Census Addresses

Local Update of Census Addresses (LUCA):

- Allowed tribal, state, and local governments to review and provide updates on the Census Bureau address list for their jurisdiction under the conditions of confidentiality, as well as receive feedback on their submission with time to submit an appeal
- Authorized by the Census Address List Improvement Act of 1994 (Public Law 103-430)
- Helped ensure a complete and accurate address frame for Housing Units and Group Quarters
- Consisted of Multiple Phases:
 - LUCA Outreach, including promotions, training and registration
 - LUCA Review of Materials, including address lists by Participants
 - LUCA Returns and Validation by the Census Bureau
 - LUCA Feedback and Appeals
 - LUCA Closeout

2020 Census Address Canvassing Overview

The 2020 Address Canvassing operation:

- Served two purposes:
 - Deliver a complete and accurate address list and spatial database for enumeration
 - Determine the type and address characteristics for each living quarter
- For the 2020 Decennial Census, the Census Bureau reengineered Address Canvassing to include a more efficient suite of In-Office and In-Field activities
- Comprised of three elements:
 - MAF Coverage Study
 - In Office Address Canvassing
 - In Field Address Canvassing

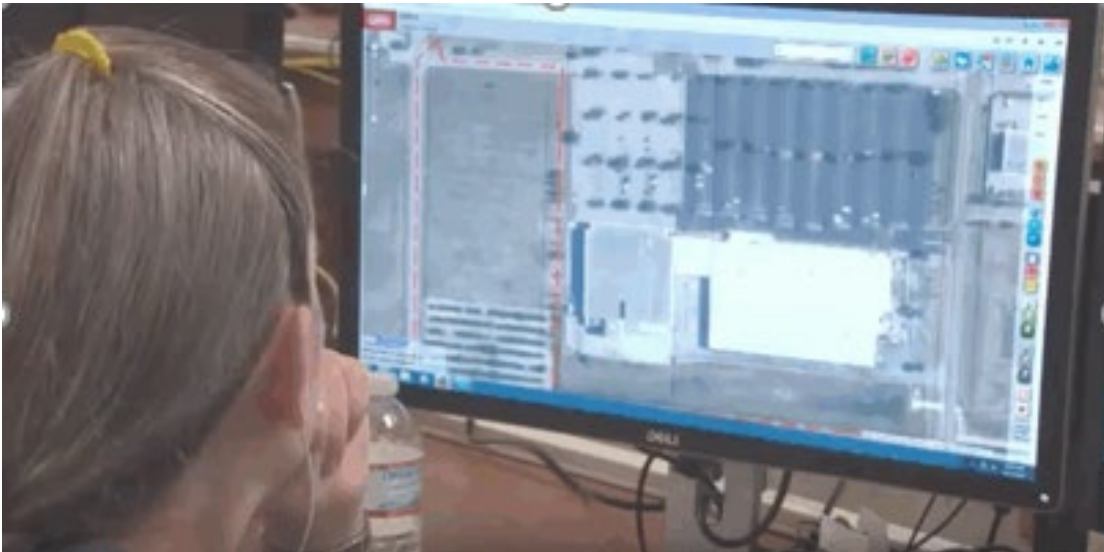
2020 Census Address Canvassing: MAF Coverage Study

MAF Coverage Study:

- Intended to be an ongoing field activity to list a sample of 20,000 nationally representative blocks annually
- Purpose of the MAF Coverage Study:
 - Measured coverage
 - Validated In-Office Address Canvassing procedures
 - Improved in-field data collection methodologies
 - Provided updates to the MAF on a continuous basis
- Started field work in April 2016
- Produced only one report - 2016 MAF Coverage Study report
- Discontinued in 2017 due to budgetary constraints

In-Office Address Canvassing

- Review the whole nation, using imagery and validated sources, and classify which blocks are up to date and which need fieldwork



In-Field Address Canvassing

- Physically canvass in areas determined by In-Office Address Canvassing



2020 Census Address Canvassing:

In Office Address Canvassing

In-Office Address Canvassing (IOAC):

- Used imagery and validated data sources to identify change on the ground related to residential structures
- Substituted field work in areas with no change, or where residential structure inventory was stable
- Used validated data sources to correct identified issues, and to resolve addresses that could not be automatically geocoded (resolved ungeocoded addresses)
- Conducted between September 2015 through March 2019
- Included the following operational components:
 - Interactive Review (IR)
 - Active Block Resolution (ABR)
 - Ungeocoded Resolution (UR)
 - In-Office Address Canvassing Group Quarters/Transitory Location (IOAC GQ/TL)
 - LUCA Address Validation(LAV)

2020 Census Address Canvassing: In-Office Address Canvassing - Interactive Review

Interactive Review (IR):

- Conducted between September 2015 through March 2019
- Staff completed an imagery-based review that assessed changes in the residential structure landscape to identify growth, decline, and potential future growth
- Measured the extent that the number of housing units in the MAF were consistent with the number of residential structures visible in current imagery
- Assigned blocks with one of the following statuses:
 - **Passive** – No observable change in the number of housing units over time, and the MAF accurately represented the number of housing units shown in the current imagery
 - **Active** – Observed changes in the residential landscape (i.e., a gain or loss of structures likely to be housing units), or the number of housing units in the MAF differed from the number shown in the current imagery
 - **On Hold** – Categorized as hold-for-imagery when a review could not be completed due to poor imagery (e.g., cloud cover obscuring the landscape)

2020 Census Address Canvassing: In-Office Address Canvassing - Interactive Review

2009 “Baseline” Imagery



2019 “Current” Imagery



Swipe
Tool

2020 Census Address Canvassing: In-Office Address Canvassing - Triggers

IOAC Triggers:

- Provided the opportunity to re-evaluate the status of Census Blocks after IR
- There were four types of triggers:
 - Active blocks that are possibly passive triggers
 - Passive blocks that are possibly active triggers
 - Hold-for-imagery blocks triggers
 - Database correction triggers

2020 Census Address Canvassing: In-Office Address Canvassing – Active Block Resolution

Active Block Resolution (ABR):

- Started in April 2016 and was discontinued in February 2017 due to budgetary constraints
- Designed to “canvass” active blocks in the office to resolve in office to remove from IFAC
- Used available sources to perform further research to verify every MAF unit and to attempt to fix overcoverage or undercoverage issues
- Blocks resolved by ABR were classified as passive and would not be part of the In-Field Address Canvassing universe unless they were triggered or placed in a BCU with an active block
- Blocks that were not fully resolved would remain active and would be eligible to be part of the In-Field Address Canvassing universe

2020 Census Address Canvassing: In-Office Address Canvassing – Ungeocoded Resolution

Ungeocoded Resolution:

- Started in April 2017 and finished in February 2020
- Designed to assign a block location, known as a geocode, to residential addresses lacking a geocode in the MAF
- Conducted research using data sources in Matching and Coding System (MaCS) and Geographic Information System (GIS) viewer
- Added or edited spatial features and address ranges in the MAF/TIGER System based on information from local source data using Geographic Aquis-based Topological Real Time Editing System (GATRES)

2020 Census Address Canvassing: In-Office Address Canvassing Group Quarters/Transitory Locations

In-Office Address Canvassing Group Quarters/Transitory Locations:

- Began in September 2017 but stopped in March 2018 because of the reprioritization of the various IOAC components due to budgetary constraints
- Conducted research and/or phone interviews to verify, update, and validate GQs and TLs in the MAF
- Completed research using administrative data, local Geographic Information System (GIS) data, public and commercial information, and made phone calls to administrative contact

2020 Census Address Canvassing: In-Office Address Canvassing – LUCA Address Validation

LUCA Address Validation:

- Began in April 2018 and completed in March 2019
- 100 percent in-office review of LUCA addresses submitted by the participating entities that were not validated through the automated match to the MAF
- Universe was comprised of:
 - Participant “Adds” that did not match to an existing Geographic Support System (GSS) or MAF record
 - Participant “Adds” that matched to MAF but the local participant located the record in a different block
 - Participant “Change” moved by the local participant into a different block than the existing address record in MAF/TIGER
 - Participant Records that matched to a non-residential address in the MAF
- Validation confirmed:
 - Whether or not a record existed on ground (as shown in imagery and/or validated sources)
 - The appropriate location for addresses when participant and MAF block differed

2020 Census Address Canvassing: In-Field Address Canvassing – Universe Criteria

Criteria for inclusion in the In-Field Address Canvassing Universe:

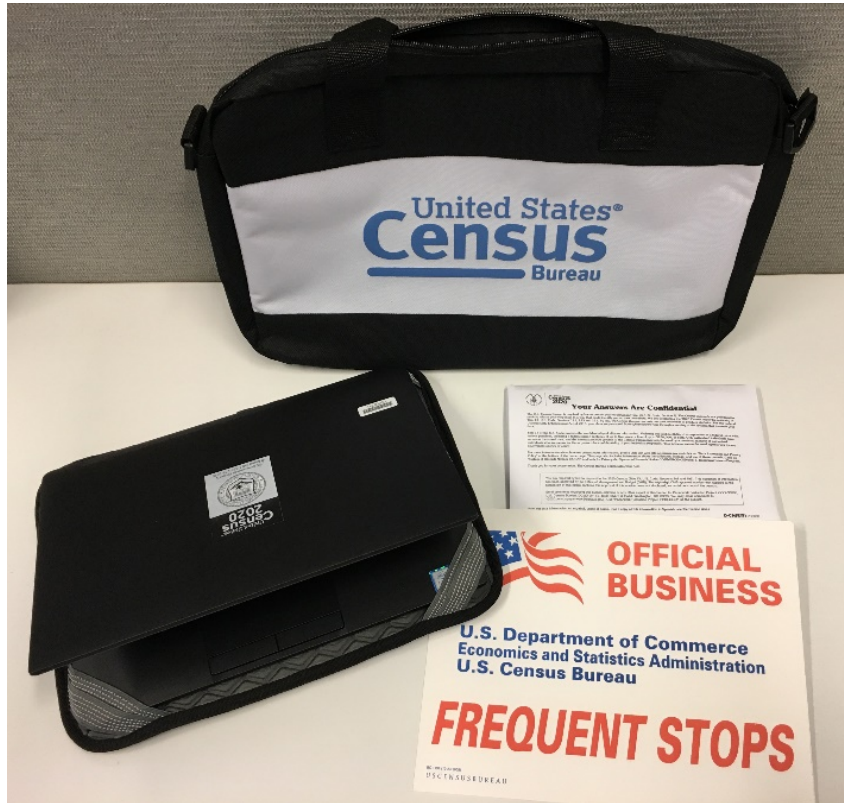
- Blocks identified as having undercoverage during IR, except for those containing only single-family housing and with a history of complete and accurate updates from the USPS DSF within a specified timeframe. Blocks could include undercoverage only or undercoverage in combination with overcoverage, growth, and decline
- Any block with overcoverage of two or more housing units, and no undercoverage. Blocks could include overcoverage only or overcoverage in combination with growth/decline
- Any block exhibiting growth or decline and an inconsistent history of DSF updates, even when IR did not classify the block having overcoverage or undercoverage
- Any block for which IR detected decline, but not classified as having overcoverage or undercoverage
- Any block with On Hold status, suggesting that the block was not covered by adequate imagery for update, or that future growth could occur
- Any block with triggered status, pending re-review by IR
- Any block with a status of triggered for fieldwork, including blocks designated by RO geographers for fieldwork

2020 Census Address Canvassing: In-Field Address Canvassing

Overview:

- Started on August 4, 2019 and completed on October 11, 2019
- Conducted in 22 percent of the Basic Collection Units (BCUs), which contained 34.9 percent of addresses in Self-response areas
- Collected updates using laptops managed by the Decennial Device as a Service (dDaaS) program
 - Over 50,000 laptops were distributed to support Address Canvassing
- Used the Listing and Mapping Application (LiMA) on a laptop to complete work in the field
 - Canvassed specific geographic areas to identify every place where people could live or stay
 - Compared what was on the ground to the existing census list
 - Verified or corrected the address and location information on existing records
 - Added new address records for those missing on the list
 - Removed address records on the list that do not exist

2020 Census Address Canvassing: In-Field Address Canvassing



2020 Census Address Canvassing: In-Field Address Canvassing – Lister Activities

Day in the Life of a Lister:

- Worked during daylight hours
- Transmitted daily to pick up any new assignments
- Reviewed assignments and planned their day
- Traveled to the first block and found a convenient place to begin
- Attempted contact at every structure to ask about living quarters
- Verified, updated, added or deleted addresses either through contact or observation
- Collected a map spot for the location of the living quarter
- Marked the block complete and traveled to the next assigned block
- Updated their work availability, completed their Time & Expenses, and transmitted the all data once they were home

2020 Census Address Canvassing: In-Field Address Canvassing – Soft Launch

Soft Launch:

- Trained two Census Field Supervisors (CFSs) in the early Area Census Offices (ACOs) six days before the remainder of the CFSs in the seven early ACOs were trained
 - Advantage: Allowed systems and training to be exercised in the production environment ahead of a larger group of trainees
 - Seven early ACOs: Began training and operation activities two weeks ahead of the remaining ACOs
 - Advantage: Allowed Census to gradually ramp up the first nationwide 2020 decennial operation and quickly address issues prior to the remaining 32 ACOs beginning training and operations
- | | |
|---------------------------------|-----------------------------------|
| ▪ New York RCC: Providence, RI | ▪ Atlanta RCC: Raleigh, NC |
| ▪ Philadelphia RCC: Beckley, WV | ▪ Denver RCC: Oklahoma County, OK |
| ▪ Chicago RCC: Kansas City, M | ▪ Los Angeles RCC: Seattle, WA |
| ▪ Chicago RCC: Milwaukee, WI | |

2020 Census Operations: Address Frame Updates Post Address Canvassing

The following 2020 Census Operations provided updates to the Census Address Frame and were provided to the appropriate Peak operations:

- LUCA Appeals
- New Construction
- Count Review

2020 Census Operations: Address Frame Updates from Peak Operations

The following 2020 Census Operations provided updates to the Census Address Frame:

- Update/Leave
- Update/Enumerate
- Remote Alaska
- Nonresponse Followup
- Group Quarters Enumeration
- Enumeration of Transitory Locations
- Non-ID

Thank You.
Any Questions?

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