

# 2020 Census: The Address Canvassing Test Revealed Cost and Schedule Risks and May Not Inform Future Planning as Intended

FINAL REPORT NO. OIG-17-024-A

MAY 11, 2017



U.S. Department of Commerce  
Office of Inspector General  
Office of Audit and Evaluation



May 11, 2017

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

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

**SUBJECT:** *2020 Census: The Address Canvassing Test Revealed Cost and Schedule Risks and May Not Inform Future Planning as Intended*  
Final Report No. OIG-17-024-A

Attached is our final audit report conducted in support of OIG's oversight role for the planning and implementation of the 2020 Census. The audit's original objective was to assess the risk that the Address Canvassing Test would not accomplish its stated goals. However, after we began audit fieldwork, the Bureau removed the term "goals" from the test plan. As a result, we modified our audit objective to review the Address Canvassing Test's cost and schedule, as well as in-field and in-office components of the test.

During our fieldwork, we found the following:

- In-office address canvassing will cost significantly more than initially estimated.
- Active block resolution may not finish in time for the 2020 Census in-field address canvassing operation.
- The Bureau's controls for monitoring active block resolution have weaknesses.
- The Bureau did not achieve some of the original test objectives.

In addition, we also documented test limitations and risks.

On April 28, 2017, OIG received the Census Bureau's response to the draft report's findings and recommendations, which we include within the report as appendix B. Bureau management agreed with all four findings and recommendations and noted actions it has and will take to address them.

Pursuant to Department Administrative Order 213-5, please submit to us an action plan that addresses the recommendations in this report within 60 calendar days. This final report will be posted on OIG's website pursuant to sections 4 and 8M of the Inspector General Act of 1978, as amended (5 U.S.C. App., §§ 4 & 8M).

We appreciate the cooperation and courtesies extended to us by your staff during our audit. If you have any questions or concerns about this report, please contact me at (202) 482-6020 or Terry Storms, Supervisory Auditor, at (202) 482-0055.

Attachment

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# Report in Brief

May 11, 2017

## Background

The 2020 Census Address Canvassing Test was conducted August through December 2016, in parts of Buncombe County, North Carolina, and St. Louis and supervised by Atlanta and Chicago regional office staff as well as staff at Census Bureau (the Bureau) headquarters. Its primary objective was to measure the effectiveness of in-office address canvassing (IOAC) by comparing its results to the results found during in-field address canvassing (IFAC) operations. According to the test plan, the Bureau also intended to use test results to

- improve the address canvassing operation by measuring the effectiveness of (a) integrated systems, (b) field staff training, and (c) the use of new collection geography in the field to answer research questions that will inform address canvassing design decisions;
- analyze cost and quality reports;
- project the impact of the reengineered operation on various enumeration operations; and
- summarize test data to enhance future IFAC operations, including planning, quality control, and budget estimation.

## Why We Did This Review

We initiated this audit in support of OIG's oversight role for the planning and implementation of the 2020 Census. The audit's original objective was to assess the risk that the Address Canvassing Test would not accomplish its stated goals. However, the *Address Canvassing Test Plan* contained no stated goals. As a result, we modified the audit objective to focus on specific test components.

## U.S. CENSUS BUREAU

### 2020 Census: The Address Canvassing Test Revealed Cost and Schedule Risks and May Not Inform Future Planning as Intended

OIG-17-024-A

## WHAT WE FOUND

During our fieldwork, we found that

- **IOAC will cost significantly more than initially estimated.** The Bureau's initial cost estimate was roughly \$11 million annually for FYs 2016 through 2019, totaling approximately \$44 million for the operation. However, our review indicated that IOAC will cost at least \$125 million.
- **Active block resolution (ABR) may not finish in time for the 2020 Census IFAC operation in August 2019.** Our analysis of ABR data identified a growing backlog of blocks awaiting quality control review.
- **The Bureau's controls for monitoring ABR have weaknesses.** The *2020 Address Canvassing Operational Plan* states that (1) ABR staff will record the amount of time spent on a particular assignment so the information can be used by headquarters management to monitor production rates and (2) ABR work is subject to a quality control process. While we found that the Bureau does require ABR staff to record the time spent processing blocks and currently has an ABR quality control process, we identified weaknesses in the Bureau's production and quality monitoring practices for ABR.
- **The Bureau did not achieve some of the original test objectives.** The 2020 Census Address Canvassing Test hired temporary field staff to verify addresses and maps in the test areas. Listers were managed by local supervisors who monitored their work using a tool that provided progress reports and automated electronic messages. According to the test plan, a success criterion for the test was to collect data to inform future operational planning and cost estimation activities. However, because the Bureau was not adequately prepared to utilize some of the innovative design features that it plans to implement for the 2020 Census, we identified limitations.

We also documented test limitations and risks, which are reflected in an "Other Matters" section.

## WHAT WE RECOMMEND

We recommend that the Director of the U.S. Census Bureau

1. Update the *2020 Census Life-cycle Cost Estimate* to reflect more accurate IOAC cost estimates, including any plans to address the ABR quality control backlog.
2. Increase ABR production rates and reduce the quality control backlog to ensure that ABR is completed prior to 2020 Census address canvassing.
3. Create a production schedule and implement a clerk-level quality monitoring process for ABR.
4. Ensure that (a) testing activities are adequately planned and remain on schedule and (b) new design innovations are prepared to function as designed.

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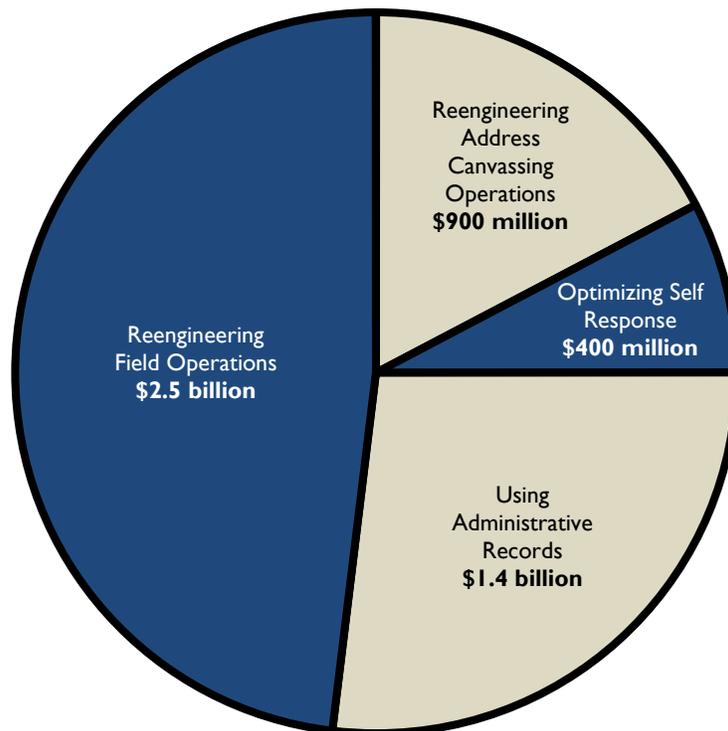
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*Cover: Herbert C. Hoover Building main entrance at 14th Street Northwest in Washington, DC. Completed in 1932, the building is named after the former Secretary of Commerce and 31st President of the United States.*

## Introduction

The Census Bureau recognizes that fundamental changes to the design, implementation, and management of the 2020 Census must occur in order to conduct the next decennial census at a lower cost (per housing unit and adjusted for inflation) than the 2010 Census. The final cost of the 2010 Census was approximately \$13 billion.<sup>1</sup> The Bureau estimates that if it were to conduct the 2020 Census just as it conducted the 2010 Census, then the next decennial census would cost \$17.8 billion.<sup>2</sup> The Bureau planned a series of tests and decision points leading up to the 2020 Census to develop innovative and efficient methods to increase response rates, decrease the number of interviews, raise workforce productivity, and streamline operations. These innovations have the potential to greatly reduce the cost of the decennial census. The Bureau estimates that it can avoid more than \$5 billion<sup>3</sup> of potential cost by implementing these innovative design changes in four key areas (see figure 1).

**Figure 1. Estimated Cost Avoidance Through a Reengineered 2020 Census**



Source: OIG analysis of U.S. Census Bureau documents

<sup>1</sup> U.S. Government Accountability Office, April 2011. *2010 Census: Preliminary Lessons Learned Highlight the Need for Fundamental Reforms*, GAO-11-496T. Washington, DC: GAO, 1.

<sup>2</sup> These costs are reported in 2020 constant dollars.

<sup>3</sup> The Bureau's cost avoidance estimate could not be verified, as the Bureau was unable to produce supporting documentation.

### *Address Canvassing*

During the 2010 Census, the Bureau conducted a costly 100 percent in-field address canvassing (IFAC) operation, which required temporary field staff to identify every place where people could live or stay. During address canvassing operations, field staff compared what they observed on the ground to the existing census address list and maps, and verified or corrected the address and location information, plus added any additional living quarters not already listed. The Bureau has estimated that \$900 million of the \$5 billion cost avoidance can be met during the 2020 Census by implementing new innovative design options in address canvassing.

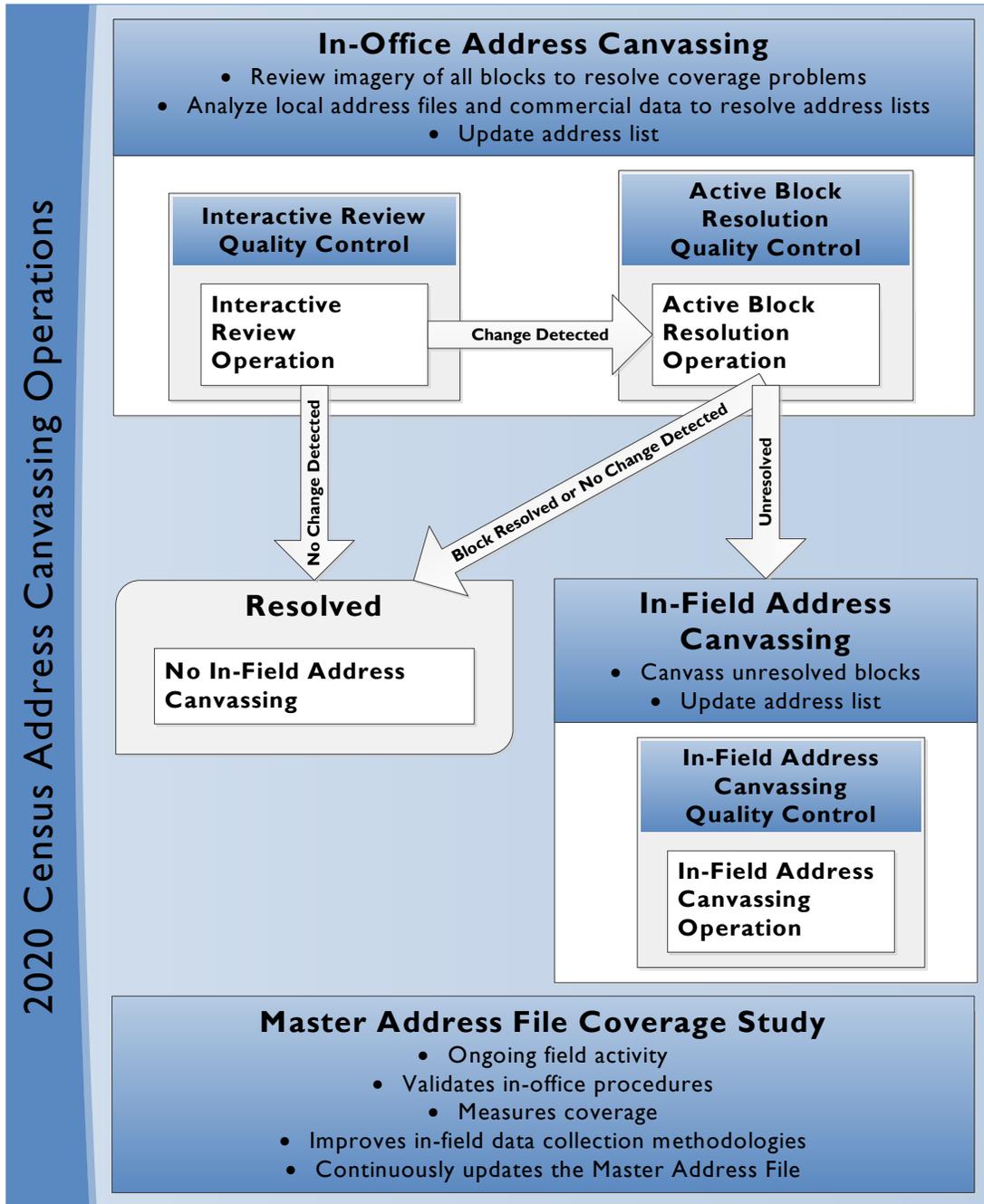
In September 2015, the Bureau began conducting an in-office review of all the nation's roughly 11 million blocks<sup>4</sup> using empirical evidence (for example, satellite imagery and third party address lists)—referred to as in-office address canvassing (IOAC). This review must be completed by January 2019.

During IOAC, clerks from the Bureau's National Processing Center (NPC) in Jeffersonville, Indiana, update the master address file and maps in preparation for the 2020 Census. IOAC operations consist of two components: (1) interactive review (IR) and (2) active block resolution (ABR). During IR, clerks identify potential growth, decline, over-coverage, and under-coverage in blocks by comparing current satellite imagery to 2009 imagery. Blocks that show evidence of change during IR move to ABR, where different staff work to resolve a block's address list in the office using local address files and/or commercial data. Generally, after ABR, if a block is not fully resolved, it will move to the IFAC workload. Throughout IOAC, the Bureau plans to include quality control operations to ensure the quality of IOAC updates (see figure 2, next page). The Bureau expects to resolve 75 percent of the nation's living quarters during IOAC, requiring only 25 percent to be resolved during IFAC.

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<sup>4</sup> A census block is an area bounded by visible features—such as streets, roads, streams, and railroad tracks—and by nonvisible boundaries—such as selected property lines and city, township, school district, and county boundaries. A census block is the smallest geographic unit for which the Bureau tabulates decennial census data.

**Figure 2. 2020 Census Address Canvassing Operations and Workflow**



Source: OIG analysis of U.S. Census Bureau documents

*2020 Census Address Canvassing Test*

The 2020 Census Address Canvassing Test was conducted August through December 2016, in parts of Buncombe County, North Carolina, and St. Louis and supervised by Atlanta and Chicago regional office staff as well as staff at Census Bureau headquarters. Its primary objective was to measure the effectiveness of IOAC by comparing its results to the results

found during IFAC operations. According to the test plan, dated July 1, 2016, the Bureau also intended to use test results to

- improve the address canvassing operation by measuring the effectiveness of (a) integrated systems, (b) field staff training, and (c) the use of new collection geography in the field to answer research questions that will inform address canvassing design decisions;
- analyze cost and quality reports;
- project the impact of the reengineered operation on various enumeration operations; and
- summarize test data to enhance future IFAC operations, including planning, quality control, and budget estimation.

# Objectives, Findings, and Recommendations

We initiated this audit on June 23, 2016, in support of OIG’s oversight role for the planning and implementation of the 2020 Census. The audit’s original objective was to assess the risk that the Address Canvassing Test would not accomplish its stated goals. However, the *Address Canvassing Test Plan*, released on July 1, 2016, contained no stated goals. As a result, we modified the audit objective to focus on specific test components.

While the test plan stated that the primary objective of the test was to “examine the effectiveness of in-office address canvassing through the results of in-field canvassing,” our audit did not evaluate the effectiveness of IOAC as compared to IFAC because the requisite data to conduct such an evaluation was not available during our fieldwork. The Bureau is currently conducting this evaluation and expects to report on that objective in spring 2017. For this audit, we reviewed the Address Canvassing Test’s cost and schedule, as well as in-field and in-office components of the test. See appendix A for further discussion regarding our scope and methodology.

During our fieldwork, we found that

- IOAC will cost significantly more than initially estimated.
- ABR may not finish in time for the 2020 Census IFAC operation in August 2019.
- The Bureau’s controls for monitoring ABR have weaknesses.
- The Bureau did not achieve some of the original test objectives.

We also documented test limitations and risks, which are reflected in the “Other Matters” section.

## I. IOAC Will Cost Significantly More Than Initially Estimated

The Bureau’s initial IOAC cost estimate—as reported in the 2015 version of the *2020 Lifecycle Cost Estimate* and other cost estimation documents—was roughly \$11 million annually for fiscal years (FYs) 2016 through 2019, totaling approximately \$44 million for the operation. However, our review of Bureau records indicated that IOAC will cost at least \$125 million—an increase of \$81.3 million (see figure 3).

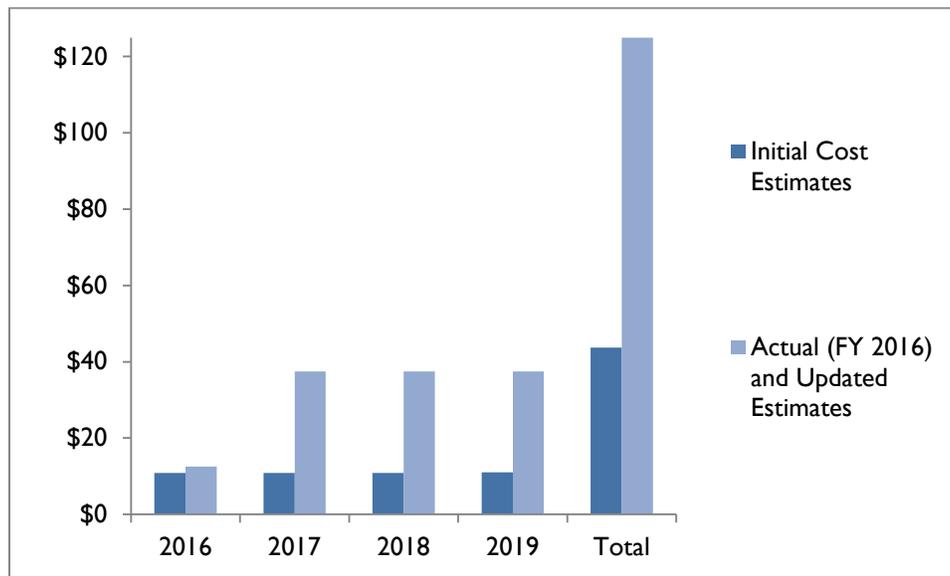
To arrive at the \$44 million figure, the Bureau assumed its FY 2016 cost estimate was an accurate reflection of IOAC costs that could be replicated for FYs 2017–2019. However, we found that the FY 2016 cost estimate was inaccurate. Specifically, it

1. underestimated ABR processing time;
2. did not reflect full production for either IR or ABR; and
3. did not reflect the actual FY 2016 cost for IOAC, which was \$12.5 million.

The Bureau’s estimate for ABR processing time raises concerns, as Census production reports show the average processing time<sup>5</sup> for an ABR block is three times slower than anticipated. Based on daily reports, the average block resolution time is approximately 60 minutes, significantly slower than the estimated 20 minutes. Even though the Bureau was developing ABR procedures for NPC clerks to perform, the ABR processing time estimate was developed using skilled geographers at Bureau headquarters. However, once ABR was transferred to NPC clerks—who were not required to have a geography background—ABR took an average of approximately 60 minutes per block.

In July 2016, the Bureau updated its IOAC cost estimate for FY 2017 from approximately \$11 million to \$38 million,<sup>6</sup> which reflected a full year of IR and ABR production. However, throughout this audit, the *Life-cycle Cost Estimate* was not updated to reflect this change. Assuming the FY 2017 estimate is an accurate reflection of IOAC costs for the remaining fiscal years, the total 4-year estimated cost for IOAC would be \$125 million (see figure 3).

**Figure 3. FYs 2016–2019 IOAC Initial Cost Estimates<sup>a</sup> Versus Updated Estimates<sup>b</sup> (in millions of dollars)**



Source: OIG analysis of U.S. Census Bureau documents

<sup>a</sup> FYs 2016 and 2017 estimate based upon IOAC cost estimation documentation, not the 2020 *Census Life-cycle Cost Estimate*, which does not report IOAC for FYs 2016 and 2017.

<sup>b</sup> FY 2018–2019 updated estimate based upon the Bureau’s IOAC FY 2017 cost estimate remaining constant, per Bureau assumption.

<sup>5</sup> Average time worked per block including quality control review.

<sup>6</sup> These estimates do not include costs such as information technology equipment and software development, nor do they reflect the cost of headquarters staff conducting quality control reviews for ABR.

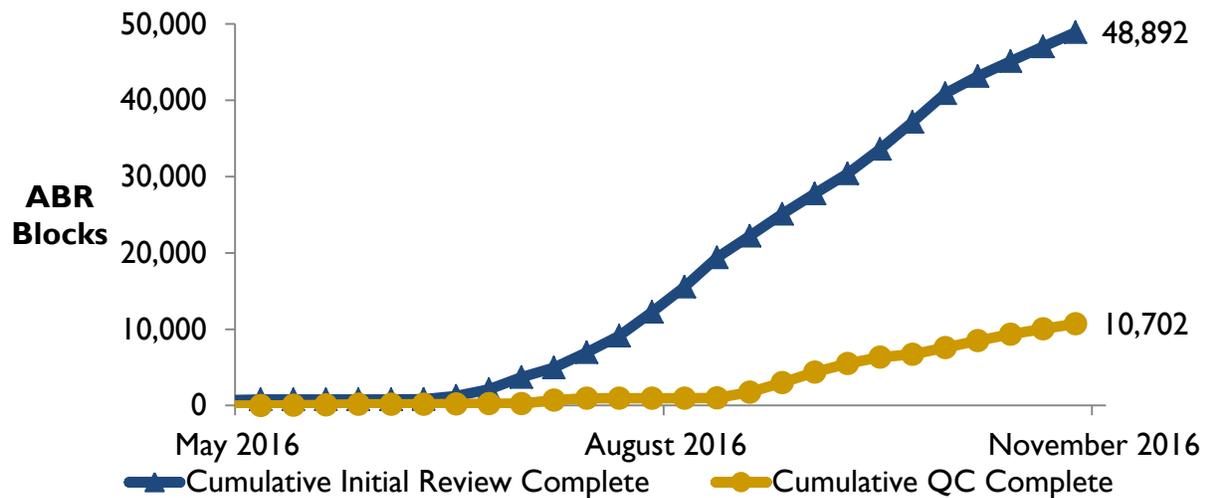
## II. ABR May Not Finish in Time for the 2020 Census IFAC Operation

Our analysis of ABR data identified a growing backlog of blocks awaiting quality control review, which may threaten the Bureau's ability to finish IOAC by the January 2019 deadline.

According to the Bureau, the 2020 Census IFAC operation that begins in August 2019 depends on the IOAC operation (see figure 2, in the introduction), which concludes in January 2019.<sup>7</sup> As previously noted, IOAC includes quality control components for both the IR and ABR operations. ABR quality control guidelines require an independent reviewer to determine whether blocks were correctly resolved based upon certain criteria, provide feedback to initial reviewer, and, where appropriate, make edits to complete work on the block.<sup>8</sup>

During our audit, NPC clerks conducted the preliminary ABR block reviews while headquarters geographers performed quality control reviews of their work. As of November 16, 2016, only 20 headquarters geographers performed quality control reviews for the 100 NPC clerks working on the ABR operation, resulting in a backlog of 38,000 blocks awaiting quality control reviews<sup>9</sup> (see figure 4).

**Figure 4. The Total Number of ABR Blocks Awaiting Quality Control, as of November 16, 2016**



Source: OIG analysis of Block Assessment, Research, and Classification, Application data from April 18, 2016, to November 16, 2016

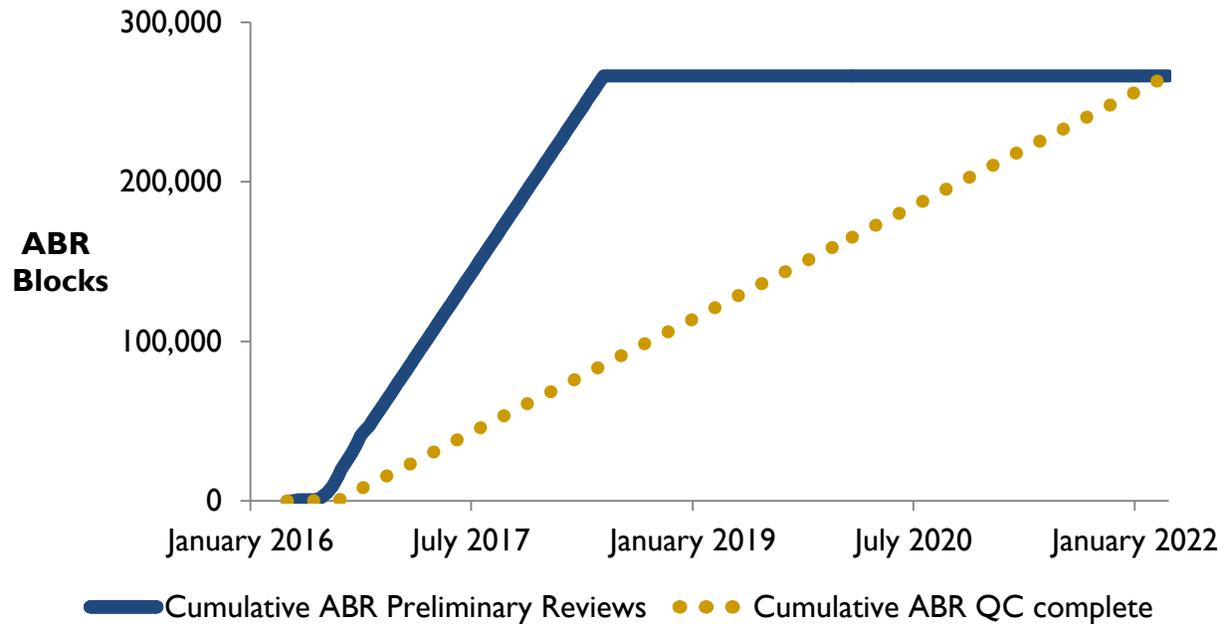
<sup>7</sup> U.S. Census Bureau, September 25, 2016. *2020 Census Life-cycle Schedule*. Washington, DC: Census.

<sup>8</sup> ABR quality control rechecks (a) 10 percent of all housing units considered "verified" by ABR clerks and all housing units that ABR clerks add, change, convert to a group quarters status (or from group quarters to housing units), identify as a duplicate, or change to a non-residential status; (b) 25 percent of the housing units deleted or moved (depending on source data); and (c) 25 percent of records with nulls values.

<sup>9</sup> OIG analysis of ABR preliminary and ABR quality control data, generated from the Block Assessment, Research, and Classification application, performed from April 18, 2016, until November 16, 2016. Approximately 25 percent of the blocks in the quality control backlog are on hold pending better imagery; the remaining 75 percent have not been reviewed by quality control staff.

Assuming average weekly production rates and staffing levels remain constant, we project the backlog of blocks awaiting quality control review would not be resolved until April 2022 (see figure 5).

**Figure 5. Projected Date of Completion for ABR Preliminary and Quality Control Reviews, as of November 16, 2016**



Source: OIG analysis of Block Assessment, Research, and Classification, Application data from April 18, 2016, to November 16, 2016

### III. The Bureau's Controls for Monitoring ABR Have Weaknesses

The *2020 Address Canvassing Operational Plan*<sup>10</sup> states that (1) ABR staff will record the amount of time spent on a particular assignment so the information can be used by headquarters management to monitor production rates and (2) ABR work is subject to a quality control process. While we found that the Bureau does require ABR staff to record the time spent processing blocks and currently has an ABR quality control process, we identified weaknesses in the Bureau's production and quality monitoring practices for ABR. Specifically, the Bureau

- did not have annual production targets, which reduced its ability to identify production shortfalls;

<sup>10</sup> U.S. Census Bureau, December 31, 2015. *2020 Census Detailed Operational Plan for the Address Canvassing Operation*, version 1.0. Washington, DC: Census.

- was slow to finalize the quality control process,<sup>11</sup> which increased the initial backlog of blocks waiting ABR quality control review and may result in data quality issues not being identified and corrected in a timely manner; and,
- did not monitor clerk error rates, which resulted in clerks with high error rates not receiving additional training.

We determined that some ABR clerks have high error rates. Our analysis of the ABR data confirmed that nearly 20 percent<sup>12</sup> of all ABR clerks had an error rate<sup>13</sup> greater than 5 percent—the standard currently in place for the IR operation. Unlike ABR, the IR component of IOAC had annual production targets, supervisors monitoring clerk error rates, and a quality control process that was planned and implemented at the start of the production operation.

#### IV. The Bureau Did Not Achieve Some of the Original Test Objectives

The 2020 Census Address Canvassing Test recruited and hired temporary field staff—referred to as listers—to verify addresses and maps in the Buncombe County, North Carolina, and St. Louis test areas. Listers were managed by local supervisors who monitored their work using an online tool that provided progress reports and automated electronic messages, known as alerts.

According to the test plan, a success criterion for the test was to collect data to inform future operational planning and cost estimation activities. However, because the Bureau was not adequately prepared to utilize some of the innovative design features that it plans to implement for the 2020 Census, we observed the following limitations:

- **Underutilized and inaccurate cost and progress reports.** Automated cost and progress reports—intended to help managers at the regional offices ensure that work remained on schedule and within budget—were not consistently used by managers because the Bureau did not develop procedures or training to ensure they used the reports. Additionally, the reports were incomplete and inaccurate: missing field staff payroll data and failing to perform some of the designed calculations. These limitations prevented the Bureau from analyzing how automated cost and progress reporting can potentially help benefit field operations.
- **Monitoring alerts expired without action.** The current test made use of three monitoring alerts, which notified a supervisor if a lister (1) did not begin an assignment on time, (2) was not making sufficient progress, or (3) did not indicate his or her work availability. Our analysis indicated that more than 10 percent of

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<sup>11</sup> ABR production at the NPC began in May 2016; the Bureau did not finalize the interactive quality control process until October 2016.

<sup>12</sup> We found that 28 of the 154 ABR clerks had an error rate greater than 5 percent from the April 18, 2016, through November 16, 2016. Analysis excluded blocks that were re-opened by a quality control reviewer or where an initial review was not complete.

<sup>13</sup> The ABR quality control process allows a quality control reviewer to correct clerk errors in a block twice before it receives a “fail” designation and is corrected by the reviewer. OIG analyzed ABR block data from April 18, 2016, through November 16, 2016, for “fail” designations for each clerk.

alerts expired before a supervisor resolved them, which limited the Bureau's ability to measure the effect of alerts on address canvassing operations.

- **On-boarding.** For the test, the Bureau did not on-board staff via the payroll system that it will use during the 2020 Census. This resulted in field administrative staff generating manually-keyed on-boarding reports that lacked controls, potentially reducing accuracy of on-boarding information.
- **Cost estimating activities.** Although required by the *Test Plan* (dated July 1, 2016), the Bureau does not have a process in place to use data from the test to update the *2020 Census Life-cycle Cost Estimate*.

One reason for these limitations may have been schedule delays which affected test preparedness. We analyzed the Bureau's Address Canvassing Test schedule, which indicated that nearly half of the test activities had a delayed start date and/or finish date. The average start delay was 25 days, with a maximum delay of 275 days; and the average finish delay was 30 days, with a maximum delay of 184 days. Each activity is linked to preceding and succeeding activities, so a delay to one activity may cause many other activities to be delayed and jeopardizes the Bureau's ability to effectively plan and carryout testing activities in a timely manner.

The findings presented in this report raise concerns about the cost, schedule, and monitoring of the ABR component of IOAC, as well as the Bureau's ability to use Address Canvassing Test data to inform future operational planning. If the Bureau does not address the referenced ABR issues in a timely manner, it could negatively affect the 2020 Census address canvassing operation and any potential cost savings. Additionally, if the Bureau does not improve its test planning practices, it will continue to receive limited information to support the 2020 Census planning effort.

### *Recommendations*

We recommend that the Director of the U.S. Census Bureau

1. Update the *2020 Census Life-cycle Cost Estimate* to reflect more accurate IOAC cost estimates, including any plans to address the ABR quality control backlog.
2. Increase ABR production rates and reduce the quality control backlog to ensure that ABR is completed prior to 2020 Census address canvassing.
3. Create a production schedule and implement a clerk-level quality monitoring process for ABR.
4. Ensure that (a) testing activities are adequately planned and remain on schedule and (b) new design innovations are prepared to function as designed.

## Other Matters

### *The Bureau Cannot Verify That IOAC Updates Are Accurate Using IFAC Data*

The Bureau cannot guarantee the accuracy of in-field canvassing results, so it may not be able to determine the relative effectiveness of IOAC results in comparison to IFAC results. Unlike IOAC, the IFAC operation does not include a quality control process,<sup>14</sup> so the accuracy of in-field canvassing results—which will be used to verify the accuracy of in-office canvassing results—cannot be ensured. The Bureau recognizes this, and its Address Canvassing Test Study Plan, which will evaluate the test, notes that the lack of quality control for IFAC will prevent it from “knowing which update [IOAC or IFAC] is truly correct.”

### *Cancellation of the 2017 Census Test*

In September 2016, citing budget constraints, the Bureau canceled the 2017 Census Test—the only remaining field test that was scheduled to occur prior to the final “End-to-End” test in 2018—where it could test new innovations and methods in the field prior to the 2020 Census. The Bureau believes that budget constraints may have a number of down-stream effects. Canceling the 2017 test will limit the Bureau’s ability to determine the effectiveness and quality of the numerous design innovations, such as new methods for address canvassing. The Bureau noted that delayed or canceled address canvassing research may increase the number of blocks and addresses requiring IFAC and nonresponse follow-up, respectively, during the 2020 Census, increasing its estimated cost.

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<sup>14</sup> U.S. Census Bureau, August 2, 2016. *2020 Census Study Plan Address Canvassing Test: Address Canvassing Integrated Product Team*, Version 0.6. Washington, DC: Census, 26. The Study Plan states, “There will be a relisting of a sample of In-Field Address Canvassing blocks as specified in Section 3.3, but this is not a [quality control] operation, will not ensure any level of quality in the outgoing data, and is only being used to potentially gain additional information to assist in future sampling methods.”

## Summary of Agency Response and OIG Comments

In response to our draft report, the Bureau concurred with all recommendations and described both completed and planned actions to address each recommendation. As stated in the Bureau's response, the suspension of ABR will result in cost increases that may reduce the total amount of cost avoidance the Bureau hoped to achieve.

The Bureau also included technical comments to our draft report, from which we made changes to the final report where appropriate. We have included the Bureau's formal response as appendix B of this report.

# Appendix A: Objectives, Scope, and Methodology

The objective of this audit was to assess the risk that the Address Canvassing Test would not accomplish its stated goals. However, after OIG began audit fieldwork, the Bureau removed the term “goals” from the test plan. As a result, we modified our audit objective to review the Address Canvassing Test’s cost and schedule, as well as in-field and in-office components of the test.

To accomplish our objective, we

- interviewed Census Bureau headquarters officials to gain an understanding of the Address Canvassing Test and the 2020 Address Canvassing operation.
- reviewed the following documents:
  - *Address Canvassing Test Plan*, dated July 1, 2016.
  - *2020 Census Study Plan Address Canvassing Test*, dated August 2, 2016.
  - *2020 Census Detailed Operational Plan for the Address Canvassing Operation*, dated December 31, 2015.
  - *2020 Census Life-cycle Cost Estimate*, dated October 21, 2015.
  - *2020 Census Life-cycle Schedule FY 2016–2017*.
- conducted on-site observations and interviews at the following locations:
  - Bureau's National Processing Center in Jeffersonville, Indiana, to observe the IOAC operation.
  - Test sites in Buncombe County, North Carolina, and St. Louis to observe the IFAC operation.
  - Atlanta and Chicago regional census offices, to observe the regional oversight of test-site operations.
- tested relevant information system controls.
- analyzed ABR data to identify production and quality risks.

Additionally, we used computer-processed data to evaluate the in-office address canvassing process, as well as IFAC supervisory alerts and operational cost and progress data. To assess whether data were sufficiently reliable to conduct this analysis, we performed reasonableness tests, looking for missing data, calculation errors, data outside valid timeframes, data outside designated values, negative values in positive-only fields, and duplicate records. We did not identify any issues and considered the data to be reliable. We conducted basic control tests for information technology systems used to generate these data, but did not conduct the analysis required to fully assess the reliability of these systems.

Based on our review, we identified internal control weaknesses regarding (1) the cost estimation for IOAC; (2) the ABR quality control schedule; (3) ABR production and quality monitoring, and (4) the Bureau's preparedness to achieve test success criteria.

We conducted this audit from June to February 2016, under the authority of the Inspector General Act of 1978, as amended, and Department Organization Order 10-13, dated April 26, 2013, at the Department's offices in Washington, DC, metropolitan area and the on-site observations mentioned above. This performance audit was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

# Appendix B: Agency Response



UNITED STATES DEPARTMENT OF COMMERCE  
Economics and Statistics Administration  
U.S. Census Bureau  
Office of the Director  
Washington, DC 20233-0001

APR 28 2017

MEMORANDUM FOR: Carol Rice  
Assistant Inspector General for Economic  
And Statistical Program Assessment

From: John H. Thompson   
Director  
U.S. Census Bureau

Subject: *2020 Census: The Address Canvassing Test Revealed Cost and  
Schedule Risks and May Not Inform Future Planning as Intended  
Draft Report*

The attached comments are in response to your March 24, 2017, draft report titled “*2020 Census: The Address Canvassing Test Revealed Cost and Schedule Risks and May Not Inform Future Planning as Intended.*” The Census Bureau appreciates the opportunity to review and provide comments on this draft report.

Attachment

cc: Pam Moulder, ESA  
Raul Cisneros, ESA



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

Census Bureau Comments on OIG Draft Report:  
*"2020 Census: The Address Canvassing Test Revealed Cost and Schedule Risks and May  
 Not Inform Future Planning as Intended"*  
 April 2017

The U.S. Census Bureau appreciates the opportunity to comment on this draft report. Address Canvassing is one of four key innovation areas for the 2020 Census, and our redesigned approach leveraging a new In-Office Address Canvassing (IOAC) operation will result in considerable cost avoidance relative to the 2010 Census design.

IOAC consists of two phases: Interactive Review (IR) and Active Block Resolution (ABR). During the first phase, IR staff conducts an assessment of the stability of the housing unit inventory at the census block level, using satellite imagery and housing unit counts from the Census Bureau's Master Address File. Census blocks that have not experienced change are designated as "stable." Census blocks that have experienced change are designated as "active" and move to the second phase, ABR. ABR constitutes a deeper dive into the blocks that IR determines to be "active" and require further resolution.

While we believe the innovative design of IOAC is sound, our early experience with ABR is consistent with OIG's findings in this report. Namely, that there are challenges with productivity and quality control in the ABR operation as originally designed. We initially estimated that ABR would take approximately 20 minutes per block. Over the course of the first four months of the operation, we found that ABR was taking approximately 60 to 90 minutes per block.

To mitigate this difference between the estimated and actual production time, we identified ways to streamline the ABR procedures to improve productivity and quality control. However, funding uncertainties under the fiscal year 2017 Continuing Resolution led to additional challenges. The Census Bureau prioritized funding and resources to the continued development and implementation of other operations and systems required for the 2018 End-to-End Census Test and 2020 Census. This resulted in a decision to suspend ABR operations at our National Processing Center until 2021, while we continue to research improvements here at headquarters. As we move beyond the 2020 Census, we will reinstate the ABR operation. We fully expect that an improved and streamlined ABR operation will be part of the 2030 Census, bringing increased efficiencies to IOAC as the operation continues to evolve.

The impact of this decision changes the Census Bureau's estimate for In-Field Address Canvassing required for 2020 from 25 to 30 percent of housing units. This additional fieldwork will increase the overall estimated cost of the 2020 Census. This change will be factored into our next iteration of the life cycle cost estimate for the 2020 Census Program.

While we concur with the OIG findings and recommendations, we offer the following clarifying information:

- Regarding OIG's finding that "The Bureau did not have annual production targets, which reduced its ability to identify production shortfalls," the Census Bureau had identified quarterly goals for ABR in February 2016, and was able to identify production shortfalls within weeks of commencing production at the National Processing Center.

The Census had developed these initial goals using the best information available at the time, given that production had not started, and that the Census Bureau had not previously conducted an activity similar to ABR.



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The plan was always to refine the production goals once the operation was underway and we learned from the preliminary results. After a few weeks of monitoring daily production rates at the NPC, it was clear that ABR was requiring more time per census block than originally estimated, and that adjustments to the operation would be necessary to complete ABR on schedule for the 2020 Census.

- Regarding OIG's finding that "The Bureau was slow to finalize the QC process," the Census Bureau finalized the ABR block-level sample QC process in April 2016. Delays until October 2016 in implementing quality control were not due to delays in finalizing this process, but to limited programming resources.
- Regarding OIG's finding that "The Bureau did not monitor clerk error rates," the Census Bureau had identified limitations of the QC system deployed at the beginning of the operation. Initially, the system tracked QC statistics by census block, not by user. While users received feedback for each of the blocks that they worked, they did not receive a summary of errors for all of the blocks worked. In addition, functionality that would enable managers and supervisors to review error rates of individual users did not exist. Revisions to the QC operation and system are currently in development.
- Separately, regarding the OIG's finding that "The Bureau did not achieve some of the original test objectives," while many of the limitations outlined on pages 9 and 10 of the report are accurate, the Census Bureau notes the cause for many was not schedule delays, as the OIG suggests on page 10. Rather, the change from LiMA 2.0 to LiMA 1.0 (and the resulting removal of QC functionality), and the change to using non-decennial onboarding processes, were the direct result of budget constraints presented late in the planning and development phase of the test. These changes required the Census Bureau to change major parts of the in-field portion of the test, thus creating the limitations cited by the OIG. We plan to address these limitations in the 2018 End-to-End Census Test.

#### Recommendations

The Census Bureau agrees with the recommendations in this report. We will document planned efforts to address them in our formal action plan following the release of the OIG's final version of this report. For recommendations 1-3, these efforts will include continuing to research improvements to the process while the ABR operation is suspended. For the fourth recommendation, the Census Bureau is working to ensure robust program and project level schedules and plans are formulated and utilized for the 2018 End-to-End Census Test.



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