

2020 Census Local Update of Census Addresses Program Improvement Project Recommendations

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Executive Summary

The Local Update of Census Addresses Program Improvement Project identifies cost effective ways to increase participation and coverage, while decreasing program costs for the 2020 Census Local Update of Census Addresses Program. In addition, the project identifies ways to improve the quality of updates for the 2020 program.

The Local Update of Census Addresses Program provides an opportunity for tribal, state, and local governments to review and comment on the address list used to take the census. Since the passage of the Census Address List Improvement Act of 1994, there have been two Local Update of Census Addresses Programs in support of the 2000 and 2010 Decennial Census operations.

The Census 2000 program consisted of two phases. The 1998 Local Update of Census Addresses Program included the Mailout/Mailback enumeration areas while the Local Update of Census Addresses 1999 program included the Update Enumerate enumeration areas.

As a result of surveys and evaluations of the 2000 Census Local Update of Census Addresses Programs, the Census Bureau made the following changes for the 2010 Census Local Update of Census Addresses Program:

- Combined the two separate phases into one review cycle for all address types
- Expanded the review time for participants from 90 days to 120 days
- Provided more advance notice of the pending program
- Initiated comprehensive program communications with participants
- Provided participants with the opportunity to use the Census Bureau's newly developed Master Address File/Topologically Integrated Geographic Encoding and Referencing System Partnership Software application
- Invited states to participate in the program
- Provided the choice of one of the following three participation options:
 1. Option 1 – Title 13 Full Address List Review
 2. Option 2 – Title 13 Local Address List Submission
 3. Option 3 – Non-Title 13 Local Address List Submission

In order to meet the objectives of increasing participation and coverage while reducing the program cost, and identifying ways to improve the quality of updates, the Local Update of Census Addresses 2020 Program Improvement Team identified four research activities:

1. The 2010 Local Update of Census Addresses Looking Back Subteam explored assessments and related documents associated with the 2010 Census Local Update of Census Addresses and 2010 New Construction programs
2. The Geographic Support System Initiative & Local Update of Census Addresses Partnership Subteam researched the impact of the Geographic Support System Initiative on the Local Update of Census Addresses Program
3. The Local Update of Census Addresses in a Targeting Environment Subteam researched the impact of Reengineering Address Canvassing on the Local Update of Census Addresses program

4. The Focus Group Implementation Subteam Conducted Focus Groups to obtain feedback from partners on potential 2020 Local Update of Census Addresses program models

The research undertaken by the subteams resulted in 12 recommendations for the 2020 Local Update of Census Addresses Program:

1. Eliminate the Option 2 and Option 3 full address list submission
2. Reduce the complexity of the Local Update of Census Addresses Program
3. Include census structure coordinates in the census address list and allow partners to return their structure coordinates as part of their submission
4. Provide ungeocoded United States Postal Service Delivery Sequence File addresses to State and County partners
5. Provide the address list in more standard formats
6. Include an in-office verification of Local Update of Census Address submitted addresses
7. Utilize Geographic Support System Initiative tools and data to validate Local Update of Census Addresses submission
8. Encourage governments at the lowest level to work with larger governments to consolidate their submission
9. Eliminate the Block Count Challenge
10. Require unit designators for multi-unit structures
11. Encourage Local Update of Census Addresses participants to identify E-911 addresses used for mailing, location, or both
12. Continue the 2010 Census Local Update of Census Addresses Program improvements that were successful

2020 Census Local Update of Census Addresses Program Improvement Project Recommendations

1 Introduction

1.1 Purpose

The Local Update of Census Addresses (LUCA) Program improvement project identifies changes that help increase participation and coverage, while decreasing program costs for the 2020 Census LUCA Program. In addition, the project identifies ways to improve the quality of address updates for the 2020 Census LUCA Program.

To meet these objectives, the LUCA 2020 Program Improvement Team conducted the following four research activities:

1. Researched reports and documents associated with the 2010 Census LUCA and 2010 New Construction (NC) programs
2. Researched the impact of the Geographic Support System Initiative (GSS-I) on LUCA
3. Researched the impact of Reengineering Address Canvassing on LUCA address validation
4. Conducted Focus Groups to obtain feedback from partners on potential 2020 Census LUCA models

2 LUCA Program Background

The Census Address List Improvement Act of 1994 (Public Law 103-430) authorized the Census Bureau to provide individual addresses to officials of tribal, state, and local governments who agreed to conditions of confidentiality in order to review and comment on the Census Bureau's Address List prior to the 2000 Decennial Census. The Act strengthened the Census Bureau's partnership capabilities with participating governments by expanding the methods by which the Census Bureau could use to exchange address information.

Since the Census Address List Improvement Act of 1994, there have been two LUCA operations in support of the 2000 and 2010 Decennial Censuses.

2.1 Census 2000 LUCA

Census 2000 marked the first decennial census for which the Census Bureau could provide its residential address list to governments that signed the required confidentiality agreement. The Census 2000 LUCA Program consisted of two phases. The first phase, 1998 LUCA, included areas enumerated via mailout/mailback enumeration (Owens, 2003). These areas contained primarily city-style addresses, which the Census Bureau defines as those that have a house number and street name (e.g., 212 Elm Street or 137 Clark Ct., Apt. 316). These addresses are used for mailing or to provide location information for emergency services, such as police, fire, and rescue (E-911 addresses). The 1998 LUCA participants received the Census Bureau address list for review and could update the address list by adding new addresses not on the census

address list, correcting addresses, deleting addresses, identifying nonresidential addresses, and identifying out-of-jurisdiction addresses.

The second phase, 1999 LUCA, included areas enumerated via update/leave or update/enumerate operation (Owens, 2002). These areas contained primarily noncity-style addresses, which the Census Bureau defines as those that do not contain a house number and/or a street name. Noncity-style mailing addresses include:

- General delivery
- Rural route and box number
- Highway contract route and box number
- Post office box only delivery

Noncity-style addresses used by the Census Bureau also include location descriptions such as “BRICK HOUSE with ATTACHED GARAGE ON RIGHT,” structure points (geographic coordinates), and census geographic codes including state code, county code, census tract number, and census block number.

Since the Census Bureau cannot match this style of address effectively to addresses in the MAF, the 1999 LUCA participants received block counts of all residential housing unit addresses within their jurisdiction. These participants could review these counts and provide block count challenges to the Census Bureau for census blocks where address count discrepancies existed rather than provide individual address updates (Owens, 2003). Due to delays in completing the participant review cycle for the 1998 LUCA and incorporating the updates into the MAF, the Census Bureau implemented a 1998 LUCA Field Verification to validate the 1998 LUCA participant updates in some areas across the country.

Following this process, the Census Bureau provided the participants with 1998 LUCA Detailed Feedback materials that revealed the results of the comparison between their submitted updates and what census staff found in the field.

The Census Bureau compared the:

- 1998 LUCA submissions against the results of the Census 2000 Block Canvassing operation, which occurred in early 1999 (Owens, 2002) and the
- 1999 LUCA submissions against the results of the 2000 Address Listing operation, which occurred in the latter half of 1998

Following this comparison process, both 1998 LUCA and 1999 LUCA participants received detailed feedback explaining discrepancies between their submissions and the results of census fieldwork in the Block Canvassing and Address Listing operations.

Participants in both programs had the option to appeal the results of the Census Bureau’s address comparison process. Address appeals were submitted to the Census 2000 LUCA Appeals Office, an independent, temporary Federal entity set up by the Office of Management and

Budget (OMB) to administer the appeals process. The Census Address List Improvement Act of 1994 requires that the Administrator of OMB's Office of Information and Regulatory Affairs, acting through the Chief Statistician and in consultation with the Census Bureau, develop an Appeals Process to resolve any disagreements that may remain after participating governments receive the Census Bureau's LUCA feedback materials.

LUCA participants wishing to appeal an address had to submit proof of the existence of the address in their jurisdiction, such as assessor records and certificates of occupancy for recently constructed homes. If the Appeals Office approved an address, the Census Bureau reinstated it into the census process then sent it to the field for enumeration in the Coverage Improvement follow-up (CIFU) operation.

2.2 2010 Census LUCA Program

The LUCA State Survey and Census 2000 LUCA evaluations and participant surveys conducted by the National Academy of Sciences (NAS), the Department of Commerce Office of the Inspector General, OMB, and the U.S. Census Bureau (through the Anteon Corporation), resulted in a number of suggested improvements to the LUCA Program (Pfeiffer and Franz, 2005). Based on these results, the Census Bureau made the following changes for the 2010 Census LUCA Program:

- Combined the two separate Census 2000 LUCA phases into one review cycle for all address types
- Expanded the review time for participants from 90 days to 120 days
- Provided more advance notice of the pending LUCA Program
- Initiated comprehensive program communications with participants
- Provided participants with the opportunity to use the Census Bureau supplied Master Address File/Topologically Integrated Geographic Encoding and Referencing System (MAF/TIGER) Partnership Software (MTPS) application
- Invited states to participate in the program
- Provided the choice of one of the following three participation options:
 1. Option 1 – Title 13 Full Address List Review
 2. Option 2 – Title 13 Local Address List Submission
 3. Option 3 – Non-Title 13 Local Address List Submission

In compliance with Title 13, Option 1 and Option 2 participants had to read and sign a Confidentiality Agreement Form. In addition, they completed a Self-Assessment Checklist designed to measure participants' ability to meet the Census Bureau's security requirements. After signing these forms, Option 1 and Option 2 participants received the census address list for their jurisdictions. Option 1 participants could choose either a paper (6,000 addresses or less) or computer-readable address list and could update the address list by correcting addresses, deleting addresses, identifying nonresidential addresses and out-of-jurisdiction addresses, and adding new addresses not on the census address list. In addition, they could challenge the number of

addresses within a census block. They could comment on any individual city-style address on the census address list and/or challenge the count of addresses for an entire census block on the address count list, but could not do both within the same block.

Option 2 participants could only receive the census address list in computer-readable format for reference purposes and were required to submit their local address file of residential city-style addresses in a predefined Census Bureau format.

Option 1 and Option 2 participants received detailed feedback of the results of the Address Canvassing Operation, which updated the census address list and verified addresses submitted by LUCA participants. Participants were eligible to file address appeals with the 2010 Census LUCA Appeals Staff, an independent, temporary federal entity set up by the OMB to administer the appeals process.

Option 3 participants did not receive the census address list and therefore were not required to sign the Confidentiality Agreement Form. They received the 2010 Census LUCA Address Count List for reference only and submitted their local address file of residential city-style addresses in a predefined Census Bureau format. Option 3 participants received a Feedback Address Update Summary Report of the total address tallies for their jurisdiction. However, since they did not receive the census address list or detailed feedback, they could not appeal addresses.

All participants received the 2010 Census LUCA Address Count List that contained the total number of housing unit and group quarters addresses on the census address list for each census block within their jurisdiction. Participants could provide map feature and legal boundary updates regardless of the option they selected.

2.3 Enumeration of LUCA Addresses

The Census Bureau included LUCA addresses verified in the Address Canvassing Operation or successfully appealed in the enumeration universe. If the Census Bureau did not receive a census questionnaire from a LUCA address, it sent that address to the Nonresponse Follow-up (NRFU) operation for enumeration. Addresses deleted or found vacant during NRFU were forwarded to the NRFU Vacant Delete Check (NRFU VDC) operation.

The Census Bureau initiated a late mailout of census questionnaires for successfully appealed addresses that could not be included in the initial enumeration universe. Those appealed addresses that did not respond to the late mailout or were not included in the late mailout were included in the NRFU VDC.

3 Research

The 2020 Research and Planning Office created the Local Update of Census Addresses Program Improvement Project to identify cost effective ways to increase participation and coverage, while decreasing program costs of the 2020 Census LUCA Program. In addition, the project identifies ways to improve the quality of address updates for the 2020 LUCA Program. This team focused on the following four high-level research topics:

1. Lessons learned from the 2010 Census
2. Plans to implement intercensal address partnership activities as part of the Geographic Support Systems Initiative (GSS-I)
3. Potential plans for reengineering address canvassing operation
4. Input from local governments on potential models for 2020 LUCA

To conduct the research for each of the four topics, the 2020 LUCA Program Improvement Team formed the following subteams:

1. 2010 LUCA Looking Back Subteam
2. GSS-I & LUCA Partnership Subteam
3. LUCA in a Targeting Environment Subteam
4. Focus Group Implementation Subteam

All subteam research and recommendations focused on how the 2020 LUCA Program should be cost-effective, yield high quality data, and enhance participation from all levels of government.

3.1 2010 LUCA Looking Back Subteam

The 2010 LUCA Looking Back Subteam conducted program evaluation research by exploring related reports and documents including:

- 2010 LUCA and New Construction Assessment reports
- 2010 LUCA and New Construction lessons learned
- Legal and policy requirements related to the LUCA Program
- 2010 LUCA Participant Survey Assessment report
- 2010 LUCA Survey Results of Non-Participating Governments
- 2010 LUCA Looking Back
- 2010 LUCA Federal Register Notices

In addition to reviewing the existing documents, the Looking Back subteam explored the activities and responsibilities performed by all LUCA stakeholders including:

- Geography Division (GEO)
- Field Division – Headquarters (FLD HQ)
- FLD – Regional Offices (FLD ROs)
- National Processing Center (NPC)

The subteam also examined some of the earlier versions of the LUCA Program and other geographic partnership programs such as the 2010 Census New Construction Program.

3.2 GSS-I & LUCA Partnership Subteam

The GSS-I is an integrated program of improved address coverage, continual spatial feature updates, and enhanced quality assessment and measurement.

The Census Bureau designed this voluntary program to make the 2020 Decennial Census more efficient by collecting address and geospatial information from our partners throughout the decade. By working with our partners at all levels of government, the Census Bureau is improving the accuracy and currency of the census address list. This saves time and resources during the decennial census operations and improves data collection processes and quality for current surveys, including the American Community Survey.

The GSS-I & LUCA Partnership Subteam based their recommendations to improve the 2020 LUCA Program by monitoring the progress of the GSS-I and by actively participating in the development of GSS-I partnership operations. The subteam contained members of the GSS-I Steering Committee as well as active members of the GSS-I Project Management and Planning Meetings and GSS-I Partner Data Evaluation team. The subteam was responsible for two primary questions including:

1. How can processes and software developed for the GSS-I be integrated into LUCA? This includes such items as secure file transfer, validation of addresses, and the feedback process.
2. How can the GSS-I & LUCA Partnership Subteam help shape GSS-I partnership activities in order to maximize the benefits for 2020 LUCA?

3.3 LUCA in a Targeting¹ Environment Subteam

Address canvassing is the process by which the Census Bureau validates, corrects, or deletes existing Census Bureau addresses, adds missing addresses, and adds or corrects locations of specific addresses before a decennial census. To substantially reduce the workload of the census listing operation (and thus the cost), while maintaining an acceptable level of accuracy, the Census Bureau is determining if a full, nationwide address canvassing operation in the field can be reengineered for the 2020 Census. Reengineering the address canvassing operation involves both in-office and in-field components to update and validate the address list in preparation for the 2020 Census.

Research conducted by the LUCA in a Targeting Environment Subteam focused on the modifications to the Address Canvassing Operation. Since address canvassing was the method for LUCA address verification for the 2010 Census, the research involved how to validate LUCA addresses in blocks that will not be address canvassed or field enumerated.

The research centered on needed changes to the LUCA Feedback phase and included the use of administrative records and an in-office LUCA address validation.

¹ The term “Targeting” was used prior to the designation of a Reengineering Address Canvassing operation.

3.3.1 Use of Administrative Records

The research for the use of Administrative Records to validate new LUCA addresses involved matching Census Bureau address data against other address sources to assess the feasibility of using various address sources. Research included the use of the following:

- 2010 LUCA address records
- Current geographic partnership address records
- Geographic data such as imagery and integrated GIS data
- 2010 and current vintage administrative records which included commercial and Federal address records

In order to match 2010 LUCA addresses to 2010 Administrative Records, the GEO provided a file of all 2010 LUCA addresses that did not match to existing MAF records (new to Census addresses) to the Center for Administrative Records Research and Applications (CARRA). The address file included a field to indicate if the LUCA address matched to an administrative record and fields to assist in researching the results of the match such as the Address Canvassing Action and the status of the record for enumeration (CENSTAT2010). The CARRA conducted the address match and provided the results to the LUCA in a Targeting Environment Subteam. These results included:

- Total of 9.1 LUCA addresses were matched to 2010 Administrative Records (only 2.8 million out of 9.1 million LUCA records were enumerated in the census)
- Of the 2.8 million LUCA addresses that were enumerated in the 2010 census, 60 percent matched to a record in the Administrative Records database
- Of the 6.3 million LUCA addresses that were not enumerated in the census, 20.5 percent matched to a record in the Administrative Records database

The subteam conducted research to determine if the match rate between administrative records and LUCA addresses varies by location. This research was to determine if some areas are more suitable for validating LUCA addresses with administrative records. See Attachment A for a map depicting the LUCA to Administrative Records Match Rate. The map indicates no strong correlation between geography and the LUCA address match rate.

3.3.2 Validating LUCA records “in-office”

Of the over 41 million LUCA address records received in the 2010 LUCA Program, approximately 9 million records did not match to existing addresses in the MAF/TIGER database (MTdb) requiring validation in the Address Canvassing Operation. Research for the in-office address validation focused on the ability to validate these unmatched LUCA records in an office environment.

The research consisted of reviewing unmatched LUCA records in-office, utilizing similar tools that the GSS-I utilizes to validate addresses including but not limited to imagery, local GIS files, and the internet to determine what the address represents. Research included urban, rural, and suburban areas.

3.4 Focus Group Implementation Subteam

The Focus Group Implementation Subteam obtained feedback from partners on potential 2020 LUCA models through a series of meetings with prospective and former LUCA participants in various geographic areas representing different sizes and types of governments.

The subteam secured the location of the meetings, moderated and coordinated the focus groups, and recorded the information for analysis. In addition, the subteam defined the criteria that allowed the selection of a representative group of participants for each focus group workshop and identified all potential participants in geographically different locations across the country, to ensure a broad and diverse representation.

The subteam members met with participants who represented local governments in the states of Washington, Georgia, Florida, Michigan, and Pennsylvania and tribal government meetings with the National Congress of American Indians (NCAI) in the District of Columbia (D.C.) and the National American Indian Housing Council (NAIHC) at their annual convention in Kansas City, Missouri.

4 Recommendations

The research undertaken by the 2020 Census LUCA Program Improvement Subteams resulted in 12 recommendations for the 2020 LUCA Program.

Recommendation 1: Eliminate the Option 2 and Option 3 full address list submission

The 2010 Census LUCA Program offered participants the choice of three participation options. Based on the 2000 LUCA evaluations and surveys, the Census Bureau considered the inclusion of Option 2 and Option 3, the full address list submissions, an improvement to the 1998 LUCA program by allowing partners to submit their entire list of residential addresses.

Impact

Eliminating Option 2 and Option 3 reduces the number of deleted LUCA address records in field verification activities, reduces the burden and cost of processing addresses and validating LUCA addresses, and reduces the need for Option 2 and Option 3 since contacted governments can submit their address list to the Census Bureau throughout the decade. Sections 4.1.1 to 4.1.3 discuss the impact of eliminating the Option 2 and Option 3 full address list submission.

Research

4.1.1 Reduces the number of deleted LUCA Records in field verification activities

A key component of the 2020 LUCA Program Improvement research is to reduce the impact of LUCA as it relates to receiving and processing addresses deleted in subsequent field verification activities. The number of deleted LUCA records increased dramatically from the 1998 LUCA to the 2010 LUCA as seen in Table 1.

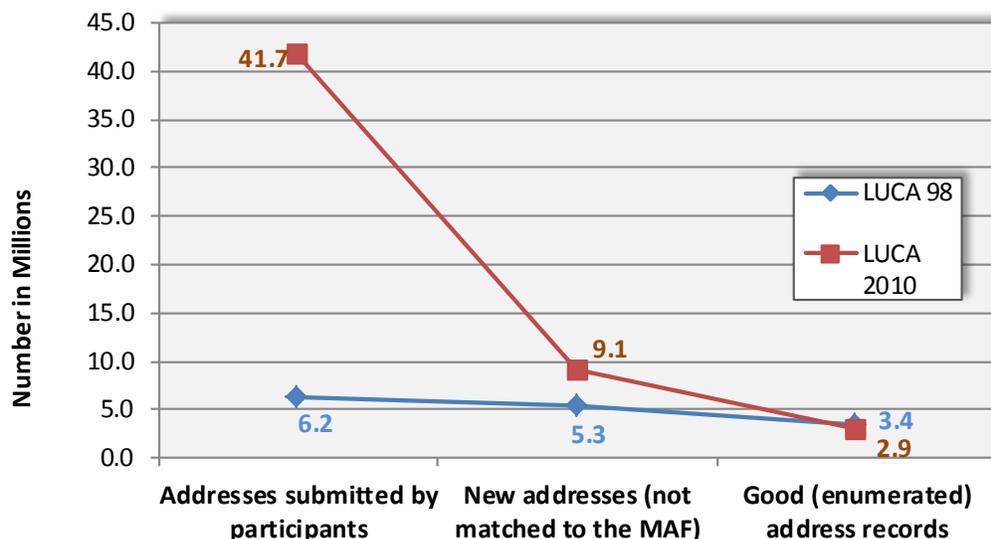
Table 1: Comparison of 1998 LUCA and 2010 LUCA

1998 LUCA	2010 LUCA
6.2 Million addresses submitted by 6,230 participants	41.7 Million addresses submitted by 7,641 participants
0.9 Million matched to existing MAF records	32.6 Million matched to existing MAF records
5.3 Million new addresses added to the MAF <ul style="list-style-type: none"> • 3.4 Million addresses enumerated (63.2 percent) • 1.9 Million deleted addresses (36.8 percent deleted) • 63.2 percent Enumeration rate 	9.1 Million new addresses added to the MAF <ul style="list-style-type: none"> • 2.9 Million addresses enumerated (31.8 percent) • 6.2 Million deleted addresses (68.2 percent deleted) • 31.8 percent Enumeration rate

Source: Evaluation of the Local Update of Census Addresses 98 (LUCA 98)
2010 Census Local Update of Census Addresses Assessment

Even though the Census Bureau received 3.8 million more new to census address records in the 2010 LUCA compared to the previous decade, it enumerated fewer new to census LUCA records than in the 1998 LUCA. In the 1998 LUCA, the Census Bureau enumerated 3.4 million new to census addresses (63.2 percent) in comparison to 2.9 million (31.8 percent) in LUCA 2010. The following figure highlights the discrepancies between the 1998 LUCA and the 2010 LUCA. While the full address list submissions increased the number of address submitted, it decreased the quality of the addresses submitted by Option 2 and Option 3 participants.

Discrepancies between 1998 LUCA and 2010 LUCA



Source: Evaluation of the Local Update of Census Addresses 98 (LUCA 98)
2010 Census Local Update of Census Addresses Assessment

A change in the program guidelines resulted in the large increase in addresses received from the 1998 LUCA to the 2010 LUCA. In the 1998 LUCA, the Census Bureau asked participants to review and comment on the Census Bureau address list. This included submitting residential addresses missing in the census address list, indicating a change or correction to an address, deleting an address, and indicating if an address was out of the participants' jurisdiction.

The Census Bureau considered the new participation options for 2010 LUCA, Option 2 and Option 3, an improvement to the 1998 LUCA by allowing partners to submit their entire list of residential addresses and placing the burden of address matching on the Census Bureau. However, this increased the number of addresses received from 6.2 million in the 1998 LUCA to 41.7 million in the 2010 LUCA. This dramatically increased the workload of the Regional Office (RO) staff that reviewed the LUCA submissions to ensure they were in the proper format and checking for obvious errors in the files. Because of the large workload, they were unable to recognize certain errors in submissions. For example, one large government geocoded all of their addresses to a root block (i.e., all address were geocoded to blocks ending in 000, such as block 4000, 5000).

After the RO review, the Census Bureau ran an automated match of the LUCA addresses to the addresses in the MAF. Of the 41.7 million records received in the 2010 LUCA, all but 9.1 million records were matched to an existing MAF record. This was an increase of 3.8 million unmatched, or new to Census records from 1998 LUCA to 2010 LUCA.

Although the LUCA Program requires participants to submit only residential addresses, a number of Option 2 and Option 3 participants submitted files that contained both residential and non-residential addresses. These non-residential addresses ranged from public buildings such as libraries to emergency service locations such as fire hydrants. For example, one State 2010

LUCA submission contained fire hydrants with standard city-style addressing (i.e., house number/street name). These fire hydrant addresses did not match to existing MAF residential records and went to the Census nationwide Address Canvassing Operation for verification. The Address Canvassing Operation had to determine which addresses were residential (for Census use) and which were nonresidential.

The GSS-I evaluation of addresses

The GSS-I evaluation of addresses confirmed that many local address list sources contain non-residential addresses and just under half are unable to distinguish residential from non-residential addresses in their address list. According to the Address Source Evaluation processing report, of the 526 address files submitted by the GSS-I partners through Phases 1-3, 47 percent did not identify a use type such as residential or nonresidential for each address. This inability to distinguish residential from nonresidential addresses may explain why address canvassing deleted so many LUCA address records.

4.1.2 Reduces the burden and cost of processing addresses and LUCA address validation

The plan for 2020 LUCA must take into consideration that there will not be a nationwide address canvassing operation for the 2020 Census. A goal of Census 2020 planning is to focus the Address Canvassing Operation on a percentage of the addresses (whether 20 percent or 50 percent), it leaves a large number of LUCA addresses that cannot be validated using address canvassing. Any recommendations for 2020 LUCA must consider this. Without a nationwide address canvassing operation, validating LUCA address records becomes the responsibility of either RO geography staff and/or National Processing Center geography staff. To support this in-office address validation, LUCA requires a large dedicated staff for a short time period. Eliminating the full address list submissions, Option 2 and Option 3, would decrease the number of in-office validation staff by half, thereby reducing costs and increasing the quality of LUCA addresses received.

4.1.3 GSS-I reduces the need for Option 2 and Option 3

The GSS-I is the first intercensal address partnership effort undertaken by the Census Bureau. The GSS-I is the method through which governments contacted by the Census Bureau can provide their entire address list to the Census Bureau for processing and update throughout the decade. The GSS-I greatly reduces the need for Option 2 and Option 3 since this program provides contacted governments the opportunity to submit their entire address list to the Census Bureau throughout the decade.

4.2 Recommendation 2: Reduce the complexity of the LUCA program

One of the major complaints and concerns by participants and governments that chose not to participate in 2010 LUCA was the complexity of the program. The complexity of the program increased the demand for resources (i.e., staff, money, and time) of governments to undertake the program and reduced the rate of participation.

Impact

Reducing the complexity of the LUCA program benefits participants by helping to reduce the demand for resources (i.e., staff, money, and time) to undertake the program and benefits the Census Bureau by increasing the rate of participation.

Research

The *Survey Results of Non-Participating Governments Eligible for the 2010 Census Local Update of Census Addresses (LUCA) Program* found that among those governments that registered and later dropped out of the program and governments that registered but did not return materials cited the complexity of the LUCA program as a reason for their non-participation. This survey found that the complexity of the LUCA program greatly increased the demand for resources (i.e., staff, money, and time) unavailable to a number of responding governments. The first recommendation of the survey is to simplify the program and thereby reduce the demand for resources.

The complexity of the LUCA program was a major concern expressed among the attendees at all of the Focus Group Implementation Subteam meetings. The following is a representation of remarks from the meeting transcripts.

Georgia

“...I do not have time to go through your information...the simpler you can keep it for me the better it’s going to be.”

Washington

“Intuitively, I know that by eliminating options, it’s better on your end because now you’re just dealing with one avenue rather than having to use different options and compile that information. It also simplifies it from our end because when you give people a lot of options and they don’t understand the differences there is some confusion in that. I think the success is going to be, not in the options we are talking about now, make it simple, make it so consistent information gets to you, you only have one thing to look at, but provide the options on how the comparative analysis is done, try to simplify that proves so there is less time spent on the end of the person doing that work. That will get you a higher success rate.”

Michigan

“...we've got a lot of very small counties, as I said, who don't have, who have neither the funds or the capacity or the people who are working for them to do this.”

District of Columbia (D.C.), NCAI

“It seems like that places a heavy burden on the tribal governments...that seems like that would be a huge amount of time ...”

“I think in rural Alaska you will get a lot less of a response. Just because...it is harder for them to do. I can't say for sure because I don't know how many tribes in rural Alaska actually

responded last time, but I think it is going to be harder for them to deal with the full list and comment.”²

4.3 Recommendation 3: Include census structure coordinates in the census address list and allow participants to return their structure coordinates as part of their submission

The address source evaluation phase of the GSS-I enhances existing matching tools by including links between local structure points and MAF structure points. These links are mapped, giving GSS-I staff the opportunity to review the locational differences between census and local structure points. This allows staff the ability to view these links and compare the structure points to the road network and imagery in an effort to verify the spatial accuracy of the structure point, along with a review to determine if the structure points represent residential housing units. Structure points that do not match are flagged separately from match records and enables staff to review unmatched records visually, to determine if they represent addresses missing in the MAF/TIGER System or addresses that are in MAF/TIGER but do not match using automated matching software.

Impact

Including structure points in the LUCA products allows participants the opportunity to compare visually their structure points to the Census Bureau’s structure points and helps to locate addresses during their review. Allowing participants to submit their structure coordinates to the Census Bureau provides census staff the ability to use software developed for the GSS-I to perform in-office address validation.

Research

4.3.1 Benefits to the participants

According to the LUCA Assessment, 54 percent of governments selecting paper maps in the 2010 LUCA were from governments with 1,000 addresses or fewer and 37 percent were from governments with 1,001 to 6,000 addresses. Governments using paper maps can use the structure points to compare visually census structure points with addresses known to exist in these smaller communities.

Focus Group Implementation Subteam attendees felt that structure points on paper maps would be of help in locating addresses.

² In response to the concerns of tribal government participation, the 2010 LUCA Assessment found that of the 114 registered tribal governments, 96 or 84.2 percent chose Option 1, the Full Address List Review. Therefore, the results of the 2010 LUCA Assessment do not support the concerns of the tribal governments on the impact of eliminating Option 2 and Option 3 and/or reducing the complexity of the program for those governments.

Florida

“... because one of the things that we are talking about is for the next LUCA if we could provide you maps with our points on it, would that help you?”

Response

“Oh, that would most certainly. But I think for our part, we would be looking for the actual...if you do have the GPS coordinates, your point file to compare to ours.”

Washington

“I would love to have that, honestly”

Pennsylvania

“It may help. There were times where I had an address point that was in another block group or block and you (Census) had it in another one. So it may help to show that...”

4.3.2 Benefits to the Census Bureau

Including structure points as part of a participant’s LUCA submission back to the Census Bureau allows census staff the ability to use software developed for the GSS-I to perform in-office address validation.

4.4 Recommendation 4: Provide ungeocoded United States Postal Service Delivery Sequence File addresses to State and County partners

Previous LUCA programs did not include the United State Postal Service (USPS) Delivery Sequence File (DSF) records that could not be geocoded to a census tract and block (due to missing features or road name and address range attributes from TIGER). Although DSF records are geocoded to a state and county by the USPS, they are not geocoded to a census tract and block.

Impact

Providing the ungeocoded DSF records to state and county LUCA participants directs LUCA participants to roads and neighborhoods that the Census Bureau is missing in the MAF/TIGER system, allowing them to focus their review in areas of need. This enables participants who do not have the resources to review the entire address list the ability to do a more focused LUCA review.

Research

According to the *2010 Census Local Update of Census Addresses Assessment (LUCA Assessment)*, 4,499,926 LUCA records matched to ungeocoded DSF records. Subsequently these ungeocoded DSF records were geocoded by LUCA participants and added to the 2010 Census. Of the 4,499,926 newly geocoded records, the Census Bureau enumerated 3,706,011 records for an 82.4 percent enumeration rate. This was a substantial benefit of LUCA to the Census Bureau.

4.5 Recommendation 5: Provide the address list in more standard formats

Because address records stored in the MAF may contain commas, the 2010 Census LUCA Program provided computer-readable address data in a pipe-delimited text file format rather than a comma-delimited text file format. This format created problems for participants unfamiliar with converting or opening the pipe-delimited address files in commonly used software (i.e., Excel, Access).

Impact

Providing the Census Bureau's address list in a standard file format enables partners to work easily with the data, reduces the number of calls to the LUCA Help Desk, and provides more time for participants to focus on their address review.

Research

According to the *2010 Census Local Update of Census Addresses Participant Survey Evaluation Report* (LUCA Participant Survey):

For LUCA, the Census Bureau should consider maximum use of the most widely adopted commercial software. Although personnel conversant with commercial GIS software might have been able to learn MTPS readily, it did require extra time, and it seems to have baffled some government personnel, especially less specialized personnel of smaller governments. Even users of less common programs often know something about the dominant software, or at least can convert its files, because they have to deal with files received from others. Thus, survey respondents recommended using ArcGIS or other GIS software from ESRI, and address lists in Microsoft Word or Excel. Even governments that use QuattroPro, for example, are likely to know how to convert Excel files because they get them from citizens, contractors, and other governments. Using the most common GIS, word processing, and spreadsheet programs would reduce the learning curve for local LUCA liaisons and allow them to concentrate the time they have available for LUCA participation on address review rather than learning a new software system. (Sweeney, Simmont, Matheis, Timko, 2012)

The LUCA Help Desk received 2,256 calls from LUCA participants. Of the 2,256 calls, 946 (41.9 percent) were to support participants in converting the pipe-delimited address files to a more standard format that participants could work with.

In agreement to a more standard software, the Focus Group Implementation Subteam meeting attendees:

Pennsylvania

"I mean Excel, Access, any basic computer software."

"Yeah I would say go with something pretty common like an Excel type of file."

Washington

“If you can make it easy a good portion of the issues will go away by providing something that can be manipulated and used fairly easily.”

4.6 Recommendation 6: Include an in-office verification of LUCA submitted addresses

Looking ahead to reengineering address canvassing for the 2020 Census, the LUCA in a Targeting Environment Subteam research focused on the ability to validate unmatched participant submitted records in an office environment using available on-line and technological resources.

Impact

The conclusion of the in-office address verification research found that in-office address verification would be feasible and should be a part of the 2020 LUCA. In addition, the subteam recommended that a pilot test would be beneficial to determine a detailed and standardized process for address verification in specific areas as part of the reengineering of the address canvassing operation in preparation for the 2020 Census.

Research

The research included two rounds of address review. Each subteam member selected four or five dissimilar entities from a list of 2010 LUCA Program Option 1 participants for each round. The entities selected were diverse examples of urban, rural, high-growth, and stable areas and included places, minor civil divisions (MCD), and counties.

When no on-line local address list was available, researchers used map and/or real estate sites such as Google maps, Bing maps, Zillow, Trulia, Redfin, and PropertyShark to verify addresses.

The time needed to review each entity varied widely depending on the number of addresses under review, the address resources available, the clarity and currency of the aerial imagery, and availability of real estate information.

The researchers had mixed results verifying individual addresses within multi-unit structures, i.e., high-rise and multi-level residential buildings. The tax assessor’s database information for Bloomington, Minnesota; Norfolk, Nebraska; and Sheridan, Wyoming identify each individual unit address. Other databases, such as Lancaster County, South Carolina and Salisbury, North Carolina tax assessor websites, contain information for the entire building but not each individual unit. Although in-office verification can verify a number of individual units in multi-unit buildings, there are limitations requiring further research.

4.7 Recommendation 7: Utilize GSS-I tools and data to validate LUCA submission

By working with our partners at all levels of government, the Census Bureau is improving the accuracy and currency of the census address list through the GSS-I. This program has improved

products, enhanced partnerships with governments, improved data processes, and provides continuous quality assessment.

Impact

Utilizing the tools and data already developed and collected for the GSS-I saves time and resources throughout the duration of the LUCA program.

Research

4.7.1 Utilizing tools developed for the GSS-I

To support the task of evaluating and processing address files from GSS-I partners, GEO developed the Address Source Evaluation (ASE) process. Through the first two years of the GSS-I, the GEO successfully evaluated over 600 partner files and over 40,000,000 addresses. The success of the ASE process is due to an automated process designed to identify missing or incorrectly geocoded addresses and skilled geography review staff.

The ASE process begins with an automated match of partner addresses and structure points to addresses in the MTdb. ArcGIS mapping software displays the results and highlights various components of the match by showing the links between the partner structure points and the MTdb structure points along with an imagery overlay. These links include which partner addresses matched to the MTdb with links (lines) connecting the MTdb structure point and the partner structure point. Each partner structure point is color-coded based on the match code to assist the interactive Local File Evaluation Interactive Review Process as shown in Table 2.

Table 2: Address Match Codes

Address Match Code	DESCRIPTION	Value Criteria
1	Confidence in: 1. Address Match 2. Local Unit-Metadata 3. Local geocode	1. Automated Match to the MAF 2. MTFCC is known and verified 3. MAF and Local Coordinate in same block
2	Confidence in: 1. Address Match 2. Local Unit-Metadata	1. Automated Match to the MAF 2. MTFCC is known and verified 3. MAF and Local Coordinate are <u>not</u> in the same Block.
3	Confidence in: 1. Address Match 2. Local geocode	1. Automated Match to the MAF 2. MTFCC is unknown, <u>not</u> verifiable, or <u>not</u> identifiable 3. MAF and Local Coordinate in same block
4	Confidence in: 1. Address Match	1. Automated Match to the MAF 2. MTFCC is unknown, <u>not</u> verifiable, or <u>not</u> identifiable 3. MAF and Local Coordinate are <u>not</u> in the same Block.
5	No confidence in partner record (Generic reject value)	No match to MAF and no evidence address exists or will soon OR Match appears invalid and no evidence address exists or will soon

Source: Geography Division

This process allows interactive review staff to see quickly where the MTdb is missing neighborhoods or where the partner file has more accurate coordinates than the Census structure points.

The ASE process is easily adaptable to a LUCA in-office review process. LUCA has the advantage of determining the format of the return address file thereby eliminating the time that GSS-I staff spends converting the GSS-I partner files to match the MTdb. In addition, if the 2020 LUCA eliminates the full address list submission options (Option 2 and Option 3), the number of address records to evaluate in-office would be greatly reduced (five to ten million addresses vs over 40 million addresses).

The ASE process would also work for the LUCA address evaluation, even in areas where partners are unable to provide structure coordinates. A LUCA ASE process would include highlighting blocks, in various colors, based on the match results of LUCA participant provided addresses to the MTdb, GSS-I address database, and the Administrative Records database. The match rate would help determine a level of confidence in LUCA submission and help the reviewer focus their review similar to the GSS-I review process.

4.7.2 Utilizing data acquired for the GSS-I

Through the first year of partner file acquisition and processing, the GSS-I received 42,111,361 addresses from 434 partners. Of the nearly 34.9 million addresses that matched to the MAF, over 16.4 million contained use types indicating the type of structure represented by the address such as residential or nonresidential. The LUCA program would match incoming LUCA addresses against addresses received from the GSS-I in order to filter out LUCA records that represent non-residential structures as previously defined by GSS-I participants.

Using GSS-I records to identify non-residential units can greatly reduce the number of addresses sent to address canvassing or in-office validation, reducing the cost of LUCA validation and increasing the quality of addresses sent to enumeration.

4.8 Recommendation 8: Encourage governments at the lowest level to work with larger governments to consolidate their submission

Although previous LUCA programs have suggested that governments consolidate their address review and submissions with other levels of governments, this effort was not widely publicized or stressed.

Impact

Encouraging governments to coordinate and consolidate their address review and submission increases the quality of data received for the LUCA program and reduces the time and resources required for local government participation. Although this decreases the number of participants due to consolidation, participation by governments at a higher level maximizes address coverage.

Research

The LUCA Participant Survey stressed that a greater effort to publicize coordination possibilities among smaller and lower-level governments (MCDs and places) could result in greater participation and an address review that is more detailed. Almost all (nearly 95 percent) of the governments that had their addresses submitted by another government were satisfied with their coordination.

In addition, the LUCA Assessment states that consolidating submissions would increase the quality of data received for the LUCA program:

Addresses are generally assigned at the lowest level of government and statistics show that the lower level governments, especially those with smaller populations provide better LUCA updates than higher-level governments. This poses a problem in that working with the lowest level government increases the amount of governments needed to cover the entire nation. Working at the state or county level would lower the number of governments needed to cover the nation but may not provide the most accurate data. Another solution would be to encourage the sharing of address data from those that assign addresses at the lowest level of governments to higher-level governments such as counties or states in order to maximize

address coverage (Swartz, Virgile, Timko, 2012.)

The Non-participating Government Survey found that governments that selected “LUCA Review Performed by Another/Higher Level of Government” increased from the ninth chosen reason for not participating in the 1998 LUCA to the fifth highest chosen reason for not participating in the 2010 LUCA Program. This seemed to indicate better communications between the Census Bureau and prospective participants regarding this alternative to direct participation. Even though the net effect of this approach resulted in a lower number of registered participants, it increased the indirect involvement in the 2010 LUCA Program by a greater number of governments that otherwise would not have participated.

Remarks from the focus groups concurred with the positive results of government coordination and consolidation to undertake and complete participation in the LUCA program. In addition, some of the attendees recommended working with their Council of Governments (COGS) and Regional Planning Agencies (RPA). Among the comments:

Florida

“...we had all three cities, incorporated cities, and the county joined forces. And, we also kind of contracted with USF (University of South Florida), their GIS specialists and basically worked between our offices, the addressing, and fed everything back to USF which compiled the list. So...research on the addressing and both the lists.”

“...we took address listings from a couple of the utilities, from the 911 database, from our existing address data and basically created a master address point file. And we did that in cooperation with the city of Tampa, Plant City, Temple Terrace, and the unincorporated area of the county. And, basically we created this point file, that’s what we’re maintaining now. The city of Tampa and Hillsborough County have joined together and we maintain one point file.”

Pennsylvania

“In Center County you have 35 municipalities, we probably have 8 that are going to do their own and then the others are going to rely on the county planning department.”

Washington

“We have the association of Washington cities and the counties have their counterpart for the counties, I think it’s really important to meet with the County execs or their representatives to talk about this. I truly believe that the county and cities work well together on projects like this. That would be a good way to get their feedback.”

4.9 Recommendation 9: Eliminate the Block Count Challenge

LUCA participants received an Address Count List that contained the block counts of all residential housing unit addresses within their jurisdiction. Option 1 participants could review these counts and provide block count challenges to the Census Bureau for census blocks where address count discrepancies existed rather than provide individual address updates.

Impact

Although the Address Count List is beneficial for LUCA participants for comparing census address counts to local address counts within census blocks, reengineering address canvassing requires the submission of full address data to verify addresses. Therefore, research for improving the 2020 LUCA Program recommended eliminating block count challenges from the program.

Research

In addition to commenting on the census address list, the 2010 LUCA Option 1 participants could challenge the number of addresses within a census block on the address count list. The LUCA Assessment reports that there were 1,028 files processed with 100,368 block challenges.

The LUCA Survey found that nearly 60 percent of the participants reported that the Address Count List was very or somewhat useful (17 percent and 40 percent respectively). However, one-quarter (25 percent) of the participants did not consult or did not try to use the Address Count List at all.

The usefulness of Address Count List varied with entity size. Entities with fewer than 6,000 addresses rated the Address Count List as more useful than did larger entities, especially those with more than 50,000 addresses.

4.10 Recommendation 10: Require unit designators for multi-unit structures

The 2010 LUCA Program procedures instructed participants to use an asterisk (*) if apartment or unit numbers were not known. They could enter ‘*’ for each unit until all of the units were added. The ‘*’ character alerted the Census Bureau that the actual unit identifiers were unknown and that further information would be obtained during address canvassing.

Impact

Reengineering address canvassing requires that all unit numbers must be identified prior to address list submission since there will not be a full nationwide Address Canvassing Operation to identify individual units. Therefore, the 2020 LUCA Program cannot accept multiunit addresses submitted without identifying unit numbers.

4.11 Recommendation 11: Encourage LUCA participants to identify E-911 Addresses used for mailing, location, or both

The Census Bureau refers to housing units and group quarters addresses that have a house number and street name address, for example, 212 Elm Street or 137 Clark Ct., Apt. 316, as city-style addresses. These types of addresses are used for mailing and/or to provide location for emergency services, such as police, fire, and rescue (E-911 addresses).

Since the LUCA program requires participants to submit only residential addresses with a house number and street name, E-911 addresses with a house number and street name used only for emergency location may be included in the local address file.

Impact

Providing a means for participants to identify if each submitted address is used for mailing, emergency location, or both helps the Census Bureau determine what type of enumeration method is appropriate for each address submitted.

4.12 Recommendation 12: Continue the 2010 Census LUCA Program improvements that were successful

In addition to combining the two separate Census 2000 LUCA phases into one review cycle for all address types and providing the choice of one of three participation options (Discussed in Recommendation 1), the 2010 Census LUCA Program:

- Expanded the review time for participants from 90 days to 120 days
- Provided more advance notice of the pending LUCA program
- Initiated comprehensive program communications with participants
- Provided participants with the opportunity to use the Census Bureau supplied MAF/TIGER Partnership Software (MTPS) application
- Invited states to participate in the program

Impact

Continuing the successful LUCA program improvements provides participants with adequate preparation and review time, encourages participation through effective communication and information, expands the use of technology, and provides participants with a variety of media selections that fit their needs to ensure a successful address review.

Research

4.12.1 Continue to provide a 120-day review time for participants.

The LUCA Participant Survey noted the positive results of expanding the review time:

- Entities with fewer than 6,000 addresses, 90 days were enough
- Entities with 6,000 to 1,000,000 addresses, 120 days were needed
- Entities with more than 1,000,000 addresses, 150 days were necessary

It took the entities more time to review the initial materials in electronic media than the paper version. More recipients of electronic address lists and maps wanted more than 120 days for review, compared to recipients of paper address lists and maps, but 82 percent of recipients of

both electronic address lists and electronic maps found 120 days or less to be sufficient for review.

4.12.2 Continue the six month advance notice about the LUCA program registration

The Advance Notification package provided governments with details of the 2010 Census LUCA Program, samples of the LUCA program materials, and provided lead-time to begin planning and preparing a strategy for their participation in the program. In addition to mailing the Advance Notification package, eligible governments could learn about the program in LUCA promotional workshops conducted by the Census Bureau ROs. These workshops emphasized the purpose and importance of the LUCA program, described the LUCA program schedule, program options, confidentiality requirements, participant responsibilities, and the planned LUCA materials supplied by the Census Bureau.

The LUCA Participant Survey found that the advance notice need varied with the size of the responding government from five to six months with larger entities more likely to need more advance notice than smaller entities.

The advance mailing was the most positive factor that influenced the decision to participate in LUCA for 70 to 78 percent of participants from all government levels except for tribal governments where it was effective at a 90 percent rate.

Additionally, the Focus Group Implementation Subteam meetings reported positive feedback from potential and former LUCA participants in providing an advance notice.

Pennsylvania

“I would say at least a good 6 months of lead time so I could get the data straighten it out and be ready to go...”

According to the LUCA Participant Survey, promotional workshops had slightly less positive influence on LUCA participation than the advance notification, in the range of 56–69 percent for counties, minor civil divisions, and places, and 70–80 percent for tribal governments. In rating nine factors as the “most important” in their decision to participate, “attending a promotional workshop” ranked number three.

To expand the benefits of the advance notice, the Looking Back Subteam recommended:

- Use technology such as webinars and video teleconferences as much as possible to reduce the need for in-person promotional workshops and technical training.
- Send a postcard with a link to a website that the government could access to learn about the LUCA Program. The postcard could also contain a toll-free telephone number to call to request promotional materials if they prefer not to use the internet.

- The Contact Update Form for governments to provide updated contact information should be available online for governments to fill out electronically. The updates could then be loaded into the GPP.

4.12.3 Continue a comprehensive communication program with participants

The 2010 LUCA proposal stressed the need for comprehensive communications with tribal, state, and local governments to encourage participation in the LUCA program. The initial contact included the advance notice and promotional workshops discussed above, the formal invitation, and follow-up. In addition to these efforts for the 2010 LUCA Program, the Census Bureau:

- Promoted the 2010 Census LUCA Program at professional conferences
- Developed a LUCA website to provide additional information and program materials such as user guides and forms

4.12.3.1 Continue but simplify invitation and registration information

In addition to a letter and the various program registration forms, the invitation package included a Computer-Based Training (CBT) CD-ROM and a sample MTPS CD-ROM to familiarize the invited governments with the program, the program materials, the procedures for their address list review, and how to make address, feature, and legal boundary map updates.

The LUCA Participant Survey states that reading the registration and advance mailings, influenced 64 to 73 percent of the participants except for tribal governments, where reading the mailings influenced 86 percent of the participants.

Although remarks from the Focus Group Implementation Subteam meetings varied as to the content and wording of the invitation, the consensus of the participants was to expand the invitation copy to include the previous liaison and other stakeholders responsible for undertaking and completing the LUCA program in addition to the Highest Elected Official (HEO).

Florida

“...go back to the previous liaison on record...that’s the person that knows the most about it at that, probably at that time...other than the official communication, to the previous liaison... As far as the elected official...the addressing official or the GIS department or whatever.”

NCAI, District of Columbia (D.C.)

“...one of the factors, if you send a copy to our governor, information, unless somebody else is also CC'ed on that letter, it is liable to fall off the table.”

While the 2010 LUCA communications program was successful, focus group responses suggested that the Census Bureau could enhance its communication efforts by:

- Increasing the font size of formal letters, forms, and program materials for ease of reading

- Improving the format to make program materials more reader friendly (e.g., the use of headers and subheadings, graphics, bolding, underlining, and bulleted lists)
- Decreasing the amount of information (some found the amount of information burdensome and intimidating)

In order to encourage participation during the invitation phase, the Census Bureau ROs conducted follow-up telephone calls to non-responding governments, followed by final reminder letters.

After researching the invitation phase of the 2010 LUCA Program, the Looking Back Subteam concluded that an on-line registration would be beneficial to the participants:

- Assuming electronic signatures are able to be accepted, encourage governments to register online. Include the Registration Form, Confidentiality Form, and Title 13 Security Guidelines and Self-Assessment Form for registration. In addition, include LUCA Program information to familiarize the invited governments with the program materials, the procedures for their address list review, and how to make address and feature map updates
- If LUCA materials are available online, the LUCA website should provide the ability for participants to access their materials as soon as they register

4.12.3.2 Continue but improve technical training

The Census Bureau ROs, state data centers, and regional planning and development agencies offered LUCA Training Workshops that provided participants with detailed examples and instructions for undertaking their LUCA review and submitting their address lists to their Census Bureau Regional Census Center (RCC).

According to the LUCA Participant Survey, the technical training workshops were:

- The second most helpful resource (of nine) in helping governments decide to participate in LUCA
- The second most helpful resource (of five) in helping governments understand the initial LUCA materials
- More effective in helping understand the initial materials than in influencing program participation or understanding the participation options
- More effective for tribal governments than for other types of governments

The participants involved in the Focus Group Implementation Subteam meetings and the Looking Back Subteam agreed that the use of technology such as webinars and video teleconferences would reduce the need for in-person technical training and be beneficial to the LUCA participants by reducing both time and cost.

Attendees of the Focus Group Implementation Subteam meetings expressed their desire for webinars, video conferences, and videos:

Pennsylvania

“How about a webinar so you can actually ask questions if you have them.”

“Webinar seems to work for most people because they can ask questions.”

Florida

“Video conferences seem to be the way.”

“We can get by with just a video or video training classes. Even if it’s not a WebEx or something like that. Just to know where your training materials are, what site they’re on, and we can use some self-learning. If you want to make it so you can capture if we went through it, maybe there’s some way to do that, but WebEx is...I mean going out of town, or going to a meeting doesn’t do much for us, isn’t an advantage to us.”

Washington

“Webinars are great and computer-based is nice because you can do it on your own time.”

Michigan

“That could potentially be very helpful because automation is the key.”

In addition, the Looking Back Subteam research concurred with the following suggestions:

- Decisions regarding the computer-readable products should be made in a timely manner to allow technical trainings to feature the products
- Conduct the technical trainings using e-learning materials (e.g., web-based trainings utilizing CBTs and videos). Having the training available on the web allows the participants to go back and review the training
- In-person technical trainings could also be offered at national, regional, and state conferences
- Create a CD containing the technical trainings for those participants that prefer that format

4.12.3.3 Continue presentations at professional conferences

Over 36 percent of respondents to the LUCA Participant Survey attended presentations at conferences. These presentations helped to influence 43 percent of their decision to participate in the LUCA program.

The Looking Back Subteam researched the success of presentations at professional conferences and concluded that presentations at national, regional, and state level conferences promotes the program by informing a large audience all at once about the LUCA program. In addition, the subteam suggested doing LUCA program presentations early in scheduled meetings with key statewide stakeholders, large city governments, and mayors of reengineered canvassing and hard-to-count communities.

4.12.3.4 Continue to improve the LUCA website and expand the use of technology

The 2010 LUCA website provided participants with program information including the initial promotional materials, the program procedures and user guides, as well as the CBT, MTPS training, and the LUCA schedule.

Nearly 60 percent of respondents to the LUCA Participant Survey read the website and found it helpful in understanding the LUCA materials.

In expanding the use of technology for the LUCA program, the Looking Back Subteam found that the 2020 LUCA website:

- Should be set up before the program begins to contain necessary information, program forms, and instructions to complete the program successfully
- Assuming electronic signatures are able to be accepted, encourage governments to register online. Include the Registration Form, Confidentiality Form, and Title 13 Security Guidelines and Self-Assessment Form for registration
- The Contact Information form should be available online for governments to fill out electronically. The updates could then be loaded into the GPP

In addition to the LUCA website, the subteam recommended creating a cloud/VDI environment where LUCA participants could download their LUCA materials to their computer and do their updates in this environment. This would probably work best for smaller governments; larger governments would probably download the LUCA address list onto their systems to perform automated matching. Additionally, the Subteam recommended creating a secure web interchange for the LUCA participants to upload files to the Census Bureau.

4.12.4 Continue to provide a variety of LUCA media types

According to the LUCA Assessment, the 2010 LUCA guidelines considered the various computer resources and skills available to local governments. For the 2010 LUCA Program, the Census Bureau offered five media combinations:

1. Paper address list and paper map
2. Paper address list and shapefile
3. Computer-readable address list and paper map
4. Computer-readable address list and shapefile
5. MTPS

After participants received their materials, the Census Bureau provided an opportunity for them to change their media type if their selection did not meet their needs.

Due to the volume of paper necessary to create the paper address list, the Census Bureau limited this media type to Option 1 participants with 6,000 addresses or less. States selecting Option 1 could use only computer-readable address list and shapefiles or the MTPS. Of the 20 state participants, 12 selected the computer-readable address list and shapefiles, while eight selected the MTPS.

Over 3,600 or 39.5 percent of the 9,110 Option 1 participants selected the paper address list and paper maps. Nearly all of the government types selecting this media combination were places and MCDs. Over half of the MCDs, 51.8 percent, selected this media combination, as did 40.5 percent of places. Of the 3,645 governments with 1,000 or fewer addresses, 65.6 percent

selected the paper address list/paper maps. Attachment B shows the location of 5,686 participants whose addresses could be geocoded to TIGER, while the remaining participant addresses could not be geocoded. Of the 5,686 participants, 5,297 (93 percent) had access to broadband coverage (although a participant may be located in a service area, they may not subscribe to the service). The remaining 389 participants (7 percent) were located out of broadband coverage areas.

The second highest combination was the computer-readable address list/paper maps selected by 2,095 or 23 percent of the governments followed by the MTPS with 1,751 or 19.2 percent. There were 1,464 governments or 16.1 percent that selected the computer-readable address list/shapefile. The lowest percentage was the paper address list/shapefile at 2.2 percent selected by 199 governments.

The Looking Back Subteam suggested that the Add Page used by participants selecting paper address list format be generated using an Excel or Adobe PDF template and made available on the LUCA website.

The subteam also recommended utilizing the PDF maps, used for 2010 New Construction Program, for the 2020 LUCA Program, especially as an alternative for governments that request paper materials.

Additionally, continue to use and improve the Excel data review macro to identify unseen errors, duplicates, and legal values in files prior to uploading files.

4.12.5 Continue to provide a partnership software application

As an alternative method for participating, participants could choose to use the newly developed MTPS for the 2010 LUCA Program. This software is a Geographic Information System (GIS) application that combined the 2010 Census LUCA address list, address count list, and digital shapefiles. Using the MTPS allowed participants to update the lists and shapefiles and to import their local address list and shapefiles for comparison to the Census Bureau's data. According to the LUCA Participant Survey, over 80 percent of governments that chose the MTPS would use it again.

Although 18 percent of the 11,500 LUCA participants used the MTPS, the LUCA Participant Survey found that smaller governments without GIS experience were more likely to use the MTPS as opposed to larger governments that have the technical personnel experienced in other GIS alternatives. About 75 percent of governments that used the MTPS found its instructions, demonstrations, and computer-based training effective.

Based on the success of the MTPS for the 2010 LUCA Program and other geographic participant programs, the Census Bureau is developing and improving the partnership software tool. As with the MTPS, the new tool contains customized functionality based on the business rules of each geographic program. This software tool will be available to participants who do or do not have access to the internet.

4.12.6 Continue State participation in the LUCA program

In compliance with the Census Address List Improvement Act of 1994 (Public Law 103-430), states were given the opportunity to participate directly in the program for the first time in 2010 LUCA. The LUCA Assessment found that over half of the 51 eligible states (includes Puerto Rico as a state), 28 or 54.9 percent, registered to participate.

Continue giving states the opportunity to participate in LUCA and encourage participation at the higher levels of government (i.e., state, county). To make state participation easier, consider delivering materials to state participants on a flow basis and design processing and tracking systems to handle submissions on a county-by-county flow basis.

5 Conclusion

Research of the 2010 Census LUCA Program identified changes in the program that will increase participation and address coverage, while decreasing program costs, and improve the quality of address updates for the 2020 Census LUCA Program.

In order to reduce the complexity of the LUCA program and increase the quality of addresses from participants, the 2020 LUCA program will have one method of participation, the Full Address List Review. Additionally, participants will have the choice of receiving their LUCA materials in various formats that meets their specific skills and needs.

In addition to the traditional LUCA address list and maps, the 2020 LUCA program products will also include structure coordinates and ungeocoded DSF addresses for State and County partners. The computer-readable address list will be provided in a standard format and commonly used software that enables participants to work easily with the data.

The 2020 LUCA addresses will be validated using multiple methods due to the planned reengineering of the address canvassing operation. While some addresses will be validated using address canvassing or field enumeration activities, an in-office operation will validate many others. The reengineered address canvassing operation requires participants to submit unit designators for multiple-unit structures and to submit full address data thereby eliminating the Block Count Challenge.

The 2020 LUCA program will provide a six-month Advance Notice mailing informing governments of the impending program invitation. Participating governments will have 120 days from the date of receipt of initial review materials to provide their LUCA updates to the Census Bureau. A comprehensive communication program will provide information about the program and stress coordinating participation between various levels of governments. In addition, the expanded use of technology will include a LUCA website, training videos, and webinars to provide an efficient and cost effective way to communicate with LUCA participants.

These recommendations based on research of the 2010 LUCA program, will ensure a successful 2020 Census LUCA Program for the Census Bureau and for LUCA participating governments.

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