

# 2020 Census: Issues Observed During the 2018 End-to-End Census Test's Address Canvassing Operation Indicate Risk to Address List Quality

FINAL REPORT NO. OIG-19-008-A

FEBRUARY 6, 2019



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



February 6, 2019

**MEMORANDUM FOR:** Dr. Steven Dillingham  
Director  
U.S. Census Bureau

*Carol N. Rice*

**FROM:** Carol N. Rice  
Assistant Inspector General for Audit and Evaluation

**SUBJECT:** *2020 Census: Issues Observed During the 2018 End-to-End  
Census Test's Address Canvassing Operation Indicate Risk to  
Address List Quality*  
Final Report No. OIG-19-008-A

Attached for your review is our final report on the audit of the 2018 End-to-End Census (E2E) Test address canvassing operation. We initiated this audit of the U.S. Census Bureau (the Bureau) in support of our oversight role over the planning and implementation of the 2020 Census. Our audit objectives were to (1) assess the performance of in-field address canvassing operations and (2) determine whether in-office address canvassing correctly identified blocks for the in-field address canvassing operation.

We found the following:

- I. In-office address canvassing did not correctly identify blocks for in-field address canvassing at the Providence test site.
- II. Resolution of alerts indicating potential instances of low quality and fraud/abuse was sometimes untimely or non-existent.
- III. The Bureau's ability to inform the 2020 Census address canvassing operation using the 2018 E2E Test faces some limitations.
- IV. The Bureau is unsure of whether 26 Listers who updated addresses were qualified.

In addition—and as part of our fieldwork—we conducted on-site observations of Listers during the test. We observed instances of some Listers' noncompliance with procedures and noted them in an "Other Matter" section of this report.

On November 8, 2018, we received the Bureau's response to the draft report's findings and recommendations, which we include within the report as appendix B. Although we were not able to reach consensus with the Bureau on the methodology used in the audit report's calculation of the in-office address canvassing error rate, OIG and Bureau management do agree the recommendations included in the report will ultimately strengthen the address canvassing operation.

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, Division Director, at (202) 482-0055.

#### Attachment

cc: Dr. Ron Jarmin, Deputy Director and Chief Operating Officer, Census Bureau  
Albert E. Fontenot, Jr., Associate Director for Decennial Census Program, Census Bureau  
Timothy P. Olson, Associate Director for Field Operations, Census Bureau  
Deirdre Bishop, Division Chief, Geographic Operations, Census Bureau  
Pamela Moulder, Senior Program Analyst, Economics and Statistics Administration  
Colleen T. Holzbach, Program Manager for Oversight Engagement, Census Bureau  
Corey J. Kane, Audit Liaison, Census Bureau  
Kemi A. Williams, Program Analyst for Oversight Engagement, Census Bureau



# Report in Brief

February 6, 2019

## Background

The Census Bureau (the Bureau) is constitutionally mandated to carry out a census of the U.S. population every 10 years. Prior to the enumeration, the Bureau verifies and updates the address of each housing unit in the country. In large part, the Bureau accomplishes this by conducting the address canvassing operation prior to the decennial census to refine the Bureau's address list and help ensure that the Bureau can contact every household. The address canvassing operation for the 2020 Census will verify the address and physical location of an estimated 143 million housing units within 11 million blocks.

During the address canvassing operation for the 2010 Census, nearly every block in the country was traversed by temporarily employed Listers, who compared what they saw "on the ground" to address lists generated by the Bureau's Master Address File. As a cost-saving innovation for the 2020 Census, the Bureau divided the operation into two components: in-office address canvassing and in-field address canvassing.

The 2018 End-to-End Census (E2E) Test is the last large-scale in-field test of the Bureau's redesigned address canvassing operation before the 2020 Census. The goals of the 2018 E2E Test's address canvassing operation were to (1) test the listing capabilities required by in-field address canvassing, (2) validate the creation of the workload for the in-field address canvassing operation by using in-office address canvassing, and (3) conduct a quality control (QC) operation during in-field address canvassing. The Bureau conducted the 2018 E2E Test's address canvassing operation in Providence; Bluefield-Beckley-Oak Hill (Beckley), West Virginia; and Pierce County, Washington.

## Why We Did This Review

Our audit objectives were to (1) assess the performance of in-field address canvassing operations and (2) determine whether in-office address canvassing correctly identified blocks for the in-field address canvassing operation.

## U.S. CENSUS BUREAU

### 2020 Census: Issues Observed During the 2018 End-to-End Census Test's Address Canvassing Operation Indicate Risk to Address List Quality

OIG-19-008-A

## WHAT WE FOUND

We assessed the performance of in-field address canvassing and identified multiple instances of noncompliance with in-field test procedures by Listers, Supervisors, and Managers. We also determined that in-office address canvassing did not correctly identify blocks for the in-field address canvassing operation. Specifically, we found the following:

1. In-office address canvassing did not correctly identify blocks for in-field address canvassing at the Providence test site.
2. Resolution of alerts indicating potential instances of low quality and fraud/abuse was sometimes untimely or non-existent.
3. The Bureau's ability to inform the 2020 Census address canvassing operation using the 2018 E2E Test faces some limitations.
4. The Bureau is unsure of whether 26 Listers who updated addresses were qualified.

In addition to our findings, on-site observations revealed that some Listers did not comply with in-field canvassing procedures. Noncompliance with test procedures during the operation could result in an inaccurate address list.

## WHAT WE RECOMMEND

We recommend that the Director of the U.S. Census Bureau do the following:

1. Evaluate how the number of incorrectly categorized passive blocks will affect Census quality and how those errors may affect demographic groups.
2. Identify in-office operational errors that are causing clerks to incorrectly categorize blocks and implement procedures to prevent errors from continuing.
3. Include a nationally representative statistical sample of passive blocks in the 2020 Census in-field operation and report the estimated number of missed households.
4. Develop procedures to ensure operational control system alerts indicating risks to quality and potential fraud/abuse are resolved in time to prevent continued enumerator error and address potential fraud/abuse.
5. Assess the risks to the 2020 Census that have arisen as a result of the limitations identified during the 2018 E2E Test's address canvassing operation.
6. Determine why final training assessment documentation was missing for 26 Listers and develop a management control to ensure that (1) trainee assessments are documented, and (2) only qualified trainees are retained for a 2020 Census Lister position.

# Contents

<b>Introduction</b> .....	<b>1</b>
<b>Objectives, Findings, and Recommendations</b> .....	<b>3</b>
I. In-Office Address Canvassing Did Not Correctly Identify Blocks for In-Field Address Canvassing at the Providence Test Site.....	3
II. Resolution of Alerts Indicating Potential Instances of Low Quality and Fraud/Abuse Was Sometimes Untimely or Non-Existent .....	4
III. The Bureau's Ability to Inform the 2020 Census Address Canvassing Operation Using the 2018 E2E Test Faces Some Limitations .....	7
IV. The Bureau Is Unsure of Whether Twenty-Six Listers Who Updated Addresses Were Qualified.....	7
Recommendations .....	8
<b>Other Matter</b> .....	<b>9</b>
On-Site Observations Revealed Some Listers Did Not Comply with In-Field Canvassing Procedures.....	9
<b>Summary of Agency Response and OIG Comments</b> .....	<b>11</b>
<b>Appendix A: Objectives, Scope, and Methodology</b> .....	<b>13</b>
<b>Appendix B: Agency Response</b> .....	<b>15</b>

*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 (the Bureau) is constitutionally mandated<sup>1</sup> to carry out a census of the U.S. population every 10 years. Prior to the enumeration, the Bureau verifies and updates the address of each housing unit in the country. In large part, the Bureau accomplishes this by conducting the address canvassing operation prior to the decennial census to refine the Bureau's address list and help ensure that the Bureau can contact every household. The address canvassing operation is just one operation included in the 2018 End-to-End Census (E2E) Test.<sup>2</sup> The address canvassing operation for the 2020 Census will verify the address and physical location of an estimated 143 million housing units within 11 million blocks.<sup>3</sup>

During the address canvassing operation for the 2010 Census, nearly every block in the country was traversed by temporary employees—known as *Listers*—who compared what they saw “on the ground” to address lists generated by the Bureau's Master Address File (MAF). As a cost-saving innovation for the 2020 Census, the Bureau redesigned the address canvassing operation used during the 2010 Census and divided the operation into two components: in-office address canvassing<sup>4</sup> and in-field address canvassing.<sup>5</sup>

Part of in-office address canvassing is an activity known as “Interactive Review,” where a Bureau reviewer compares aerial imagery from different years to identify blocks containing (1) growth and decline, (2) MAF overcoverage and undercoverage,<sup>6</sup> and (3) the potential to add living quarters in the future. The reviewer designates a block as “active” if the block contains one of these conditions. If not, the reviewer designates the block as “passive.” A block is placed “on hold” if additional information is needed to make a determination. Active blocks are included in the in-field address canvassing operation for verification—passive blocks are not. One hundred

---

<sup>1</sup> U.S. Const. art. I, § 2.

<sup>2</sup> The 2018 E2E Test consists of many operations: (1) address canvassing; (2) group quarters; (3) internet self-response; (4) update leave; (5) nonresponse followup; and (6) post processing and products.

<sup>3</sup> A Census collection *block* is a geographic area containing housing units and other structures bounded on all sides by visible features such as roads, railroad tracks, and rivers—or by invisible features such as county lines, city limits, or property lines.

<sup>4</sup> In-office address canvassing originally consisted of two operations: Interactive Review followed by active block resolution (ABR). The Bureau cancelled ABR in March 2017. OIG assessed in-office address canvassing activities in two fiscal year 2017 reports: (1) U.S. Department of Commerce Office of Inspector General, May 11, 2017. *2020 Census: The Address Canvassing Test Revealed Cost and Schedule Risks and May Not Inform Future Planning as Intended*, OIG-17-024-A. Washington, DC: OIG; and (2) DOC OIG, September 13, 2017. *2020 Census: Evaluation of Interactive Review Address Canvassing Operation Revealed Issues with Quality Assurance Controls*, OIG-17-030-I. Washington, DC: OIG.

<sup>5</sup> The in-field address canvassing operation mirrors the procedures used in the 2010 Census address canvassing operation.

<sup>6</sup> “Overcoverage occurs when the address list contains an address that does not exist on the ground or when there are multiple instances of an address [*sic*] for the same residential structure on the ground. Undercoverage occurs when the address list is missing an address [*sic*] that exists on the ground.” See U.S. Census Bureau, July 13, 2017. *Study Plan for the Evaluation of Address Canvassing 2018 End-to-End Census Test*, Version 0.2. Suitland, MD: Census, 5.



percent of the nation's blocks will undergo an in-office review. The Bureau estimates that in-office address canvassing will reduce the workload for the in-field component by 70 percent. However, if blocks are not correctly designated, there is a risk that blocks will (a) be unnecessarily placed in the in-field workload, thereby increasing cost, or (b) not be placed in the in-field workload when a visit is required to add or update existing housing units, potentially resulting in those housing units not receiving Census forms.

The 2018 E2E Test is the last large-scale in-field test of the Bureau's redesigned address canvassing operation before the 2020 Census. The goals of the 2018 E2E Test's address canvassing operation were to

1. test the listing capabilities required by in-field address canvassing,
2. validate the creation of the workload for the in-field address canvassing operation by using in-office address canvassing, and
3. conduct a quality control (QC) operation during in-field address canvassing.

The Bureau conducted the 2018 E2E Test's address canvassing operation from August 28, 2017, to October 6, 2017,<sup>7</sup> in Providence; Bluefield-Beckley-Oak Hill (Beckley), West Virginia; and Pierce County, Washington. The New York City, Philadelphia, and Los Angeles regional Census centers supported the test locations, respectively. In-field address canvassing was carried out by Listers overseen by Census Field Supervisors (Supervisors) who reported to Census Field Managers (Managers), all of whom were temporary Bureau employees.

---

<sup>7</sup> This includes both the production and QC phases of the operation. The Bureau planned to complete the production operation roughly 1 week prior to the QC operation on September 29, 2017.

# Objectives, Findings, and Recommendations

Our audit objectives were to (1) assess the performance of in-field address canvassing operations and (2) determine whether in-office address canvassing correctly identified blocks for the in-field address canvassing operation.

During our fieldwork, we assessed the performance of in-field address canvassing and identified multiple instances of noncompliance with in-field test procedures by Listers, Supervisors, and Managers. We also determined that in-office address canvassing did not correctly identify blocks for the in-field address canvassing operation.

Specifically, we found the following:

1. In-office address canvassing did not correctly identify blocks for in-field address canvassing at the Providence test site.
2. Resolution of alerts indicating potential instances of low quality and fraud/abuse was sometimes untimely or non-existent.
3. The Bureau's ability to inform the 2020 Census address canvassing operation using the 2018 E2E Test faces some limitations.
4. The Bureau is unsure whether 26 Listers who updated addresses were qualified.

Appendix A provides additional details regarding the objectives, scope, and methodology of our audit.

## I. In-Office Address Canvassing Did Not Correctly Identify Blocks for In-Field Address Canvassing at the Providence Test Site

The Bureau, in part, defined the 2018 E2E Test<sup>8</sup> to be successful if in-field address canvassing validated the work of in-office address canvassing.<sup>9</sup> However, OIG analysis<sup>10</sup> of the 433 passive blocks included in the 2018 E2E Test<sup>11</sup> found that in-office address canvassing results differed from in-field results in 61 percent of the blocks tested.<sup>12</sup> This does not mean that all of the housing units within those blocks were missed; rather, it means that at least one housing unit was added to or removed from the address list by a field representative. In total, we found that field representatives added 1,087 housing units

---

<sup>8</sup> For purposes of this report, reference to the 2018 E2E Test refers to the address canvassing operation only, not peak operations that occurred later.

<sup>9</sup> Census, August 22, 2017. *2018 End-to-End Census Test Plan*, Version 1.1. Suitland, MD: Census.

<sup>10</sup> OIG only analyzed the accuracy of passive blocks, because these blocks will not be sent for in-field verification.

<sup>11</sup> While the 2018 End-to-End address canvassing in-field operation was conducted at three locations—Providence; Beckley, West Virginia; and Pierce County, Washington—the Bureau only included passive blocks in the Providence site to assess the accuracy of the in-office operation.

<sup>12</sup> OIG's analysis included all 433 passive blocks designated by in-office review. The Bureau plans to send passive blocks back to in-office address canvassing for a second review when outside data sources show potential change to those blocks, which could decrease the number of passive blocks and increase the number of in-field blocks. However, this second review did not occur during the 2018 E2E Test—and, as there is no assurance that a second in-office review would have changed the status from passive to active, our analysis included all passive blocks.



and removed 1,287 housing units in the 433 passive blocks. This indicates that in-office address canvassing is yielding incorrect results or, at the very least, results that are inconsistent with in-field address canvassing.

Blocks incorrectly designated as passive during in-office address canvassing pose the greatest risk to address list quality. If the in-office address canvassing operation does not correctly categorize blocks, then the Bureau's address list that identifies housing units for the 2020 decennial will be incorrect—and some households may not receive a Census form. Although the Bureau aims to reduce the number of housing units that require in-field verification, address data quality will be sacrificed if in-office address canvassing is not yielding accurate results. The in-office address canvassing operation anticipates more than half the blocks will be passive blocks and not require in-field verification. With such a high percentage of addresses being passive blocks—and if those blocks continue to be incorrectly categorized more than half of the time—address list quality will likely be adversely affected. Although address canvassing is not the only source of address updates,<sup>13</sup> it is a substantial part of developing an accurate frame for the 2020 Census.

Although the in-office address canvassing operation began in September 2015, the Bureau has neither determined the cause of addresses being incorrectly designated nor developed a process for correcting these errors. Prior to the E2E Test, the Bureau conducted two tests of the accuracy of in-office address canvassing,<sup>14</sup> with one being nationally representative. Both tests yielded higher than expected error rates.

## II. Resolution of Alerts Indicating Potential Instances of Low Quality and Fraud/Abuse Was Sometimes Untimely or Non-Existent

During the 2018 E2E Test, each Supervisor and Manager had access to the operational control system (OCS) which generated alerts for situations that required management attention. Supervisors were responsible for resolving these alerts “immediately”—a term that the Bureau did not define. During the test, we found that Supervisors did not resolve some alerts timely and other alerts at all. Therefore, problems involving low quality or instances of fraud and/or abuse may have gone unaddressed.

There were 15 alerts generated during the 2018 E2E Test (see table I for a list and descriptions). In general, the alerts provided indicators of issues regarding the quality of the in-field operation, productivity, scheduling, time and expense, and potential fraud and/or abuse. Listers<sup>15</sup> could trigger 12 of these 15 alerts; Supervisors triggered the remaining 3 (see alerts triggered by Listers (L) and Supervisors (S) in table I). Managers were responsible for resolving alerts triggered by Supervisors.

---

<sup>13</sup> Other sources that update the address list include information from the U.S. Postal Service; third-party data sources; and local, state, and tribal governments.

<sup>14</sup> The Bureau assessed the accuracy of the in-office address canvassing operation on two occasions: the 2016 MAF Coverage Study (based on a nationally representative sample of all blocks in the United States) and the 2016 address canvassing test (using data from test sites in Buncombe County, North Carolina, and St. Louis).

<sup>15</sup> Listers are the temporary employees comparing what they see “on the ground” to an address displayed on a mobile device during in-field address canvassing.

**Table 1. Operational Control System Alerts Used During the 2018 E2E Test**

Alert Name	Alert Description
1. Block Failed QC (L)	An employee worked a block that failed quality control (QC)
2. Payroll Not Approved (S)	A [Supervisor] has not approved time and expenses from any employees within 2 days of submittal
3. Potential Overcharge Miles (L)	An employee claimed more miles on the time and expense report than expected for the given assignment
4. Potential Overcharge Hours (L)	An employee claimed more hours on the time and expense record than expected for the given assignment
5. Low Cases Per Hour (L)	An employee worked a significantly lower number of addresses per hour than expected
6. High Cases Per Hour (L)	An employee worked a significantly greater number of addresses per hour than expected
7. No Timesheet (L)	An employee worked yesterday but did not submit a time and expense record by midnight
8. No Show (L)	An employee submitted Work Availability and has assignments but did not perform any work that day
9. Many Days No Work (L)	An employee has not worked in 3 work days
10. Block No Progress (L)	An employee opened an assignment but did not work on it for 3 work days
11. Overtime Claimed (L)	An employee entered overtime hours on the time and expense record
12. Stale Alert (S)	A [Supervisor] did not resolve an alert they received within 2 days of the alert being triggered
13. No Timesheet (S)	An alert to the [Manager] that a [Supervisor] worked the prior day but did not submit a time and expense record by midnight
14. Look Ahead Work Availability (L)	50 percent or fewer employees on the team submitted work availability for the current date and the next 4 days
15. Block Not Started (L)	An employee downloaded an assignment but did not begin working it for 3 work days

Source: *Address Canvassing, Census Field Supervisor Manual*, July 2017.

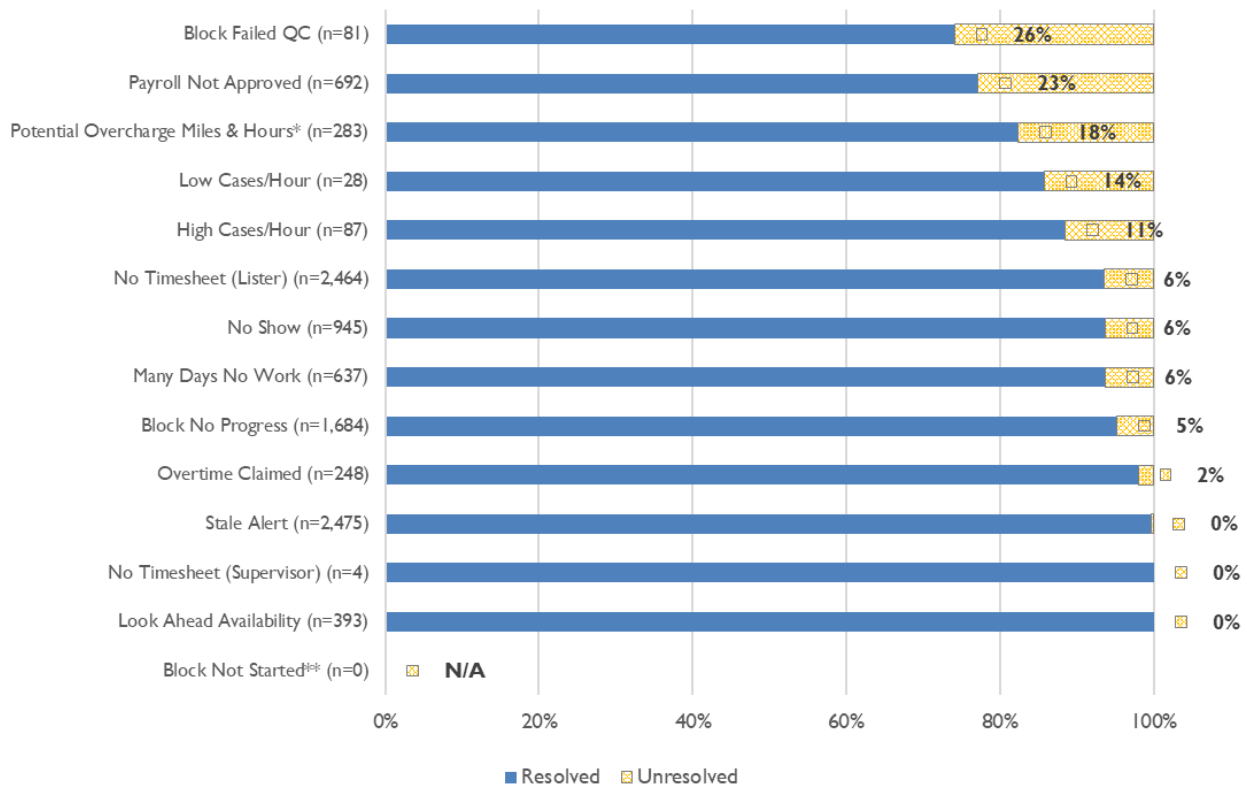
(L) Alerts triggered by Listers

(S) Alerts triggered by Supervisors

Alerts help the Bureau manage risks associated with operations, reporting, and compliance—providing a layer of internal control over the address canvassing operation. For example, the *Block Failed QC* alert notifies Supervisors and Managers when a block worked by a particular employee failed the QC review. The *Potential Overcharge Hours* and the *Potential Overcharge Miles* alerts indicate potential fraud and/or abuse caused by Listers who may have claimed more hours or mileage on assignments than merited. By timely resolving these alerts, Supervisors and Managers have an opportunity to identify and correct potential issues, provide additional training, or recommend termination if necessary.

During the course of the 2018 E2E address canvassing operation, in-field address canvassing staff triggered 10,021 alerts, of which 592 alerts were unresolved at the close of the operation. The *Block Failed QC* alerts, which provided a “near real-time” indication of low-performance in-field, accounted for 81 alerts, 21 of which were not resolved, resulting in the highest unresolved rate among the alerts (see figure 1). In addition, the *Potential Overcharge Miles* and the *Potential Overcharge Hours* alerts—which provide indicators of potential fraud and/or abuse—(when combined) accounted for 283 of the total alerts, 50 of which were not resolved, resulting in the third highest “unresolved” rate (see figure 1).

**Figure 1. Percentage of Unresolved Alerts by Category**



Source: Census Bureau alert data captured during the 2018 E2E Test, August 28–September 27, 2017.

\* We combined the *Potential Overcharge Miles* and *Potential Overcharge Hours* alerts since (a) these two alerts can occur together, (b) the procedures for resolving these alerts were the same, and (c) both alerts serve as indicators of potential fraud.

\*\* According to Census Bureau alert data, there were no *Block Not Started* alerts triggered during the 2018 E2E Test, August 28–September 27, 2017.

The Bureau did not prioritize the resolution of alerts addressing indicators of low quality or potential fraud and/or abuse. Considering the brevity of the address canvassing operation, it is imperative that management timely resolve alerts, especially alerts that have a direct impact on the quality of the address canvassing operation or indicate potential fraud and/or abuse. When Supervisors and Managers timely resolve these alerts, they have an opportunity to identify and correct potential issues, re-train staff, or recommend them for termination before they complete additional work. This opportunity was lost by not

prioritizing alert resolution, and Listers who erroneously performed or failed to perform their duties may have remained undetected because of management delays in resolving alerts.

### III. The Bureau's Ability to Inform the 2020 Census Address Canvassing Operation Using the 2018 E2E Test Faces Some Limitations

An objective of the 2018 E2E Test is to determine whether operations included in the test are ready to go into production for the 2020 Census. The Bureau established two goals to meet this objective during the address canvassing operation of the test: (1) deliver a complete and accurate address list and spatial database for enumeration and (2) determine the effectiveness of address canvassing operations.<sup>16</sup> However, we identified limitations that may prevent the Bureau from determining whether they fully achieved these goals. Specifically, we identified the following:

1. While a prior study<sup>17</sup> concluded that in-office address canvassing incorrectly classified passive blocks and had challenges in rural areas, Bureau management did not originally plan to include any passive blocks in the 2018 E2E Test. However, it decided to include passive blocks only at one test site, choosing the Providence test site over Beckley, which was selected for canvassing “very rural addresses.”
2. The Bureau’s ability to fully test the QC component of its Unified Tracking System was limited because it could not generate QC reports.<sup>18</sup>
3. The actual mobile devices that Listers will use during in-field address canvassing for the 2020 Census were not available to assess device performance.<sup>19</sup>

Combined, these limitations increase the risk that operational problems will remain undiscovered.

### IV. The Bureau Is Unsure of Whether Twenty-Six Listers Who Updated Addresses Were Qualified

After completing training, the Bureau required Listers to take the Lister Final Assessment and pass with a minimum score of 72 percent. If Listers failed to score a 72 percent or above, they had to successfully undergo an observation by their Supervisor prior to performing address canvassing work. Managers were responsible for manually activating Listers in the OCS once Listers passed the final assessment or successfully completed an observation by their Supervisor. However, we found that out of 237 Listers who made changes to at least one address during the address canvassing operation, there was no score

---

<sup>16</sup> Objectives of the 2018 E2E Test and goals of the 2018 E2E address canvassing operation can be found in the following report: Census, November 1, 2017. *2018 End-to-End Census Test Plan*, Version 1.0. Suitland, MD: Census.

<sup>17</sup> Census, August 16, 2016. *Master Address File Coverage Study 2016 Analysis Report*, version 1.4. Suitland, MD: Census

<sup>18</sup> “QC UTS [Unified Tracking System] reports ... serve as essential tools for [Supervisors] to provide feedback to production [L]isters.” See Census Decennial Statistical Studies Division, August 10, 2017. *2018 End-To-End Census Test In-Field Address Canvassing Quality Assurance Plan*. Suitland, MD: Census.

<sup>19</sup> As of March 13, 2018, the Bureau planned to use a Windows 10 mobile device for enumeration.

recorded to show that 23 of them took the final assessment. Furthermore, 3 Listers did not pass the final assessment and the Bureau could not provide documentation that these Listers successfully underwent an observation by their Supervisor. Combined, these 26 Listers (about 11 percent) worked an average of 26 days out of the 29-day operation.

The Bureau allowed these 26 Listers to work during the 2018 E2E address canvassing operation because management controls were not in place to ensure that (1) the Bureau captured documentation of employees' final assessment scores and (2) Managers did not activate unqualified employees.

The Bureau's criteria to measure the success of the 2018 E2E Test's address canvassing operation included Listers' and Supervisors' demonstration of competency after completing training. Insufficiently trained Listers increase the risk of erroneous additions and deletions to the address list. Theoretically, these errors could affect the Bureau's undercoverage and overcoverage rates and the Bureau's ability to derive an accurate and complete housing unit list from the 2018 E2E address canvassing operation. In addition, missed or misclassified housing units could increase the cost of subsequent operations during the 2018 E2E Test and the 2020 Census. If not addressed, this lack of management controls over the post-training final assessment process for in-field address canvassing could adversely affect the results of the 2020 Census address canvassing operation.

## Recommendations

We recommend that the Director of the U.S. Census Bureau do the following:

1. Evaluate how the number of incorrectly categorized passive blocks will affect Census quality and how those errors may affect demographic groups.
2. Identify in-office operational errors that are causing clerks to incorrectly categorize blocks and implement procedures to prevent errors from continuing.
3. Include a nationally representative statistical sample of passive blocks in the 2020 Census in-field operation and report the estimated number of missed households.
4. Develop procedures to ensure that OCS alerts indicating risks to quality and potential fraud/abuse are resolved in time to prevent continued enumerator error and address potential fraud/abuse.
5. Assess the risks to the 2020 Census that have arisen as a result of the limitations identified during the 2018 E2E Test's address canvassing operation.
6. Determine why final training assessment documentation was missing for 26 Listers and develop a management control to ensure that (1) trainee assessments are documented, and (2) only qualified trainees are retained for a 2020 Census Lister position.

## Other Matter

### On-Site Observations Revealed Some Listers Did Not Comply with In-Field Canvassing Procedures

Noncompliance with test procedures during the in-field address canvassing operation could result in an inaccurate address list. According to the *Address Canvassing Lister Manual*,<sup>20</sup> Listers were supposed to perform the following procedures during the in-field address canvassing operation and the 2018 E2E Test:

- Verify or update the location address and physical description of the living quarters.
- Stand in the proper location to collect “mapspots”<sup>21</sup> as denoted by the mobile device’s “You Are Here Indicator.”<sup>22</sup>
- Park their car and walk the driveway or path until they come to the house if the Lister saw a mailbox, driveway, or other indication of a house on the ground.
- Canvass each floor of multi-unit structures if they can gain access, and a manager/other knowledgeable person is not available.

We observed 10 Listers, and did not detect any significant deviation from Bureau procedures from 7 of them. We identified the following instances of noncompliance during our observations of the remaining 3 Listers:

- A Lister did not verify the location address and physical description of the living quarters. Specifically, one Lister did not update incorrect addresses on more than 10 occasions.
- Listers did not stand in the proper location to collect “mapspots” or park their car and walk until they came to a house while canvassing. Specifically, QC and production Listers entered “mapspots” away from housing units and while inside their vehicles.
- A Lister did not canvass each floor of a multi-unit structure although they could gain access and a manager/other knowledgeable person was not available.

The following issues contributed to Listers’ lack of compliance with procedures:

- Some Listers reported that it was difficult to translate online training on listing and mapping procedures into actual work in-field and that training did not cover adding, editing, or deleting units in multi-unit structures well enough.

---

<sup>20</sup> Census, June 2017. *Address Canvassing Lister Manual*. Suitland, MD: Census.

<sup>21</sup> *Mapspots* (also referred to as MAF structure points) are symbols used to indicate the location of structures containing one or more living quarters.

<sup>22</sup> The “You Are Here Indicator” is a symbol on the mobile device’s map used to indicate where you are on the ground using Global Positioning System.



- During our observations of in-field address canvassing, some Listers did not appear comfortable with the technology used during canvassing.
- The Bureau did not ensure that all Listers completed and passed the final assessment or underwent a successful observation by their Supervisor before allowing them to work in-field.

# Summary of Agency Response and OIG Comments

In its November 8, 2018, response to our draft report, the Bureau concurred with our recommendations. This final report accurately represents the facts and evidence obtained during audit fieldwork—but was revised to add additional context and better reflect the Bureau's position.

Despite concurring with the recommendations, the Bureau disagreed with the methodology used in calculating the in-office address canvassing block classification error rate. As stated in finding I, the Bureau, in part, defined the 2018 E2E Test a success if the canvassing conducted by Listers in the field validated in-office address canvassing results.

In its response to our audit finding I, the Bureau asserted that the blocks within 200 Basic Collection Units marked passive by the in-office operation should be excluded because they were triggered by another activity (such as new, unaccounted for postal service addresses) as being in need of a second in-office address canvassing review. However, these blocks, in fact, did not go through the triggered second in-office review prior to the 2018 E2E Test. Further, there is no guarantee that a second in-office review would have changed the blocks from passive to active. Thus, OIG believes that the most accurate way to assess the validity of in-office results as determined by in-field address canvassing is to include the passive triggered blocks because they were “classified as passive” by in-office address canvassing. Nonetheless, even if the passive triggered blocks were excluded, the in-office block classification error rate would still be 45 percent—which, as we state in finding I, indicates that in-office address canvassing is yielding results that are either incorrect or inconsistent with in-field address canvassing to a substantial degree.

Additionally, the Bureau noted in its response that we used “‘raw’ unprocessed results” in our analysis. In contrast, the Bureau stated that the Geography Division conducted a separate analysis to determine the accuracy of the Listers’ actions to add or delete addresses during canvassing. We do not reference the analysis in the report because it was conducted after our fieldwork was completed and, therefore, was outside of the scope of our audit. It should be noted that when the Bureau (1) excluded the passive triggered blocks and (2) conducted this additional analysis, it still found that in-office address canvassing had a greater than 30 percent block classification error rate.

Furthermore, the Bureau stated that only 2 percent of the addresses within passive blocks represented coverage errors. However, to quantify the number of housing unit additions or deletions that were missed in the in-office address canvassing operation, we looked at a Bureau study conducted during fiscal year 2016. The Bureau took a nationally representative sample of 18,500 blocks and found that errors in passive blocks could result in 1.4 million missed households in the 2020 decennial census and 3.4 million households incorrectly left on the address list, causing enumerators to conduct unnecessary visits. Moreover, the Bureau does not know which populations or regions will be most affected by the missed households in passive blocks.

We are aware that the Bureau is attempting strategies to mitigate these concerns (e.g., the triggering of blocks for a second in-office address canvassing review). However, the Bureau has not conducted any analysis to show that these strategies will fix the problems—and does not plan to conduct any analysis before the 2020 decennial census. As a result, the Bureau does not know how the error rate of in-office address canvassing will affect the quality of the 2020 decennial census.

Regarding finding II, the Bureau stated that our conclusion is overly broad because “only 6 percent of all alerts (592 out of 10,021) were not resolved.” While this may seem insignificant in the context of this test, we have also reported this finding in previous reports. If the Bureau does not devise a solution to resolving alerts before the 2020 decennial, an error rate of this size during the actual census may have a much larger impact on the quality of the count.

Regarding finding III, the Bureau disagreed “that the 2018 E2E was not successful in testing [in-field address canvassing].” Our finding does not conclude that the overall test was not successful; rather, our finding identifies some test limitations. Given that the Bureau’s Test Plan stated as one objective of the E2E Test to “[t]est and validate major operational threads, procedures, systems and infrastructure together to ensure proper integration and conformance with requirements,” we conclude that the limitations noted in finding III did not help the Bureau achieve the stated goal in the areas noted.

The Bureau agreed with the conclusion and recommendation associated with finding IV. While we agree that the Bureau was successful in demonstrating its ability to deliver online training to field staff, we are concerned that the Bureau has limited time to address deficiencies in order to ensure an adequately trained field staff.

Although we were not able to reach consensus on the methodology used, OIG and Bureau management do agree that the recommendations included in the report will ultimately strengthen the address canvassing operation. OIG agrees with the Bureau plan to analyze the impact of the in-office operation using nationwide 2020 Census results. Regardless of the methodology used to analyze it, in-office address canvassing errantly classified more than 30 percent of passive blocks. As a result, we believe that corrective action is warranted.

We have included the Bureau’s formal response as appendix B of this report.

# Appendix A: Objectives, Scope, and Methodology

We initiated this audit of the 2018 E2E Test on July 24, 2017. Our audit objectives were to (1) assess the performance of in-field address canvassing field operations and (2) determine whether in-office address canvassing correctly identified blocks for in-field address canvassing.

To accomplish our objectives, we performed the following:

- Interviewed Bureau management and in-field support staff at the area Census office in Los Angeles, and the regional offices in Philadelphia and New York City.
- Interviewed and observed Listers at all three test sites: Pierce County, Washington; Beckley, West Virginia; and Providence.
- Interviewed Bureau staff at Census headquarters in Suitland, Maryland.
- Reviewed test planning and assessment documentation.
- Conducted data analysis on passive blocks in Providence based on data provided by the Bureau on January 17, 2018.
- Conducted data analysis on alert data generated during the address canvassing operation, provided by the Bureau.

We used the following criteria to determine whether the Bureau executed the 2018 E2E Test's address canvassing operation in accordance with law, test objectives, goals, documented procedures, and lessons learned:

- Article I, § II of the U.S. Constitution
- *2018 End-to-End Census Test Plan*, Version 1.0, November 1, 2017
- *2018 End-to-End Census Test In-Field Address Canvassing Quality Assurance Plan*, August 10, 2017
- Findings and recommendations from the *Address Canvassing Final Assessment Group Exercise*, June 15, 2017
- *Census Field Manager Job Aid*, FLD-1091, August 2, 2017
- *Address Canvassing Census Field Supervisor Manual*, DX-641, July 2017
- *Address Canvassing Lister Manual*, DX-675, June 2017
- Address Canvassing Observation Form DX-1222

We did not use statistical sampling as a part of our data analysis—we used the complete universe of computer-processed data to evaluate (1) the types and resolution of alerts, (2) reasonableness of mileage reported, (3) manual assignments, and (4) whether Listers and Supervisors completed training and passed their assessment. Additionally, we used computer-processed data to determine whether in-field Listers identified address updates in passive

blocks. We focused on passive blocks because we considered the risk of potentially missed housing units to be greater than the risk of additional canvassing in active blocks. To assess whether data were sufficiently reliable to conduct this analysis, we performed reasonableness tests and looked 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 reliable. We conducted basic control tests for information technology systems used to generate this data and found no reportable issues, but we did not conduct the analysis required for a complete assessment of the reliability of these systems.

We identified internal control weaknesses with respect to the post-training final assessments used by the Bureau during the 2018 E2E Test's address canvassing operation.

We conducted this audit from July 2017 to January 2018, under the authority of the Inspector General Act of 1978, as amended, 5 U.S.C. App., and Department Organization Order 10-13, dated April 26, 2013, at the Census Bureau headquarters in Suitland, Maryland; the three test sites for the 2018 E2E Test; and the regional offices in Philadelphia and New York City.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the 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.


## Appendix B: Agency Response



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

NOV 08 2018

MEMORANDUM FOR: Carol Rice  
Assistant Inspector General for Audit and Evaluation

From: Ron Jarmin   
Performing the Non-Exclusive Functions  
and Duties of the Director  
U.S. Census Bureau

Subject: *2020 Census: Issues Observed During the 2018 End-to-End Census Test's Address Canvassing Operation Indicate Risk to Address List Quality Draft Report*

The attached comments are in response to your October 30, 2018, revised draft report titled "*2020 Census: Issues Observed During the 2018 End-to-End Census Test's Address Canvassing Operation Indicate Risk to Address List Quality.*" The Census Bureau appreciates the Office of the Inspector General revisions to the draft report, and is thankful to for the opportunity to work with you during the process and to provide comments on this new draft report.

While we still have some comments and concerns, we no longer disagree with any of the six recommendations, and will prepare an action plan to address them once the final report is issued.

Attachment



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



Census Bureau Comments on Office of Inspector General Draft Report:  
"2020 Census: Issues Observed During the 2018 End-to-End Census Test's Address  
Canvassing Operation Indicate Risk to Address List Quality"  
November 2018

The U.S. Census Bureau appreciates the opportunity to comment on this draft report. We have some concerns with several of the findings in this draft, but have no fundamental disagreements with the recommendations.

We do not believe the draft report places the In-Office Address Canvassing (IOAC) operation in proper context and would like to note that in addition to our planned Address Canvassing operations (both In-Office and In-Field), the Census Bureau has multiple processes to update and validate the 2020 Census address frame. These processes include:

1. Biannual processing of the United States Postal Service's Delivery Sequence File (DSF). The DSF is the Census Bureau's primary source for address updates, having supported the Census Bureau in adding 4.8 million new residential addresses to the Master Address File (MAF) since 2010.
2. Tribal, state, and local government address lists and road files provided through the Geographic Support System (GSS) Program. Between 2013 and 2018, the GSS Program accepted approximately 107 million addresses for use in updating the MAF. Of these 107 million addresses, roughly 106 million (99.5 percent) matched addresses that were already in the MAF. The GSS Program helped demonstrate to us and these participating governments the completeness of the MAF, and resulted in more accurate spatial coordinates for many addresses.
3. The Ungeocoded Resolution Project (URP). The URP is a program in which Census Bureau staff research and identify the census block to which an address should be assigned when the automated geocoding process is unable to make the determination. Since the project began in 2017, over 772,000 addresses (73 percent of addresses reviewed) have been geocoded to census blocks. Once geocoded, addresses are added to the initial decennial census address frame.
4. The Local Update of Census Addresses (LUCA) Program. LUCA, including its appeal process, is now underway providing an opportunity for tribal, state, and local governments to review the Census Bureau's address list for their respective jurisdictions.
5. The New Construction Program. Local governments may provide addresses for housing units built after LUCA, but ready for occupancy by April 1, 2020.

6. The Count Review Program (CRP). The CRP is conducted in collaboration with state members of the Federal-State Cooperative for Population Estimates. It provides an additional opportunity for states to review counts of housing units prior to the 2020 Census.

Additional comments on each of the four findings and six recommendations are as follows:

**Regarding Finding I --** In-office address canvassing did not correctly identify blocks for in-field address canvassing at the Providence test site.

The Census Bureau disagrees with the Office of Inspector's General (OIG) findings regarding the analysis of passive blocks in the Providence site. We have serious concerns about the OIG's methodology.

For the 2018 End-to-End Census Test, 433 Basic Collection Units (BCU) in the Providence site were selected for canvassing in the field in order to evaluate IOAC processes. Of these total BCUs, 233 were passive BCUs (i.e., all blocks within the BCU were passive) and 200 BCUs contained blocks that had been triggered for re-review in IOAC. The OIG's reasoning is incorrect in this instance, as the Census Bureau considered all of the BCUs to be active because a second review had not been conducted. The OIG stated that it included the 200 "passive-triggered" BCUs in the universe because the OIG believed that there was no assurance that a second review would have changed the status to active. The Census Bureau respectfully disagrees. Because the Census Bureau has no way of knowing what the outcome of a second review would be and what proportion of the triggered blocks might remain passive, it treats all of the triggered blocks as active until proven otherwise. Thus, the Census Bureau believes that the 233 passive BCUs are the appropriate universe for evaluating the accuracy of IOAC in identifying blocks as passive.

Further, the OIG analyzed the "raw" unprocessed results from fieldwork. In doing so, the OIG included in its findings actions taken in the field that did not result in coverage changes when processed prior to updating the MAF. As a result, the OIG over-stated error levels. For example, a canvasser fails to notice that a side door on a house leads to a basement apartment and, as a result, deletes the address, which a previous canvassing operation added to the MAF and that local government-provided address lists have also included. The Geography Division, referencing the source history in the MAF for the address, rejects the deletion. Therefore, there is no net change from this action, but it would have been included in OIG's findings as an error. Based on our review of processed In-Field Address Canvassing (IFAC) results, we found that 98 percent of the addresses in the in-sample passive blocks were validated, and only 2 percent of the addresses returned from the field represented potential coverage errors.

**Regarding Finding II** -- Resolution of alerts indicating potential instances of low quality and fraud/abuse was sometimes untimely or non-existent.

We do not believe the data support such a broad conclusion. Overall, as OIG notes on page 5, only 6 percent of all alerts (592 out of 10,021) were not resolved. Also, of 81 "Block Failed quality control (QC)" alerts, 21 alerts - less than 1 percent of all 10,021 alerts - were unresolved. These unresolved alerts did not lead to a failure to conduct or complete the QC. If selected for QC, the block was sent to the Operations Control System for assignment to the QC staff. Even if the "Block Failed QC" alert was not resolved by the supervisor, the failed QC block was re-canvassed.

However, based on what we learned in the 2018 End-to-End (E2E) Census Test Address Canvassing operation, we agree that we need to continue to improve our alert process for these situations to ensure listers with poor quality work are identified quickly during the 2020 Census Address Canvassing operation.

**Regarding Finding III** -- The Bureau's ability to inform the 2020 Census address canvassing operation using the 2018 E2E Test faces some limitations.

The Census Bureau disagrees with the premise of this finding—namely, that the 2018 E2E was not successful in testing IFAC. We successfully implemented quality control for the first time using LiMA (our listing and mapping application); successfully integrated the first field test with the ECaSE system (our Internet response application); deployed the systems and procedures that will be used during the 2020 Census; and gleaned important lessons learned that we already are using to improve our systems and processes. Specifically, these lessons include:

- The Census Bureau used laptops that it already had in-house to support the field operations for the 2018 E2E Census Test. While a newer model of the laptops will be used for 2020 Address Canvassing, no significant changes will be introduced, and operational testing with the 2020 equipment will be conducted in Spring 2019. The laptops used in the 2018 E2E Census Test deployed all of the software applications planned for 2020 listing operations (LiMA, Mobile Case Management (MCM), and Field Operational Control System (FOCS) software).
- The Census Bureau also believes we successfully tested the Optimizer to make assignments to listers during the 2018 E2E Census Test. As we observed the impacts and behaviors that our business rules triggered during production, we did make manual changes to some assignments. Based on these observations, we have made further changes and improvements to how the Optimizer assigns listing work. We never envisioned using the Optimizer to make all assignments during the 2018 E2E

Census Test. The Optimizer is a tool for ensuring the majority of assignments are made in an efficient and logical manner. We will adhere to the same plan for 2020, that is; there is no intent to have the Optimizer make all assignments without any intervention.

With regard to the OIG's observation about passive blocks only being studied in one test site, by design and given available budget, the Census Bureau only assigned passive blocks into the workload in the Providence test site. This was done to support a sample that would enable further analysis in that test site. Both of the remaining test sites followed the 2020 Address Canvassing workload model that will not include passive blocks.

**Regarding Finding IV** – The Bureau is unsure of whether 26 Listers who updated addresses were qualified.

The Census Bureau agrees with this finding, but notes that the 2018 E2E Census Test Address Canvassing training was the first time we used the Decennial Learning Management System (LMS). The LMS consisted of online training modules, including the final assessment component referenced in the report. The Census Bureau successfully demonstrated the ability to deliver online training to field staff.

However, we agree that the test demonstrated the need for more robust monitoring and tracking of the final assessment. Specifically, final assessment scores from the LMS were not connected to the FOCS, making tracking a manual task for managers. After this was identified during Address Canvassing, we introduced a series of actions for later 2018 E2E Census Test operations. For example, we added custom reporting and monitoring tools in the LMS to provide managers with better information on the status of the Final Assessment. These custom tools were implemented for the Nonresponse Followup operation in the 2018 E2E Census Test; however, we agree that further refinements are needed for 2020.

### **Response to Recommendations**

**Recommendation 1:** Evaluate how the number of incorrectly categorized passive blocks will affect Census quality and how those errors may affect demographic groups.

We agree with the recommendation, if the intent is for us to conduct an evaluation of the results of the 2020 Census. The Census Bureau is planning an evaluation in the 2020 Census that will try to measure the accuracy of the address canvassing operation, including the in-office and in-field components. For the former, the error profiles of blocks identified as passive and active will be estimated, although not necessarily according to their effects on the coverage of different demographic groups.



**Recommendation 2:** Identify in-office operational errors that are causing clerks to incorrectly categorize blocks and implement procedures to prevent errors from continuing.

The Census Bureau agrees with this recommendation. While we disagree with the scale of errors reported by the OIG (as described in more detail in our comments on Finding I, above), we agree that errors occurred. Corrective action will be taken.

**Recommendation 3:** Include a nationally representative statistical sample of passive blocks in the 2020 Census in-field operation and report the estimated number of missed households.

The Census Bureau agrees with the recommendation to study housing unit coverage in the 2020 Census. For that study, we plan to use the Post Enumeration Survey areas, which will be a statistically representative sample of blocks.

**Recommendation 4:** Develop procedures to ensure OCS alerts indicating risks to quality and potential fraud/abuse are resolved in time to prevent continued enumerator error and address potential fraud/abuse.

The Census Bureau agrees with the recommendation to improve procedures and training for resolving operational control system (OCS) alerts. We already removed one duplicative alert that caused confusion during the test and added one additional alert to identify potential work-hour accounting irregularities. We will work to make changes to the training provided to the field staff that respond to OCS alerts, emphasizing the importance of resolving all alerts in a timely manner.

**Recommendation 5:** Assess the risks to the 2020 Census that have arisen as a result of the limitations identified during the 2018 E2E Test's address canvassing operation.

The Census Bureau agrees with the recommendation and is actively ensuring that all processes and systems that will be used during the 2020 Census Address Canvassing Operation that were not utilized during the 2018 E2E Census Test will be tested and operational. We have already solidified the workload criteria for the operation. We will continue to refine and test all management and operational reports, and we have plans to test the new laptop devices that will be used during the operation.

**Recommendation 6:** Determine why final training assessment documentation was missing for 26 Listers and develop a management control to ensure that (1) trainee assessments are documented, and (2) only qualified trainees are retained for a 2020 Census Lister position.

The Census Bureau agrees with the recommendation that we need to continue to revise procedures for using the training assessments as a tool for managing field staff in 2020.

I8CENS182295