



February 23, 2016

**MEMORANDUM FOR:** John H. Thompson  
Director  
U.S. Census Bureau

*Carol N. Rice*

**FROM:** Carol Rice  
Assistant Inspector General for Economic  
and Statistical Program Assessment

**SUBJECT:** *The U.S. Census Bureau's Efforts to Ensure an Accurate Address List  
Raise Concerns over Design and Lack of Cost-Benefit Analysis  
Final Report No. OIG-16-018-A*

This report addresses the status of the Census Bureau's (the bureau's) 2020 Census program preparation and planning efforts. Our audit objectives were to (1) assess the methods and costs of continuously updating the Master Address File Topologically Integrated Geographic Encoding and Referencing database (MTdb);<sup>1</sup> (2) determine how efforts, such as the fiscal year (FY) 2015 Address Validation Test (AVT), support the accuracy of the Master Address File; and (3) evaluate the preparation of the Local Update of Census Address (LUCA) program for the 2020 decennial census. This report focuses on risks identified for objectives 2 and 3 to provide timely recommendations for the bureau's operational design decisions. We intend to report on the results of objective 1 subsequent to the completion of additional fieldwork. See appendix A for more specific details on our objectives, scope, and methodology.

## Background

To conduct demographic, population, and income surveys, including the decennial census, the bureau maintains a complete list of all living quarters in the United States in the MTdb. As the backbone of the bureau's survey operations, the MTdb must be up-to-date and accurate. Because there is no single source for updating data in the MTdb, the bureau must coordinate with providers of multiple data sources, such as tribal, state, and local governments; conduct its own operations to verify and update addresses and maps; and receive updates twice a year with delivery point addresses from the United States Postal Service.

---

<sup>1</sup> The bureau maintains a complete list of all residential housing units, which is linked (geographically encoded, or geocoded) to geospatial data in the MTdb.

Before the 2010 Census, two operations—address canvassing and the LUCA program—were conducted to ensure completeness of residential address data. In the 2010 Census, address canvassing, which cost \$444 million<sup>2</sup> and required bureau employees to traverse every street in the United States, was a significant cost driver. The LUCA program updates the MTdb through coordination with tribal, state, and local governments.<sup>3</sup>

In an effort to reduce costs of the 2020 Census, the bureau is reengineering address canvassing. Rather than planning for bureau employees to walk every street, the bureau researched and tested statistical models and conducted an in-office review to identify those areas that require updates and are potential areas for reengineered address canvassing. The AVT was critical for assessing the accuracy of the statistical models and in-office review in identifying address changes and defining address canvassing workloads for the upcoming decennial census.

**Table I. Comparison of AVT Components**

<b>AVT</b> (Address Validation Test)	
<b>Validation Test</b> Master Address File Model Validation Test	<b>Partial Block Canvassing Test</b>
<ul style="list-style-type: none"> <li>• statistical modeling</li> <li>• full block canvass</li> </ul>	<ul style="list-style-type: none"> <li>• in-office review</li> <li>• partial block canvass</li> </ul>

As noted in table I, the AVT focused on updating the Master Address File using two different components: the Master Address File Model Validation Test (Validation Test) and the Partial Block Canvassing Test.<sup>4</sup> The Validation Test consisted of a full

block canvass that assessed the ability of statistical models to predict which blocks have experienced address changes that are not recorded in the Master Address File. The Partial Block Canvassing Test was a proof-of-concept test employing an in-office review using imagery with a partial block canvass. This alternative partial block approach sought to (a) detect unrecorded changes in blocks and (b) identify portions of blocks where change is likely, allowing the bureau to reduce workloads and costs. The bureau used these test results to direct future testing and make operational 2020 Census design decisions.

Title 13 of the United States Code requires the bureau to provide strong protection over the information it collects, including address information. It was only with the passage of the Census Address List Improvement Act of 1994 that designated representatives of tribal, state, and local governments were allowed to review and update the bureau's master address list and maps through the LUCA program. According to bureau documentation, these governmental entities are the “definitive authority for quality address and street data within their communities.” For the 2010 Census, LUCA program participants had three options for submitting information to the bureau. About 29 percent of the almost 40,000 eligible

<sup>2</sup> This cost reflects the direct field costs for conducting the address listing operation, such as mileage and salaries, and does not include the infrastructure, contract, and development costs associated with the operation.

<sup>3</sup> During audit fieldwork, the bureau was unable to provide 2010 LUCA costs; however, in response to our draft report, the bureau gave an estimate of \$20.5 million. Because the information was not provided when requested, the bureau did not provide timely support on the accuracy of the estimate (see section II B for additional concerns regarding the cost collection).

<sup>4</sup> The bureau refers to the Master Address File Model Validation Test as the MMVT; however, for ease of reading this report, we refer to it as the Validation Test.

government entities participated, submitting over 40 million addresses. For the 2020 Census, the bureau plans to reduce the number of options from three to one, while establishing the goal of increasing government entity participation and improving the quality of addresses submitted.

## Findings and Recommendations

As the bureau prepares to make design decisions regarding address canvassing and implementing the LUCA program, we have highlighted four issues for your prompt attention. We identified concerns with (1) the lack of a cost-benefit analysis for statistical modeling and partial block canvassing tests, (2) the lack of success benchmarks for statistical modeling, (3) the elimination of LUCA participation options, and (4) the lack of a cost-benefit analysis for the LUCA program.

### I. The Bureau Did Not Collect Cost Data or Conduct a Cost-Benefit Analysis for Either the Validation Test or the Partial Block Canvassing Test

The bureau's AVT Field Test Plan, finalized on September 29, 2014, included the following research question: "How can we best balance cost and quality associated with a targeted address canvassing?" Final results were to include a comparison of the field collected address data and costs from the Partial Block Canvassing Test with those from the Validation Test, to assess the cost-effectiveness of each approach (see box, below). However, no cost data for either approach was collected. According to field office management, they were not provided field cost collection requirements by the research teams in a timely manner, so this information was not incorporated into testing. As a result, the bureau cannot determine which component, statistical modeling, or imagery will yield a reduction in costs without affecting quality. Despite not having this information, the bureau decided to use imagery based on results from the Partial Block Canvassing Test rather than statistical modeling based on results from the Validation Test.

#### AVT Field Test Plan Research Questions:

*"Are the data collected with the Partial Block Canvassing methodology of the same completeness and correctness as compared with a full block canvass? Is the collection of data using the Partial Block Canvassing methodology more cost effective than a full block canvass?"*

Source: Census Bureau

### II. The Bureau Did Not Establish Benchmarks Before Assessing the Success of Statistical Modeling

The purpose of the Validation Test was to integrate statistical modeling and Geographic Support System Initiative (GSS-I) geographic research approaches to measure errors in the Master Address File and identify areas for improved 2020 reengineered address canvassing field operations.<sup>5</sup> Both the Validation Test and Partial Block Canvassing Test are attempts to

---

<sup>5</sup> GSS-I offers a continuous plan to provide the most current, accurate, and complete address and feature data to the Census Bureau's customers and data users. The purpose of the GSS-I is to maintain the bureau's geographic framework for data collection, tabulation, and dissemination annually between decennial censuses to support ongoing programs. The initiative is being led by the Census Geography Division.

identify Census blocks that are likely to require Master Address File updates—those with “adds” (new housing units), and “deletes” (eliminated housing units). By identifying the blocks that require updates in advance, the bureau would not need to deploy enumerators to every street in the country as it did in 2010. Thus, a critical component of the AVT was to evaluate the efficacy of both approaches and determine whether they could be used for reengineered address canvassing in 2020.

However, neither the 2015 AVT Field Test Plan nor the Validation Test project plan established benchmarks for evaluating the success of statistical modeling. While the AVT Field Test Plan stated the Validation Test “will be considered successful if the updated address data, collected for the sample of blocks, is useful in assessing the statistical models,” it did not provide criteria for how the statistical models would be assessed. In 2014, the Government Accountability Office (GAO) developed the following guidance for establishing performance measures:

Management establishes activities to monitor performance measures and indicators. These may include comparisons and assessments relating different sets of data to one another so that analyses of the relationships can be made and appropriate actions taken. Management designs controls aimed at validating the propriety and integrity of both entity and individual performance measures and indicators.<sup>6</sup>

The failure to establish benchmarks in advance led to inconsistent conclusions. Starting in 2010, the bureau conducted research that assessed the viability of using statistical models for reengineered address canvassing. One project used data available before the 2010 address canvassing operation to predict the likelihood of Census block updates in 2010 with respect to “add capture rates”<sup>7</sup> and other variables, including delete capture rates and other metrics. The Geography Division’s “Address Canvassing Recommendation” stated that those models “have yielded favorable results thus far. Furthermore, the methodology provides an exceptionally low cost solution.”<sup>8</sup>

The AVT tested the statistical models in an address canvassing operation field environment. Figure I (next page) depicts the add capture rates across various canvassing levels for both the pre-AVT statistical modeling results described in the previous paragraph and the statistical modeling results from the AVT. As shown in the figure, the statistical modeling results from the AVT are equal to, or slightly better than, the pre-AVT statistical modeling

---

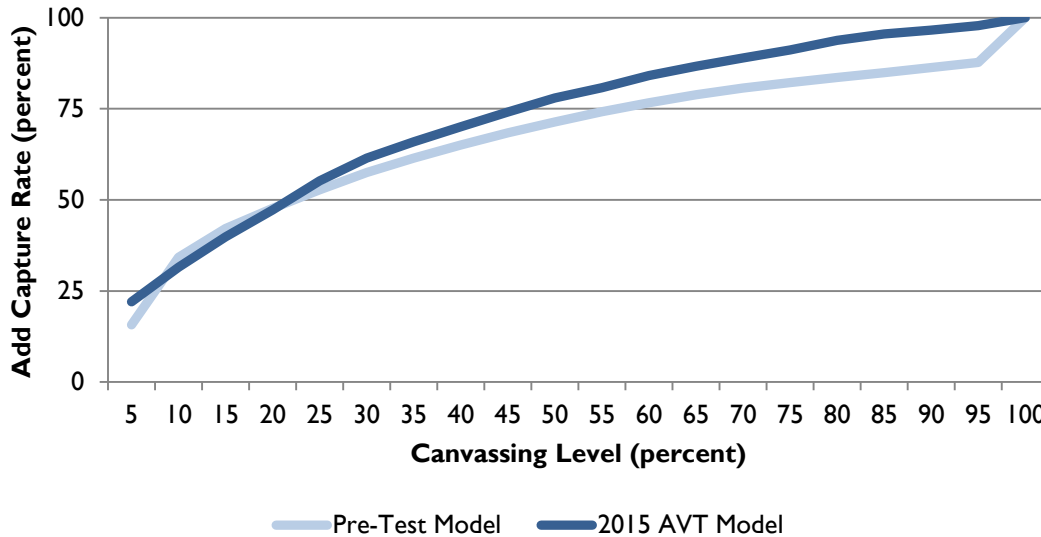
<sup>6</sup> Government Accountability Office (GAO), September 2014. *Standards for Internal Control in the Federal Government*, GAO/AIMD-14-704G. Washington, DC: GAO, 47.

<sup>7</sup> One of the ways that the bureau analyzed the modeling results was to review add capture rates (i.e., the percentage of new housing units identified by the models) across different canvassing levels (i.e., by the percentage of blocks canvassed by enumerators). By canvassing 100 percent of the blocks (sending enumerators to each street in the country), for example, the bureau would capture 100 percent of adds. Similarly, if enumerators canvassed 25 percent of the blocks, they may capture roughly 25 percent of the new units. But, by using modeling to identify the blocks that are most likely to have adds and focus canvassing efforts in those blocks, the bureau could theoretically capture 50 percent of the adds while canvassing only 25 percent of the blocks.

<sup>8</sup> U.S. Census Bureau, November 2014. *Geography Division Address Canvassing Recommendation*. Suitland, Maryland: U.S. Census Bureau, 26.

results at 17 of the 20 canvassing levels (i.e., 5–100 percent) and are within 2 percentage points at the other 3 canvassing levels.

**Figure I. Add Capture Rates by Canvassing Level**



Source: OIG analysis of Census Bureau data

However, the 2015 AVT Report, issued in September 2015, stated that the current statistical models were not effective at identifying specific blocks to canvass and recommended that they not be used. Given that the results of the AVT are consistent with the pre-AVT statistical modeling results that the bureau previously characterized as “favorable,” it is unclear why the bureau did not reach the conclusion that statistical modeling is inefficient before testing the AVT. Instead, the bureau failed to define criteria before the test, found that the statistical modeling results matched expectations, and then concluded that the results were not effective. Had criteria been developed before the AVT test, the bureau would have had a transparent basis for reaching the conclusion that the results were unsuccessful.

**III. Decision to Eliminate LUCA Participation Options Increases the Risk of Not Receiving Address Updates from Some 2010 Participants**

The bureau decided to offer government entities fewer options for participating in the 2020 LUCA decennial program than the 2010 LUCA. At the same time, the bureau established the goal of increasing participation and improving the quality of addresses submitted to the LUCA program in a cost-effective manner. We found that the bureau may not be providing adequate alternatives for LUCA participants. Also, the bureau did not conduct a cost-benefit analysis and relied on inaccurate data before deciding to eliminate participation options.

A. *The Bureau May Not Be Providing Adequate Alternatives for LUCA Participants*

Although the bureau eliminated two 2010 LUCA participation options (options 2 and 3), the bureau has not provided adequate alternatives for governments who find the remaining option too burdensome (see table, 2 below).<sup>9</sup> As a result of the bureau’s decision, the only participation option for the 2020 LUCA program participants is to identify and submit discrepancies between their residential address lists and the bureau’s master address list (option 1).

**Table 2. Comparison of 2010 Census LUCA Program Options**

Option	Able to View the Bureau’s Master Address List	Method for Submitting Addresses	Selected by Governments <sup>a</sup>	Addresses Enumerated by the Bureau	Available in 2020
Option 1	Yes	Only submit addresses that did not appear on the master address list as well as corrections (e.g., deleted addresses)	9,109	1,191,794 <sup>b</sup>	Yes
Option 2	Yes	Submitted their entire list of all residential addresses	1,531	942,481	No
Option 3	No	Submitted their entire list of all residential addresses	860	230,325	No

Source: OIG analysis of the bureau’s data and documents

<sup>a</sup> Some government entities who selected option 1 ended up participating under option 2.

<sup>b</sup> Although option 1 participants generated more enumerated addresses in raw numbers, almost four times as many government entities opted to use option 1 versus option 2. Thus, on average, there were fewer enumerated addresses per entity for option 1 than for options 2 and 3. However, the size of the government entity and population growth would affect how many valid addresses the bureau would expect to receive from any entity regardless of the option chosen.

The bureau stated that another program, GSS-I, could help government entities affected by the change. Although not covered in this report, GSS-I is a potentially less

<sup>9</sup> The bureau has invested in IT tools to help government entities submit their addresses.

burdensome method for sending address updates.<sup>10</sup> Yet, with less than 5 years before the next decennial census, there may not be enough time to include all 2010 LUCA program option 2 and 3 participants in the GSS-I program.

The GSS-I program resembles options 2 and 3 of the 2010 LUCA program because it allows participants to submit their entire residential address lists rather than just the corrections. However, the GSS-I is also distinct from the 2010 LUCA program because governments must be invited before they can submit an address update (see table 3, below).

**Table 3. Key Differences Between the GSS-I and LUCA Programs**

Key Differences	GSS-I	LUCA
<i>Selection process</i>	Specific government entities are invited to participate based on perceived data quality issues in the Master Address File, as well as areas where there are known data and entities that could coordinate submissions (e.g. states that coordinate submissions with counties)	All eligible government entities can participate
<i>Frequency</i>	Addresses are accepted throughout the decade	Addresses are accepted once per decade
<i>Recourse options</i>	Government entities cannot appeal the bureau’s decisions to reject proposed additions to the Master Address File, but they do receive feedback	Government entities can appeal the bureau’s decisions in some instances
<i>Method for submitting address updates</i>	One-way sharing: government entities submit their entire list of all residential addresses	Two-way sharing: government entities review the bureau’s Master Address File for their areas of jurisdiction and then only submit additional addresses and corrections to this list <sup>a</sup>

Source: OIG analysis of the bureau’s data and documents

<sup>a</sup> Both options 1 and 2 of the LUCA program review the bureau’s Master Address File, but only option 1 participants submit corrections to the list. Option 3 participants do not review the bureau’s Master Address File.

We found that a quarter of the government entities that selected option 2 in the 2010 LUCA program and less than a third that selected option 3 had participated in the GSS-I

<sup>10</sup> We will report on the results of objective 1, which includes an assessment of GSS-I, subsequent to the completion of additional fieldwork.

program as of May 2015 (see table 4, below). The remaining governments who participated in options 2 and 3 in 2010 are at risk of not being invited to participate in GSS-I before the 2020 Census. If these governments found option 1 of the LUCA program too burdensome in 2010, they may find this choice burdensome in 2020, and the bureau will lose a willing participant for the 2020 Census.

**Table 4. GSS-I Participation Rates in the Canceled LUCA Options**

	Number of Government Entities in 2010	Participated in GSS-I as of May 2015 <sup>a</sup>	Percent Invited
Option 2	1,531 <sup>b</sup>	399	26
Option 3	860	278	32

Source: OIG analysis of the bureau's data and documents

<sup>a</sup> This may be an overestimate, as it assumes counties, places, and minor civil divisions that participated in the 2010 LUCA program are in the associated GSS-I state and county submissions..

<sup>b</sup> Some government entities who selected option 1 ended up participating under option 2.

Furthermore, limiting options may more acutely impact lower income areas that participated in the LUCA program in the last decade. Overall, counties representing 81.8 million individuals and 34.9 million household units are slated to have their preferred LUCA participation option eliminated. Examples of the diverse array of cities and counties who participated in option 2 or option 3 include Memphis, Tennessee, and Jacksonville, Florida, as well as more rural areas such as Laramie County, Wyoming, and Evangeline Parish, Louisiana. To assess whether a population's wealth affected the selection of participation options by government entities, we developed a logistic regression model using data from the 2010 LUCA program, the 5-year estimates of the 2013 American Community Survey, and the 2010 Census.<sup>11</sup> Among the government entities that participated, we found that counties with lower median household incomes were less likely to select option 1.

Before proposing to eliminate options 2 and 3, the LUCA program conducted seven focus groups to assess the impact of the proposed change. At four of the seven focus groups, participants expressed concern with keeping only option 1 for the 2020 LUCA program. However, participants in one focus group expressed support for the proposed change. Participants in the remaining two focus groups did not provide definitive feedback. Furthermore, LUCA program management reported that some governments that initially chose option 1 in 2010 ended up participating in option 2 because they reportedly ran out of time to complete the more burdensome option 1. The feedback the bureau has received indicates that it may receive less input from local governments before the 2020 Census, and the bureau will need to rely on other operations to gather this information.

<sup>11</sup> Our model is based on the 2010 participation data and therefore does not account for changes in the adoption of GIS technology nor state resources invested in technology.



*B. The Bureau Did Not Conduct a Cost-Benefit Analysis on Reducing LUCA Options*

The bureau did not perform a cost-benefit analysis, and relied on inaccurate data, before proposing to eliminate LUCA program participation options for the 2020 Census. LUCA program management attempted to use 2010 LUCA program costs as a baseline for estimating 2020 LUCA costs and identifying potential cost savings. However, bureau management indicated that they were unable to use the 2010 LUCA program as a baseline for estimating the cost because all the 2010 LUCA expenses were not recorded to specific LUCA project codes.<sup>12</sup> Thus, the decision to eliminate options 2 and 3 was made without estimates of the options' costs in 2010.

Although the program did not perform a cost-benefit analysis, program managers did try to use common sense when making recommendations to reduce costs and improve quality. For example, they inferred that reducing the number of participation options would result in cost savings because LUCA would produce fewer user guides for participants. Furthermore, they estimated that eliminating two of the options would reduce the number of addresses they received through the program. With fewer addresses received, the bureau indicated that it would need less LUCA staff to assess whether these addresses were valid residential housing units.<sup>13</sup> However, if the bureau misses the opportunity to receive updates through LUCA, it will need to rely on other methods to get this information. Without a cost-benefit analysis, bureau management is unable to determine whether the potential cost savings outweigh design decisions that could limit participation in the LUCA program.

The bureau did assess the quality of addresses submitted during the 2010 LUCA program and found that option 1 generated more new valid addresses overall. However, the bureau relied on data that did not accurately reflect which option participants actually used. In some instances, the bureau allowed governments who had chosen option 1 to participate in option 2, but did not correct the data to reflect the actual participation choice of the entity. The bureau does not know whether using inaccurate data made option 1 look better or worse in comparison with other options. By not accurately recording the participation option actually used by entities in 2010, the 2020 LUCA program could not conduct a cost-benefit analysis to support their decision to eliminate two options.

*Recommendations*

We recommend the Census Bureau Director

- I. Collect cost information during testing to fully inform design decisions.

---

<sup>12</sup> See note 3.

<sup>13</sup> No additional staff was needed to validate addresses submitted through the LUCA program in 2010 because the bureau had already planned to visit almost all households in its Address Canvassing Operation. However, for the 2020 Census, the bureau does not expect to visit every household.

2. Develop test plans that contain success criteria with quantitative benchmarks and comply with GAO guidance for establishing performance measures.
3. Develop strategies to ensure 2010 LUCA participants are able to submit address updates.
4. Plan for the 2020 LUCA program to collect more comprehensive cost information and program data so that the 2030 LUCA program can make more informed cost-benefit decisions.

In accordance with Department Administrative Order 213-5, please submit to us—within 60 calendar days of the date of this report—an agency action plan that responds to the recommendations in this report. This final report will be posted on OIG’s website pursuant to section 8M of the Inspector General Act of 1978, as amended (5 U.S.C. App. 3).

## Summary of Agency Response and OIG Comments

On January 28, 2016, OIG received the bureau's response to the draft report, which we summarize and comment upon here and include in its entirety (see appendix B). Based on the bureau's review of the draft report and subsequent discussion, we have made some minor changes to the report. In the response, the bureau concurs with the recommendations in the report.

In response to finding III A, the bureau stated that it has a number of efforts in place, including IT investments and new software, to increase participation and involvement of all governmental units in maintaining the MAF, including GSS-I. The bureau also noted that it plans to cover updates for all governmental units in the country by the end of FY 2017. However, the bureau will rely on larger governmental entities (e.g., states) to coordinate the responses that fall within its boundaries. Consequently, not every local government will receive an invitation to participate. Although GSS-I does collect information on entities that submit updates, it is not monitoring whether 2010 LUCA option 2 and 3 participants submitted updates through the GSS-I program. If the bureau does not monitor whether this coordination occurs, there is a risk that some governments who submitted updates to the 2010 LUCA program will not be invited, either directly or indirectly, to participate in the GSS-I program.

The bureau also raised concerns about linkages that OIG made between the residents' wealth and capabilities of the local governments. The bureau noted that some of the areas that OIG identified in the draft report had well-established address data. However, the OIG analysis was not about the availability of quality address data; rather, it concerned local government resources to pursue the more burdensome LUCA option. Our models showed that counties with lower median wealth were more likely to select option 2 or 3 (the less burdensome cancelled options) rather than option 1. However, we modified the report, where appropriate, to clarify that these results were based on 2010 data and did not account for technological changes or state investments that could have occurred.

In response to finding III B, the bureau acknowledged it did not conduct a cost-benefit analysis regarding the changes to LUCA options for 2020—but also stated that it did not make the decision based on costs. However, as indicated in the report, the bureau established the goal of increasing participation and improving the quality of addresses submitted to the LUCA program in a cost-effective manner—but did not conduct a cost-benefit analysis to determine whether changes are cost-effective.

The response identifies actions that, if taken, should improve the bureau's ability to provide opportunities for 2010 LUCA participants to provide updates for the 2020 Census. We look forward to reviewing the agency action plan.

## Appendix A: Objectives, Scope, and Methodology

The objectives of our audit were to (1) assess the methods and costs of continuously updating the MTdb; (2) determine how efforts, such as the FY 2015 AVT, support the accuracy of the Master Address File; and (3) evaluate the preparation of the LUCA program for the 2020 Census. However, in order to provide timely recommendations for the bureau's decennial census operational design decisions, we focused this audit on the risk areas identified in the AVT and LUCA program preparation.

To meet our audit objectives, we assessed the risks associated with the AVT and changes to the LUCA program. For the AVT, these included the use of project plans for testing, data reconciliation, any cost-benefit assessment of partial block versus full block canvassing, and performance criteria for statistical models. For the LUCA program, the risks included success criteria, program costs, and the impact on participation rates due to changes in the options for participation. As a result of our risk assessment, we directed our substantive field work and reporting on the bureau's cost-benefit analysis of partial block versus full block canvassing, performance criteria for statistical models, the effect on local government participation in the 2010 LUCA program for the 2020 Census, the cost-benefit analysis of LUCA program changes, and the benchmarks to determine success of the 2020 LUCA program in comparison to the 2010 LUCA program.

To accomplish our audit objectives, we conducted the following activities:

- interviewed bureau staff and management
- reviewed AVT, Validation Test, and LUCA project plans and documents
- reviewed the 2015 AVT Results Report
- analyzed local government participation data from 2010 LUCA
- reviewed the LUCA Recommendations report
- analyzed LUCA program schedules

We reviewed the following laws, regulations, policies, and documents:

- Census Address List Improvement Act of 1994, Public Law No. 103-430, (1994)
- GAO, January 2012, *Additional Actions Could Improve the Census Bureau's Ability to Control Costs for the 2020 Census*, GAO-12-80. Washington, DC: GAO
- GAO, June 14, 2007, *Census Bureau Has Improved the Local Update of Census Addresses Program, but Challenges Remain*, GAO-07-736. Washington, DC: GAO
- GAO, September 10, 2014, *Standards for Internal Control in the Federal Government*, GAO-14-704G. Washington, DC: GAO

- Office of Management and Budget, October 29, 1992, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, Circular No. A-94. Washington, DC: Office of Management and Budget
- U.S. Census Bureau, November 2014. Geography Division Address Canvassing Recommendation. Suitland, Maryland: U.S. Census Bureau
- U.S. Department of Commerce, Revised September 2011, *Accounting Principles and Standards Handbook*, “Chapter 12: Managerial Cost Accounting.” Washington, DC: Department of Commerce
- U.S. Department of Commerce Office of Inspector General, May 10, 2012, *High-Quality Maps and Accurate Addresses Are Needed to Achieve Census 2020 Cost-Savings Goals*, OIG-12-024-I. Washington, DC: DOC OIG

We reviewed internal controls significant within the context of the audit objectives by interviewing officials at the bureau, examining relevant policies and procedures, and reviewing documentation for evidence of internal controls. We identified internal control weaknesses that are included in our findings. Additionally, we identified internal control deficiencies that were not significant to the audit objectives and were communicated to officials of the audited entity.

In satisfying our audit objectives, we used computer-processed data to test objective 3. We learned that LUCA participation options were not accurately recorded in some instances, and we noted this limitation in our analysis. We found the data sufficiently reliable for analyzing the relationship between the GSS-I and LUCA programs at a high level, but we determined that the bureau relied on inaccurate participation data in some instances. For objective 2, we reviewed documentation submitted by the bureau but did not analyze data; therefore, we did not test the reliability of the bureau’s information technology systems.

We conducted this performance audit in accordance with generally accepted government auditing standards. These standards require that we plan and perform our audit to obtain sufficient, appropriate evidence that provides a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We conducted our review from April 2015 through October 2015 under the authority of the Inspector General Act of 1978, as amended, and Department Organization Order 10-13. We performed our work at the Department of Commerce headquarters in Washington, DC, and the Census Bureau headquarters in Suitland, Maryland.


## Appendix B: Agency Response



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Economics and Statistics Administration**  
**U.S. Census Bureau**  
Washington, DC 20233-0001  
OFFICE OF THE DIRECTOR

27 JAN 2016

MEMORANDUM FOR Carol N. Rice  
Assistant Inspector General for Economic  
and Statistical Program Assessment

From: John H. Thompson   
Director

Subject: Draft Report: *Audit of U.S. Census Bureau's Efforts to  
Continuously Update the MTdb and LUCA Program Participation*

The U.S. Census Bureau appreciates the opportunity to review this draft audit report entitled *Audit of U.S. Census Bureau's Efforts to Continuously Update the MTdb and LUCA Program Participation*. Our comments are contained in the attached document.

Please contact Ms. Colleen Holzbach if you have any questions about these comments.

Attachment

USCENSUSBUREAU  
*Helping You Make Informed Decisions*

[www.census.gov](http://www.census.gov)

U.S. Census Bureau's Comments on the  
Draft Report entitled  
*Audit of U.S. Census Bureau's Efforts  
to Continuously Update  
the MTdb and LUCA Program Participation*

The U.S. Census Bureau appreciates the opportunity to review this draft report. Overall, we agree with the recommendations laid out on page 9 of the report.

We have the following specific comments on the statements and findings in this draft report.

2020 Local Update of Census Addresses (LUCA)

On page 6, the report states "Although the bureau has proposed eliminating the two 2010 LUCA participation options (options 2 and 3) that allowed local governments to submit their entire list of residential addresses, a less burdensome participation method in comparison to option 1... the bureau has not provided adequate alternatives." Also on page 6, the report states that "Yet, with less than 5 years before the next decennial census, there may not be enough time to include all 2010 LUCA program option 2 and 3 participants in the GSS-I program."

The Census Bureau has a number of efforts in place to increase participation and involvement of all governmental units in maintaining our Master Address File.

The Census Bureau's GSS-I program is scheduled to cover updates for all governmental units in the country by the end of fiscal year (FY) 2017, which we believe will happen. We have not been able to cover as many governments as originally planned, because the Census Bureau did not receive requested funding for the GSS-I program over the last several fiscal years. Despite this funding gap, we have prioritized our effort for FY 2016 and expect to meet the 2017 target stated above.

We also plan to implement, maintain, and provide training and support for two tools for use by local governments in building and submitting their address list in advance of 2020 LUCA:

- The Community TIGER tool is a free, cloud-based set of GIS tools governments can use to build and maintain their own address list using industry standard software and methodology.
- The Geographic Update Partnership Software (GUPS) allows the local government to submit an address list they have built (using Community TIGER or another tool) to the Bureau in the format required for MAF/TIGER update.

Another goal of the Census Bureau's GSS-I program is to encourage sharing of address data across levels of government by working with and through state and county governments. This goal was driven by an interest from states and local governments to share data within the state before local address lists were provided to the Census Bureau. This approach was unanimously

supported by over 40 tribal, state, and local government participants at the GSS-I Address Summit held in 2011, and reiterated by participants during a Community Addressing Conference in 2013. The Census Bureau fully supports the efforts of states and counties to act as data aggregators for their local communities, often with legislative authority (e.g., Utah).

On page 7, the report states that “Furthermore, limiting options may more acutely impact lower income areas that participated in the LUCA program in the last decade.”

The Census Bureau believes this hypothesis makes a link between resident wealth and the capabilities of the government that does not necessarily apply. In fact, three of the four governments mentioned in the draft OIG report (Memphis, Jacksonville, and Laramie) have a well-established online GIS presence that includes street data, with Jacksonville and Laramie also displaying address point data online.

Related to this point, on page 8, the report states that “To assess whether a population's wealth affected the selection of participation options by government entities, we developed a logistic regression model using data from the 2010 LUCA program, the 5-year estimates of the 2013 American Community Survey, and the 2010 Census. Among the government entities that participated, we found that counties with lower median household incomes were less likely to select option 1.”

While the Census Bureau appreciates the OIG's concern, this discussion of impacts to lower income areas in 2020 based on their 2010 LUCA participation method assumes that these local governments:

- 1) Have not benefitted from the widespread adoption and proliferation of GIS technology and resources at the state level since 2010;
- 2) Have not implemented or benefitted from Next Generation E-911 addressing programs since 2010; and
- 3) Have not benefitted from the widespread availability of federal grants under the NTIA Broadband initiative since 2010. The purpose of the grants was “to support the efficient and creative use of broadband technology to better compete in the digital economy,” and in some areas has resulted in improved GIS systems and address data.

We believe any of these opportunities would positively impact the ability of areas with lower incomes in 2010 to participate in the proposed 2020 LUCA participation option. All of these things are happening in most states and many local communities, and the Census Bureau believes they are helping governments improve their address lists and their ability to work with us.

Finally, on page 8, the report states that “The bureau did not perform a cost-benefit analysis, and relied on inaccurate data, before proposing to eliminate LUCA program participation options for the 2020 Census.”

Based on discussions with the OIG, we understand that the term ‘inaccurate data’ refers to the omission in the Census Bureau's analysis of the 2010 LUCA program of the fact that some



participants in the 2010 LUCA did not provide materials consistent with the participation option they selected. These situations did happen, and the Census Bureau did not make a change in our production control system to reflect these incidents; however, we do not believe these situations arose often enough to significantly alter the key findings from our 2010 LUCA evaluation.

The Census Bureau acknowledges that it did not conduct a cost-benefit analysis regarding proposed changes to LUCA options for 2020. We did not conduct this type of analysis because we did not make this decision based on costs. Instead, we based the decision on evaluations of our successes in the 2010 LUCA program (when over 90 percent of participants chose Option 1), the results from our recent LUCA focus groups, and the fact that the new GSS-I will be available to all governments nationwide prior to the start of the 2020 LUCA program. Overall, we believe the combination of GSS-I, other tools we now offer, LUCA, and increasing capabilities and partnerships at the state and local level, will provide better opportunities for communities to work with us to improve the MAF for the 2020 Census.

Census Control Number CQAS-07402  
DMD:J.Dinwiddie:1/28/16  
CQAS:Review:nth:1/28/16  
Revised:per M. Creech comments:J.Dinwiddie:1/28/16  
CQAS:Final:msw:1/28/16

42CENSU42216