



June 2021

2020 CENSUS

Innovations Helped with Implementation, but Bureau Can Do More to Realize Future Benefits

Accessible Version

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Why GAO Did This Study

For the 2020 Census, the U.S. Census Bureau (Bureau) implemented a series of planned innovations to rein in cost increases that have characterized recent decennial censuses and enhance data quality. For example, the Bureau reengineered the way that it compiled its address list to reduce time spent physically going door-to-door. The Bureau also developed automated tools designed to manage follow-up with nonresponding households more efficiently. Understanding how these innovations performed can help to gauge the cost and quality of the 2020 Census while informing decisions about future censuses.

This report, the second in a series of retrospective reviews of the 2020 Census, examines the extent to which the Bureau's innovations to the 2020 Census helped the Bureau achieve its cost and quality goals. GAO reviewed Bureau planning documentation, interviewed key officials, analyzed preliminary Bureau field production data, and surveyed area census office managers.

What GAO Recommends

GAO is making three recommendations, including that the Bureau track savings from future innovations; research and test any effects of those innovations on data processing timelines; and identify and report on additional measures on the effectiveness of the Bureau's optimization. The Bureau agreed with GAO's findings and recommendations. The Bureau also provided technical comments, which GAO incorporated as appropriate.

View [GAO-21-478](#). For more information, contact Yvonne Jones at 202-512-2717 or by email at jonesy@gao.gov or Nicholas Marinos at 202-512-9342 or by email at marinosn@gao.gov.

What GAO Found

With the decennial census coming to a close, the Bureau expects the 2020 Census to cost roughly \$14.2 billion (in nominal year dollars), which is above initial estimates but below the Bureau's most recent estimate of \$15.6 billion. This figure includes \$1.1 billion that has been spent responding to the unprecedented Coronavirus Disease 2019 (COVID-19) pandemic. If this scenario holds, the Bureau also will have been able to slow the trend in increasingly costly decennials, with 2020 costing roughly \$96 per household, compared to \$92 for 2010, \$80 for 2000, and \$45 for 1990 (adjusted for inflation).

The Bureau slowed decennial cost growth but did not position itself to know how much money was saved by each of its planned 2020 innovation areas. Bureau officials told GAO that they did not track the specific innovation areas within their revised cost estimation and budget execution framework and that they focused less on cost savings stemming from the innovation areas as they transitioned to implementing the census. GAO's March 2020 cost estimating and assessment guide, however, notes that a primary purpose of a cost estimate is to help managers evaluate affordability and performance against plans, as well as the selection of alternative solutions. Tracking operational innovations as part of the cost estimation and budget execution framework will help the Bureau to assess the cost effectiveness of future designs.

An expanded range of response modes, the extended self-response window, and a modified outreach strategy helped the Bureau achieve a higher-than-expected 63.4 percent self-response rate by mid-August 2020 amid challenging conditions related to COVID-19. While the Bureau made a late design change in February 2020 to its Internet response system, thereby introducing risk, 50.6 percent of households self-responded to the 2020 Census using the Internet prior to Non-Response Follow-Up – higher than the 41.8 percent that the Bureau had anticipated. The flexibility in response options also created the potential for the Bureau to receive multiple responses across multiple modes from a given household. Receiving more than 17 million responses without a census-issued identifier (compared to the approximately 9 million that the Bureau expected) increased the Bureau's workload to verify the data. For future decennials, researching and testing how design innovations may affect the methodologies and time required for post-data collection processing will help the Bureau manage any risks of delayed delivery of data products.

Improved use of technology aided the productivity of the Bureau's field operations, though using additional measures of productivity results could help the Bureau maximize future gains. Specifically, the use of laptops and smartphones to collect census data in the field for the first time, along with a case routing and assignment capability known as the optimizer, helped the Bureau canvass and enumerate more cases per hour than the Bureau had anticipated. Bureau officials said that they have not yet analyzed any additional measures of the optimizer's success that the Bureau had originally identified, such as miles traveled per case or hours worked per enumerator. Without identifying and reporting on a wider range of measures of effectiveness, the Bureau may miss opportunities to learn how it might further refine optimization efforts to achieve higher productivity in future operations.

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Abbreviations

ACO	area census office
ACOM	area census office manager
Bureau	U.S. Census Bureau
CDC	Centers for Disease Control and Prevention
CFS	census field supervisor
COVID-19	Coronavirus Disease 2019
DHS	Department of Homeland Security
ECaSE–ISR	Enterprise Censuses and Surveys Enabling Platform–Internet Self-Response
FSCPE	Federal-State Cooperative for Population Estimates
GQ	Group Quarters
IRS	Internal Revenue Service
IT	information technology
LUCA	Local Update of Census Addresses
MAF	Master Address File
NRFU	Non-Response Follow-Up
OCS	Operational Control System
POA&M	plans of actions and milestones

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June 14, 2021

Congressional Addressees

In April 2021, the U.S. Census Bureau (Bureau) delivered state apportionment counts to the President.¹ This occurred a little more than a year after the Coronavirus Disease 2019 (COVID-19) forced the Bureau to suspend key census operations and modify its approach to data collection. Meanwhile, for the 2020 Census, the Bureau also implemented a series of planned innovations to enhance data quality and rein in cost increases that have characterized recent decennial censuses.

For example, the Bureau reengineered the way that it compiled its address list to reduce time spent physically going door to door. The Bureau also developed automated tools designed to assign follow-up with nonresponding households more efficiently while making it more likely that the Bureau would be able to contact the respondents themselves (rather than a neighbor or landlord, for instance). Understanding how these innovations performed can help to gauge the quality of the 2020 Census while informing decisions about future censuses.

This report examines the extent to which the Bureau's innovations to the 2020 Census helped the Bureau achieve its cost and quality goals. The report is the second in a series of retrospective reviews on the 2020 Census with the overall aim of informing planning and decisions for the design of the 2030 Census.² We performed our work under the authority of the Comptroller General to evaluate the 2020 Census to assist Congress with its oversight responsibilities.

To address our objective, we identified key operational innovations that were new to the census and that the Bureau grouped into the following areas: Reengineered Address Canvassing; Optimized Self-Response; Reengineered Field Operations; Use of Administrative Records and Third-Party Data Sources; and Cybersecurity and Data Protection. To examine the Bureau's cost and quality goals in these areas, we reviewed

¹See 13 U.S.C. § 141(b). Census data are used, among other purposes, to apportion the seats of the U.S. House of Representatives and redraw congressional districts in each state.

²The first report was issued in December 2020. See GAO, *2020 Census: Census Bureau Needs to Assess Data Quality Concerns Stemming from Recent Design Changes*, [GAO-21-142](#) (Washington, D.C.: Dec. 3, 2020).

prior Bureau projections of the operational effects of each of the areas as well as the Bureau's cost estimates.

For the Bureau's cybersecurity and data protection innovation area, we updated our prior work related to the Bureau's cybersecurity challenges. We also included information from our ongoing work related to the Bureau's plans to protect respondent data by using disclosure avoidance methods. For that work, we collected and reviewed documentation on the status of disclosure avoidance activities, such as milestone schedules. We also interviewed relevant agency officials about their plans to implement disclosure avoidance for 2020 Census data products.

To contextualize our 2020 observations with how these innovations were tested and implemented throughout the decade, we reviewed and synthesized our prior report findings across the innovation areas. Where feasible, we reported on preliminary data from the Bureau on the quantity of address canvassing done remotely and in the field, response rates by mode, and use of administrative records during the Non-Response Follow-Up (NRFU) operation. We also surveyed the Bureau's area census office managers to obtain their views.³ We interviewed Bureau officials to obtain their perspectives on lessons learned from implementation of the census and to learn more about real-time developments in the Bureau's implementation of data protection.

We conducted this performance audit from February 2021 to June 2021 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 objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

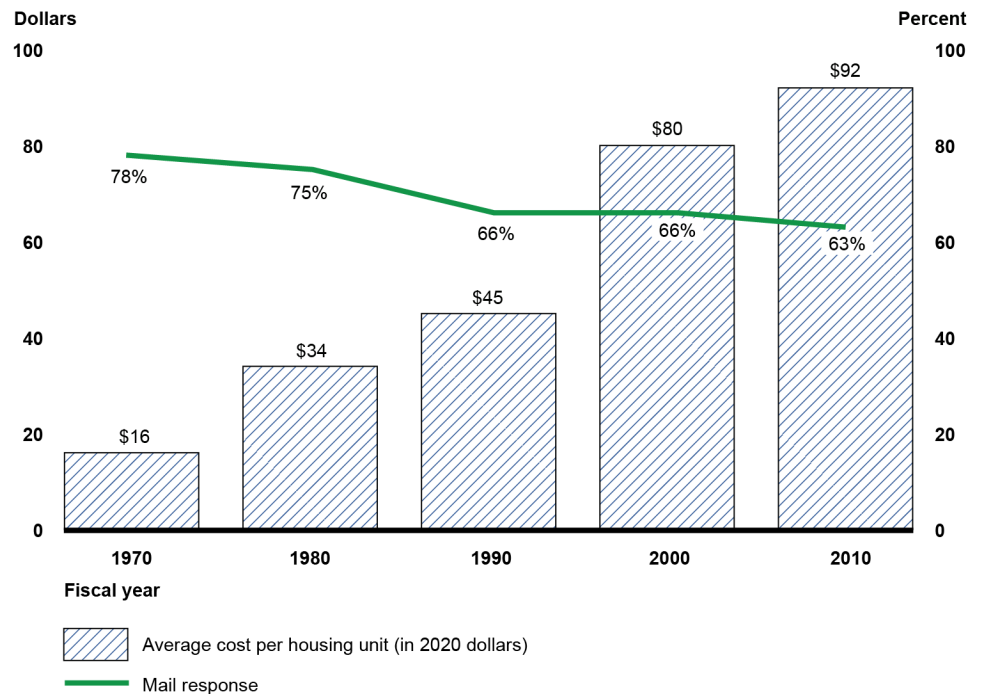
³The Bureau implemented field operations through a nationwide network of 248 area census offices (ACO). ACOs oversee local recruiting and operations and are organizational subunits of offices in the Bureau's six regions. We surveyed managers at all 248 of the Bureau's ACOs six times during the 2020 Census, including in late February to early March, early April, late May, late June to early July, late August, and early October. The response rates ranged from 67 to 76 percent. We also reviewed open-ended responses provided by ACO managers as part of this survey. We have other ongoing work analyzing the survey and plan to report those results and additional information about the survey later this year. For more information on how we have incorporated this survey work in prior reporting, see GAO, *2020 Census: The Bureau Concluded Field Work but Uncertainty about Data Quality, Accuracy, and Protection Remains*, [GAO-21-206R](#) (Washington, D.C.: Dec. 9, 2020).

Background

Costs of the Decennial Census Had Increased Dramatically in Recent Decades

The Bureau designed its methodology for the 2020 Census against a backdrop of steadily increasing costs. In 1970, the census cost \$16 per household counted. By 2010, that cost had risen to \$92 per household, and the overall cost of the 2010 Census was \$12.3 billion (constant 2020 dollars). It was the costliest to date. These cost increases tracked with declining self-response rates. This led the Bureau into correspondingly more fieldwork to visit nonresponding households during the NRFU operation (see fig. 1).⁴

Figure 1: Decennial Self-Response Rates and Per-Housing Unit Costs (in Constant 2020 Dollars) over Time



Source: GAO analysis of Census Bureau data. | GAO-21-478

⁴NRFU and address canvassing, during the latter of which the Bureau updates and verifies its address list prior to dissemination of invitations to respond to the census, constitute the Bureau’s highest-cost operations.

Data table for Figure 1: Decennial Self-Response Rates and Per-Housing Unit Costs (in Constant 2020 Dollars) over Time

Year	Average cost
1970"	16
1980"	34
1990"	45
2000"	80
2010"	92

In 2015, the Bureau estimated that trends such as declining self-response rates and increasing complexity of living arrangements would have increased the cost of the 2020 Census to \$17.8 billion (constant 2020 dollars) if the Bureau were to repeat the 2010 methodology for conducting the census.

The Bureau Developed Innovations with the Goal of Reducing Costs and Enhancing Data Quality

The Bureau developed key innovation areas that included a mix of strategies to reduce costs and enhance data quality (see table 1). For example, the Bureau designed the internet response option and its effort to combat false or misleading information to facilitate higher rates of self-response. This option would reduce potential downstream fieldwork costs and also provide what the Bureau considers to be the highest quality of census data. Likewise, the Bureau planned to canvass addresses virtually and over time because it had the potential to reduce in-field address canvassing costs while producing a more up-to-date address list throughout the decade.

Table 1: Census Bureau’s Innovation Areas and Initial Projections of Their Contributions to the 2020 Census

Innovation area	Summary of innovation(s)	Bureau’s 2015 projection of cost or quality impact
Reengineered address canvassing	Only canvass self-response areas if areas not confirmed using aerial imagery or local partner data State, local, and tribal governments provide updates to the address list throughout the decade	900 million in savings; reduction of in-field address canvassing workload from 100 percent to 25 percent of housing units

Letter

Innovation area	Summary of innovation(s)	Bureau's 2015 projection of cost or quality impact
Optimized self-response	Provide additional modes of response (internet, phone) to respondents Households can respond with or without a unique identification code supplied by an invitation to respond	400 million in savings; increase in data quality by facilitating more self-responses
Reengineered field operations	Fewer area census offices (from 494 in 2010 to 248 in 2020) Automated case assignment and electronic data collection Real-time field data monitoring tools for managers Mobile devices to collect responses in the field	2.5 billion in savings; increased staff productivity
Use of administrative records	Model with government and third-party data sources to predict housing occupancy status and streamline Non-Response Follow Up contact strategy Enumerate persistently nonresponding households using sufficiently high-quality data	\$1.4 billion in savings; avoid the need to impute, or statistically derive information for, nonresponding households using nearby households
Cybersecurity and data protection	Monitor misinformation and disinformation from social and traditional media Systems and new technology used in other innovations (e.g., the internet response system and mobile devices) Use a new disclosure avoidance technique, known as differential privacy, to protect respondent data in public data products	Protect the integrity of the 2020 Census against false or misleading information; ensure that false information does not dissuade households from responding Avoid unauthorized disclosure of respondent personally-identifiable information

Source: GAO analysis of U.S. Census Bureau data. | GAO-21-478

When the Bureau first presented its innovation areas in 2015, it estimated that these changes would collectively save more than \$5 billion for the 2020 Census relative to replicating the 2010 methodology. We have reported previously on the potential for these innovations to improve the census while noting the implementation risks and the need for testing.⁵

⁵GAO, *2020 Census: Sustained Attention to Innovations, IT Systems, and Cost Estimation Is Needed*, [GAO-17-584T](#) (Washington, D.C.: May 3, 2017).

The Bureau Implemented 2020 Innovations That Produced Important Results, but Some Benefits Were Not Fully Tracked or Realized

The Bureau Expects the 2020 Census to Cost Less Than Planned but Did Not Position Itself to Attribute Cost Savings to Individual Innovation Areas.

The Bureau’s preliminary data suggest it is on track to spend less during the 2020 decennial life cycle (2012-2023) than what it projected in its revised cost estimate. As of March 2021, the Bureau anticipated ending the cycle with \$14.2 billion in expenditures—higher than initial estimates but less than the Bureau’s revised cost estimate of \$15.6 billion (see table 2).⁶

Table 2: The Census Bureau Expects That the 2020 Census Will Cost Less than Its 2017 Estimate

Dollars in billions

	October 2015 estimate	October 2017 estimate	Actual costs (thru FY 2021) ^a	Anticipated final costs as of April 2021
Amount	12.3	15.6	13.7	14.2
Fiscal Year 2012-2023 nominal costs				

Source: GAO analysis of U.S. Census Bureau data. | GAO-21-478

^aThe Bureau’s nominal costs for FY 2021 include actual costs to -date (including costs related to COVID-19), as well as planned obligations.

The Bureau had roughly \$2 billion in total contingency funds available for the 2020 Census. In December 2020, the Bureau told us \$1.8 billion of these funds could have been needed to pay for the Bureau’s COVID-19 response and other late design changes. In February 2021, Bureau officials told us that they had actually spent \$1.1 billion of these funds thus far, as costs to accelerate NRFU and to mitigate for COVID-19

⁶GAO, *2020 Census: Census Bureau Improved the Quality of Its Cost Estimation but Additional Steps Are Necessary to Ensure Reliability*, [GAO-18-635](#) (Washington, D.C.: Aug. 17, 2018). The Bureau had initially estimated in October 2015 that the 2020 Census would cost \$12.3 billion but revised this estimate in October 2017 to \$15.6 billion, a 27 percent increase.

disruptions have come in below what the Bureau had previously approved.

If remaining costs are incurred as currently projected, the apparent limiting of its 2020 life-cycle costs below the Bureau's revised estimate is an important achievement for the Bureau given the challenging conditions under which it implemented the census. Moreover, after adjusting for inflation in that scenario, the 2020 Census will have cost roughly \$96 per household (compared to \$92 per household in 2010, \$80 in 2000, and \$45 in 1990). This suggests that even with the expenses associated with COVID-19, the Bureau moderated the historically rising cost curve of the census in figure 1 above.

However, Bureau officials stated that the Bureau did not position itself to say how much money was saved by each of its planned 2020 innovation areas. While in 2019, we credited the Bureau with important steps it had taken to improve the quality of its cost estimate, Bureau officials told us during our audit that the initial projections of savings from the Bureau's innovations were produced before the Bureau modified its cost estimation methodology. Specifically, officials told us that the 2020 innovation areas were not identified within the Bureau's framework for itemizing the activities, deliverables, and costs (termed a work breakdown structure). This framework is the cornerstone of a cost estimate and helps agencies track budget execution in relation to the agency's plan. The officials explained that, having revised the cost estimate first in 2017, they are more focused on how the innovations affected data quality than on the cost effects. They also said that their current approach to evaluating the innovation areas is to compare the actual cost of an operation such as address canvassing with what it would have cost using the 2010 methodology.

Our March 2020 report on cost estimating states that a primary purpose of a cost estimate is to help managers evaluate affordability and performance against plans, as well as the selection of alternative solutions. Moreover, well-developed cost estimates help to justify budgets to Congress and demonstrate the effects of proposed budget cuts.⁷ While the Bureau made important strides with its cost estimate, and its innovations made important contributions to the 2020 Census (which we

⁷GAO, *Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs*, [GAO-20-195G](#) (Washington, D.C.: Mar. 12, 2020).

describe later in this report), the Bureau is unable to demonstrate the financial value of investments made in its specific innovations or to what degree any cost savings experienced in 2020 were because of the innovations.⁸ Tracking operational innovations as part of how costs are estimated and how budgets are executed would help the Bureau assess the cost effectiveness of future designs.

Reengineered Address Canvassing: The Bureau Created a More Current Address List during the Decade but Reduced Fieldwork Less Than Planned

The Bureau Plans to Build upon Its 2020 Process of Updating the Address List

The Bureau's Master Address File (MAF) is the foundation of the census. The Bureau relies on the MAF to disseminate census forms, follow up with non-respondents, and delineate its data products, among other things. The Bureau took several steps to promote a more updated MAF throughout the decade. Officials expressed interest in expanding these efforts.

U.S. Postal Service updates. The Bureau continued its practice of receiving twice-annual updates from the U.S. Postal Service's Delivery Sequence File, which served as a baseline for further refinements. The Bureau had incorporated these data in prior censuses.

Geographic Support Program. Beginning in 2013, the Bureau solicited, received, reviewed, and provided feedback on periodic updates to the MAF from state, local, and tribal governments in what is known as the Geographic Support Program. Prior to in-field address canvassing, the Bureau indicated that it had received at least one round of updates from governments representing nearly 90 percent of housing units and the population. The Bureau also annually invited governments to submit any

⁸GAO, *2020 Census: Census Bureau Needs to Improve Its Life-Cycle Cost Estimating Process*, [GAO-16-628](#) (Washington, D.C.: June 30, 2016). We recommended that the Bureau take specific steps to ensure its cost estimate meets the characteristics of a high-quality estimate—comprehensive, well documented, accurate, and credible. The Bureau agreed with our recommendation and in following up on this recommendation in 2019 we subsequently found that the revised 2017 and 2019 cost estimates met these characteristics.

changes to jurisdictional boundaries and names in what is known as the Boundary and Annexation Survey.

While outreach throughout the decade was an important feature of this program, updates to the MAF were generally infrequent, as Bureau officials reported receiving only one or two updates from participating governments. According to officials, the Bureau prioritized nationwide coverage in the early years of the Geographic Support Program. Thus, most of the Bureau's time in this area was spent ensuring that all governments had at least one opportunity to participate. Officials told us that, going forward, they plan to target this program to areas with high rates of change or areas that have historically required a disproportionate amount of in-field address canvassing. Following through on this approach would be consistent with our October 2019 recommendation for the Bureau to better leverage its data on existing programs related to the MAF to help target its ongoing outreach to areas in most need of coverage.⁹

Local Update of Census Addresses. After several years of voluntary outreach to tribes, states, and localities, the Bureau once again implemented the statutorily required, once-per-decennial Local Update of Census Addresses (LUCA) program from 2017 to 2019. Unlike other programs, LUCA gave governments the opportunity to review and suggest modifications to the MAF for their jurisdictions.¹⁰ The Bureau then reviewed submissions that did not already match to the MAF and offered governments the opportunity to appeal any address determinations with which they disagreed.

The Bureau invited nearly 40,000 registered governments to participate in LUCA, and nearly 8,400 participated—down only slightly from 2010. As we reported in October 2019, participation varied greatly across geographies and levels of government. For instance, while large sections of the West and Southeast had LUCA participation from multiple levels of government, many counties in states including Texas, Kansas, and South Dakota had no participation at all.¹¹ Our October 2019 recommendation cited above also applied to this program. The Bureau expects to learn

⁹GAO, *2020 Census: Actions Needed to Improve Census Bureau's Process for Working with Governments to Build Address List*, [GAO-20-17](#) (Washington, D.C.: Oct. 23, 2019).

¹⁰Census Address List Improvement Act of 1994, Pub. L. No. 103-430, 108 Stat 4393 (Oct. 31, 1994).

¹¹[GAO-20-17](#).

more from LUCA's degree of coverage to influence outreach to governments.

As the Bureau begins to plan for 2030, officials are looking into multiple ways to update the address list even more dynamically during the decade. Officials are researching ways to link and integrate the MAF—which focuses on living quarters—with other address lists that focus on businesses, the labor market, and demographics. The Bureau is also looking at ways to enhance its annual MAF Coverage Study. The Bureau developed the study during the 2020 cycle to independently and annually assess the MAF's accuracy. Going forward, officials said they would like to study the MAF at lower levels of geography and provide more detailed feedback to governments.

Finally, the Bureau supports expanded use of the National Address Database—a public database of address data and geospatial coordinates that agencies across governments can update and use for purposes such as emergency response. The Bureau co-leads the data committee that oversees this initiative with the Department of Transportation. As we reported in October 2019, though, privacy restrictions under Title 13 of the U.S. Code limit the Bureau's ability to use decennial address data for the purposes of refining the National Address Database.¹² Bureau officials note that with modifications to Title 13, the Bureau could take a more active role in leveraging its decennial data to implement and maintain the database. We have previously recommended that Congress consider modifications to Title 13 with respect to address data to facilitate such efforts.¹³

Data from Related Programs Suggest That the Bureau's Efforts Successfully Updated the MAF

Bureau officials told us that they view the 2020 MAF as being high quality, up to date, and a key factor in the productivity of the Bureau's in-field address canvassing operation. While operational assessments and evaluations that the Bureau is still conducting will yield more definitive data on these points, early results from operations that use the MAF as a

¹²Title 13 generally prohibits the Secretary of Commerce, any Commerce employee, or local government census liaisons from using information collected for the decennial census for any purpose other than statistical purposes. 13 U.S.C. § 9(a)(1).

¹³GAO, *Geospatial Data: Progress Needed on Identifying Expenditures, Building and Utilizing a Data Infrastructure, and Reducing Duplicative Efforts*, [GAO-15-193](#) (Washington, D.C.: Feb. 12, 2015).

reference point suggest that the Bureau's address list was current and of high quality.

For example, of the addresses that the Bureau vetted during the LUCA program in 2018 and 2019, 92 percent either already matched to the MAF or were found upon further review not to exist. This suggests that most addresses that participants felt should be in the MAF in fact were in the MAF. Moreover, when the Bureau reviewed its 2020 Census responses that people submitted without a census-issued identifier that had been mailed to them (known as Non-ID responses), the Bureau found that 97 percent of the addresses provided matched what was on file. This means that the Bureau could validate these responses effectively.

We reported in March 2020 that the Bureau was able to complete its in-field address canvassing under budget (\$119 million vs. \$185 million budgeted), and according to a May 2021 draft assessment of the Bureau's in-field address canvassing operation, the Bureau canvassed more efficiently than expected (19.3 households canvassed per hour versus the Bureau's plan of 15.8).¹⁴ While many factors likely contributed to this, such results would have been more difficult if staff in the field last year had to update the MAF or if the MAF had widespread errors.

The Bureau Reduced Fieldwork for Address Canvassing by Less Than It Had Initially Planned

Preliminary Bureau data suggest that the Bureau has made important strides toward a more current, high-quality address list; yet the Bureau did not fully realize the potential for its methods to reduce costly fieldwork. The Bureau projected that it could reduce its in-field address canvassing workload to 25 percent of housing units in self-response areas. As we reported in March 2020, though, the Bureau finalized roughly 35 percent of its address list by going door to door.¹⁵

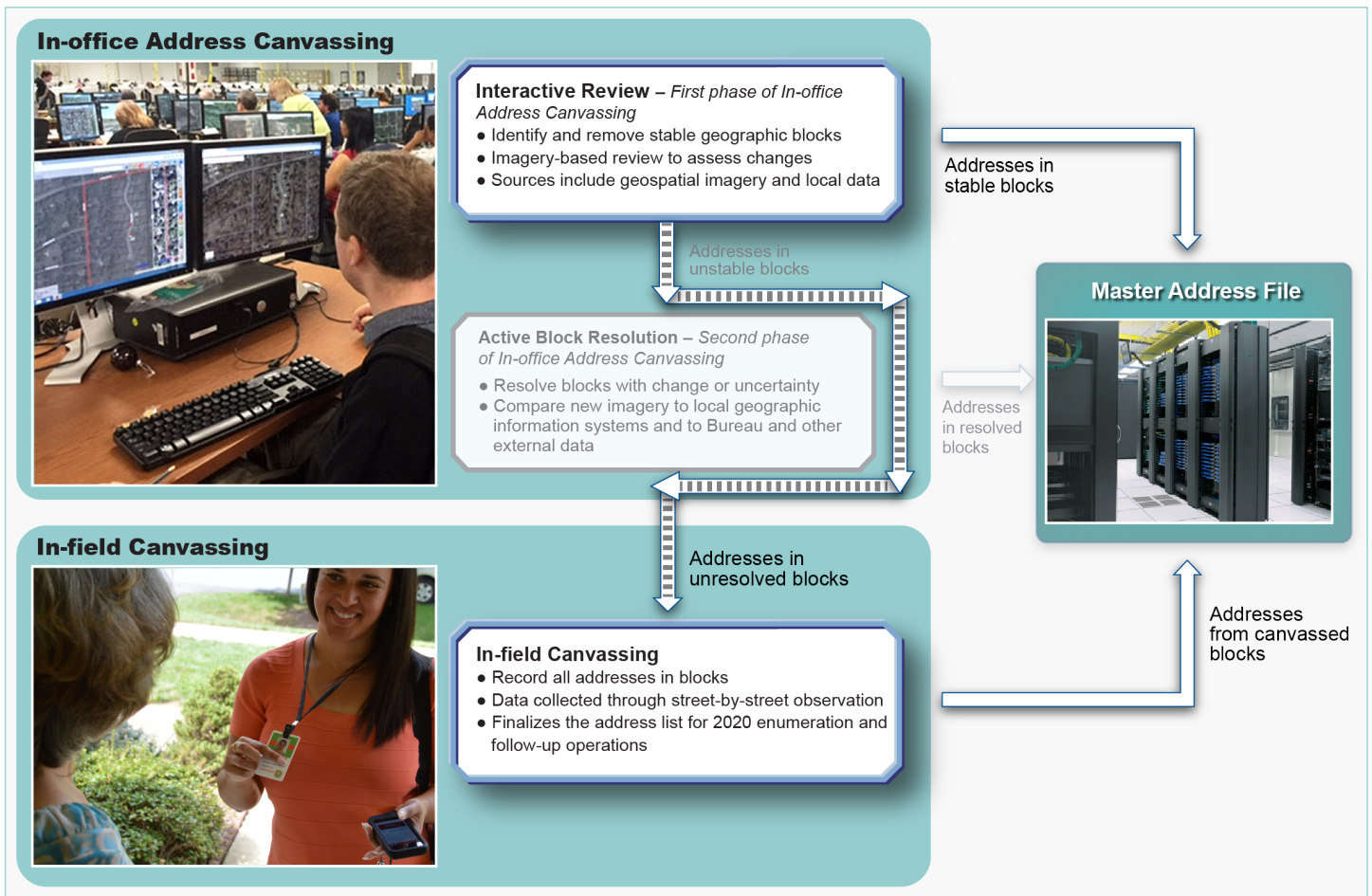
During the decade, the Bureau made operational decisions that led to a greater-than-expected workload for in-field address canvassing. Most significantly, as figure 2 shows below, the Bureau eliminated a key step in its in-office address canvassing operation that compromised its ability to

¹⁴GAO, *2020 Census: Bureau Generally Followed Its Plan for In-Field Address Canvassing*, [GAO-20-415](#) (Washington, D.C.: Mar. 12, 2020).

¹⁵[GAO-20-415](#).

resolve certain census blocks virtually. Namely, the Bureau designed the Active Block Resolution phase to allow employees to resolve coverage concerns identified during the review of imagery in the first phase and verify every housing unit by virtually canvassing the entire area. In 2017, though, the Bureau suspended this phase of in-office address canvassing, citing budgetary uncertainty. At the time, officials estimated that this decision alone would increase the in-field address canvassing workload from 25 percent to at least 30 percent.

Figure 2: Bureau Ceased Second Planned Phase of In-Office Address Canvassing



Source: U.S. Census Bureau and GAO analyses of Census Bureau information. | GAO-21-478

Text of Figure 2: Bureau Ceased Second Planned Phase of In-Office Address Canvassing

In Office Canvassing

Interactive Review – First phase of In-office Address Canvassing
(Addresses stable blocks)

- Identify and remove stable geographic blocks
- Imagery-based review to assess changes
- Sources include geospatial imagery and local data

Interactive Review – First phase of In-office Address Canvassing
(Addresses in resolved blocks)

- Identify and remove stable geographic blocks
- Imagery-based review to assess changes
- Sources include geospatial imagery and local data

In-field Canvassing (Addresses in unstable blocks)

- Record all addresses in blocks
- Data collected through street-by-street observation
- Finalizes the address list for 2020 enumeration and follow-up operations

Source: U.S. Census Bureau and GAO analyses of Census Bureau information. | GAO-21-478

The Bureau also decided in 2017 to cease its MAF Coverage Study that was planned to evaluate in-office address canvassing, similarly citing budgetary uncertainty. As we reported in 2017, this work could have provided data to further demonstrate the value of the Bureau's reengineered efforts to 2020. It also could have helped to refine the Bureau's in-office address canvassing methodologies for future operations.¹⁶

We have previously identified additional steps that the Bureau could have taken to reduce its fieldwork. For instance, during the LUCA program, the Bureau chose not to virtually review 37 percent of submissions and instead provisionally add them to the MAF. While most of these addresses were in areas the Bureau had already planned to review in the

¹⁶GAO, *2020 Census: Bureau Needs to Better Leverage Information to Achieve Goals of Reengineered Address Canvassing*, [GAO-17-622](#) (Washington, D.C.: July 20, 2017).

field, we reported in October 2019 that the Bureau missed an opportunity to leverage the inputs from governments as part of the virtual review to potentially remove some of this workload from in-field address canvassing.¹⁷ We also recommended in July 2017 that the Bureau improve how it tracks its productivity during in-office reviews of addresses to prioritize reduction of fieldwork. The Bureau agreed with this recommendation and implemented it in September 2018.¹⁸

Finally, the Bureau adopted a different unit of geography, known as the basic collection unit, for its fieldwork than the census blocks that employees used to canvass the address list virtually. Because the basic collection units were generally larger than the blocks that were reviewed in office, some contained both resolved and unresolved blocks from in-office address canvassing. Officials noted in 2018 that this would increase fieldwork because any basic collection unit that was at least partially unresolved would be fully referred to in-field address canvassing. Officials told us in February 2021 that they will be reviewing the effectiveness of the differing units of geography for in-office versus in-field address canvassing.

Optimized Self-Response: Expanded Response Options and a Modified Outreach Strategy Helped during COVID-19, but Bureau Can Better Plan Postcollection Processing

Late Change to the Internet Response System Increased Risk, but the Bureau Ultimately Achieved a Higher-Than-Anticipated Internet Response Rate

The 2020 Census was the first census that had internet response as the primary mode of data collection. To better ensure the readiness of its internet response system (known as the Enterprise Censuses and Surveys Enabling Platform–Internet Self-Response (ECaSE–ISR)), the Bureau conducted performance and scalability testing. However, as of January 2020 (2 months before the planned system deployment), the

¹⁷[GAO-20-17](#).

¹⁸[GAO-17-622](#). The Bureau subsequently implemented our recommendation to use, when conducting in-office address canvassing, productivity measures that track the progress in completing in-office address canvassing and the effectiveness of the operation in reducing fieldwork. Our findings from [GAO-20-17](#) on the Bureau's decision to limit in-office reviews of LUCA submissions and subsequent effects, though, underscores the continued importance of orienting the Bureau's efforts toward the outcome of reducing fieldwork.

Bureau was working to resolve an information technology infrastructure problem that caused ECaSE-ISR to experience performance issues.

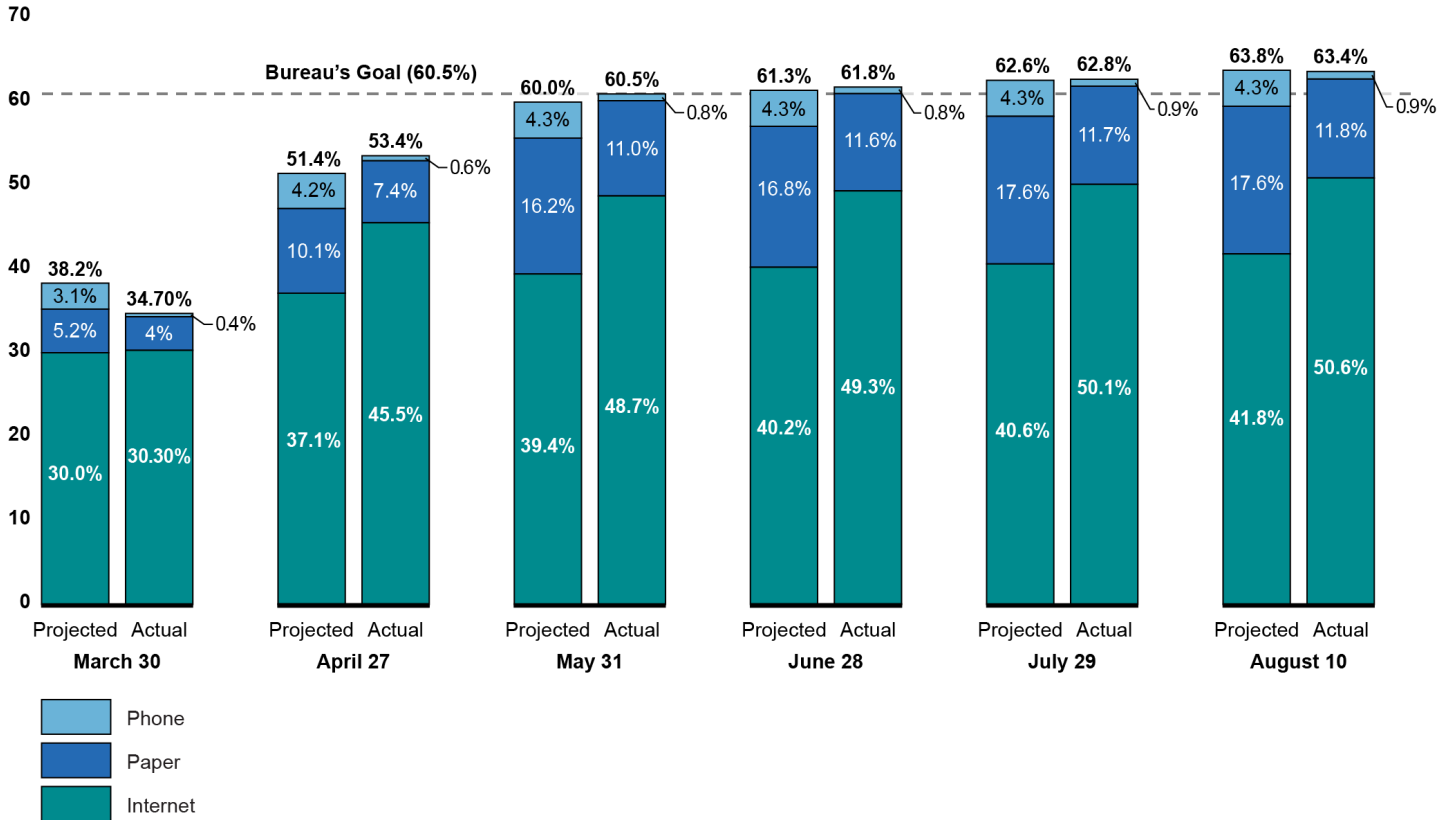
On February 7, 2020, the Bureau decided to replace ECaSE-ISR with Primus, a Bureau-developed backup system, to provide the internet response capability for the 2020 Census. This change introduced new risks, in part, because the backup system was not used extensively in earlier operational testing.

Nevertheless, the Bureau deployed its internet response system on March 9, 2020, as planned, and the Bureau's self-response phase began on March 12, 2020. This phase was scheduled to end on July 31, 2020, but, as part of its response to COVID-19, the Bureau extended the phase approximately 75 days until October 15, 2020. Through its media campaign, the Bureau strongly encouraged self-response online, by phone, or by mail while it responded to the delays and suspensions to its operations as a result of the COVID-19 pandemic. According to the Bureau, throughout the 2020 Census, the internet response capability worked as intended. In particular, the Bureau reported that the system did not experience any downtime.

According to Bureau officials, the internet response option and an extended response period helped the Bureau achieve a higher-than-anticipated self-response rate for the 2020 Census. Prior to the delayed start of full NRFU production in mid-August 2020, the Bureau received responses from 63.4 percent of households (approximately 93.6 million housing units)—exceeding its goal of 60.5 percent and stopping the historical decline in decennial self-response rates. According to the Bureau, households using the internet represented 50.6 percent of the country compared to the projected 41.8 percent. This represents a larger-than-expected proportion of responses (see fig. 3).

Figure 3: Projected and Actual Self-Response Rates by Mode during the 2020 Census

Percentage of Households Responding



Source: GAO analysis of Census Bureau management reports and updated projections as of August 10, 2020. | GAO-21-478

Data table for Figure 3: Projected and Actual Self-Response Rates by Mode during the 2020 Census (percentages)

March 30

	Internet	Paper	Phone
Projected	30	5.2	3.1
Actual	30.3	4	0.4

April 27

	Internet	Paper	Phone
Projected	37.1	10.1	4.2
Actual	45.5	7.4	0.6

May 31

	Internet	Paper	Phone
Projected	39.4	16.2	4.3
Actual	48.7	11	0.8

June 28

	Internet	Paper	Phone
Projected	40.2	16.8	4.3
Actual	49.3	11.6	0.8

July 29

	Internet	Paper	Phone
Projected	40.6	17.6	4.3
Actual	50.1	11.7	0.9

August 10

	Internet	Paper	Phone
Projected	41.8	17.6	4.3
Actual	50.6	11.8	0.9

Modified Mailing and Advertising Approaches Supported Self-Response Gains

To further maximize self-response and the effect of the internet response option, the Bureau divided its mailing strategy into panels. For the first panel, called "Internet First," the Bureau emphasized online response as the primary self-response option for households. Households in this panel received fewer paper questionnaires. For the other mailing panel, called "Internet Choice," the Bureau targeted areas of the nation that were least likely to respond online. Households in this panel received more paper questionnaires.

The first mailing arrived in households between March 12 and 20, 2020, just as the World Health Organization was declaring COVID-19 to be a pandemic. The first mailing consisted of a letter inviting recipients to complete the census online, by phone, or by mail. Households in the second panel also received a paper questionnaire they could mail back.

Bureau officials stated that they took advantage of the extended self-response period to conduct additional mailings to further encourage people to self-respond to the census and as well as inform them of the upcoming NRFU operation. Bureau officials stated that the larger-than-anticipated internet response resulted in a surplus of questionnaires and printed reminders, which the Bureau then used to conduct the additional mailings. However, Bureau officials noted that some of its self-response options were affected by the pandemic. For example, call centers had reduced capacity because some individual call sites closed when staff tested positive for COVID-19.

The Bureau also used the extended self-response period as an opportunity to extend its communications campaign to encourage self-response.¹⁹ The Bureau's integrated communications campaign monitored real-time response data to help modify messaging to population subgroups that were lagging in self-response. The Bureau also adjusted its messaging to reflect COVID-19 protocols, such as new advertisements which featured census staff wearing personal protective equipment while in the field to address public safety concerns. The Bureau's communications campaign included new advertisements encouraging online self-response and promoting cooperation when census takers arrive to conduct an interview. The campaign also sought to reach new audiences and leverage an expanded list of media vendors via a planned total of 45 languages in addition to English.

Expanded Group Quarters Response Options Helped the Bureau's COVID-19 Response, but the Bureau Encountered Issues with Data Collection

Prior to the pandemic, the Bureau had developed an eResponse option (whereby facility administrators could electronically submit enumeration data) for group quarters (GQ) facilities such as college/university student housing and skilled nursing facilities. In addition, facilities could have field staff conduct the enumeration in-person; have census staff drop off and pick up census questionnaires; or complete a paper response data listing that would be picked up by census field staff. In light of the pandemic, the Bureau modified this strategy and encouraged administrators at GQ facilities to switch their method of enumeration from in-person enumeration to eResponse. The Bureau also offered GQ facilities the

¹⁹We previously reported on expansions of the Bureau's communication campaign in *2020 Census: Recent Decision to Compress Census Timeframes Poses Additional Risks to an Accurate Count*, [GAO-20-671R](#) (Washington, D.C.: Aug. 27, 2020).

chance to mail paper listings to the Bureau, rather than have enumerators pick them up.

According to Bureau officials, the share of GQs that took advantage of the eResponse option was greater than anticipated due to COVID-19, though officials did not have data on how many facilities had changed their response option or how much of the increase was due to the Bureau's outreach to facilities during the pandemic. Bureau officials said some GQ facilities found eResponse challenging to complete. For example, some GQ administrators who oversaw multiple facilities had difficulty submitting eResponse data. The eResponse template required GQ administrators to provide a unique ID for each group quarters facility, but some administrators mistakenly submitted all GQs under one ID.

Additionally, as we reported in March 2021, the Bureau encountered issues in contacting GQ facilities due to the pandemic and at GQ facilities with multiple sites. For example, some GQ and service-based enumeration field staff, who count people experiencing homelessness, found it challenging to locate a point of contact at GQ facilities closed due to the pandemic, such as college/university student housing. Correctional facilities were relocating and releasing people due to the pandemic, and nursing facilities frequently would bar enumerators from the premises because of concerns about spreading COVID-19. To help with GQ data collection, the Bureau used an amended Count Review Operation to try to obtain contact information for roughly 1,700 facilities from state government stakeholders in the Federal-State Cooperative for Population Estimates (FSCPE).²⁰

The challenges that took place in 2020 with GQ response submissions led to some GQ facilities reporting zero population. Concerned about the accuracy and completeness of GQ data, in mid-December 2020, Bureau officials began making phone calls to GQs that were not enumerated, and in many cases successfully gathered additional data. For example, Bureau officials said that they had population data for 88 percent of the college/university student housing prior to the follow-up phone calls. After the phone calls, officials enumerated a total of approximately 97 percent

²⁰The Bureau designed its Count Review Operation to allow state representatives in FSCPE to review the GQ lists and locations in their states before and after enumeration. Citing constraints from the schedule compressions in the fall of 2020, the Bureau revised the second phase of this operation to limit FSCPE's review to those facilities for which the Bureau had the least information on file.

of the housing. As a result of the incomplete cases, however, Bureau officials told us that, for the first time in a census, they would impute, or statistically derive, some GQs that remain unresolved with a zero population count, introducing another source of uncertainty in the quality of data for these GQs.²¹

New Self-Response Option Aided Participation in Census but Complicated Data Verification Workload

The Bureau focused on making it easy for people to respond anytime or anywhere to increase self-response rates by providing response options that do not require the respondent to have a unique Census identification code in hand when responding.²² This “Non-ID” option allowed people to respond to the census after seeing an advertisement or hearing about the census from a friend. For the 2020 Census, the Bureau estimated that approximately 9 million individuals would respond to the census without a census-issued identifier. However, the Bureau reported that it ultimately received more than 17 million responses via this option. The Bureau attributed this to the extended self-response period and extensive promotional campaign.

Bureau officials also said they successfully handled the increase in Non-ID responses despite challenges associated with COVID-19. Office closures to the Bureau’s National Processing Center during the spring of 2020 meant that the Bureau had to temporarily delay the verification of addresses provided by these Non-ID responses. Officials said that they completed this higher-than-expected workload in a compressed time because, as discussed earlier in this report, most of the addresses matched to what the Bureau already had on record. Officials said the Bureau also introduced workplace flexibilities for the National Processing Center staff, such as greater availability of overtime to help with the data processing. Flexibilities in how people could respond to the census also

²¹The Bureau uses imputation to create records for housing units that appear occupied, but for which no other information is available. Count imputation draws data from similar nearby households to determine whether a housing unit exists, whether it is occupied, and, if so, by how many people. In previous censuses, the Bureau has used count imputation for occupied household with no census data, but has not used count imputation for group quarter facilities.

²²Unique identification codes are attached to mailed invitations to respond to the census and help the Bureau automatically link the subsequent response with the address to which the invitation was sent.

meant that it was easier for households to provide multiple responses over multiple modes.

Standards for Internal Control in the Federal Government calls on agencies to identify, analyze, and respond to risks related to achieving the defined objective.²³ The Bureau has an objective to deliver timely and quality census data. Bureau officials stated that they are interested in further evaluating all of the steps of the post-data collection processing phases to see if new efficiencies can be gained. For future decennials, researching and testing how design innovations will affect the methodologies and time required for post-data collection processing will help the Bureau manage any risks of delayed delivery of future data products.

Reengineered Field Operations: Technology Improved Productivity, though Use of Additional Metrics Could Help Maximize Gains

Devices and Automation Helped the Bureau Boost Productivity and Adapt to COVID-19

During address canvassing, the Bureau used 23 information technology (IT) systems to support a series of new innovations. These innovations included, among other things, the use of computer laptops to collect census data and a new operational control system to electronically optimize assignments and transmit work to address canvassers. Due in part to these innovations, the Bureau achieved higher-than-projected workload productivity during its address canvassing operation, as defined by cases completed per hour (see table 3).

Table 3: Bureau Projected-Compared-to-Actual Workload Productivity for the Address Canvassing Operation

2020 Census Operation	Projected (cases per hour)	Actual (cases per hour)
Address Canvassing	15.8	19.3

Source: U.S. Census Bureau production data. | GAO-21-478

The Bureau also used 23 IT systems to support a series of new technical innovations during NRFU. Other innovations included the use of mobile devices by approximately 370,000 enumerators to, among other things,

²³GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: Sept. 10, 2014).

access case assignments, receive automated case routing, and collect response data.

According to Bureau officials, the new technical innovations enabled the Bureau to adapt to COVID-19 better and reduce related risks during NRFU. Specifically, in response to COVID-19, the Bureau made IT improvements to its NRFU infrastructure. These improvements included increasing system storage and performance capabilities and deploying additional handheld devices, laptops, and other related IT support services. For example, in April 2020, the Bureau purchased 125,000 additional enumerator handheld devices (for a total of approximately 559,000 devices). According to the Bureau, these changes were intended to reduce the risks that it would need more enumerators than originally planned due to, among other reasons, a higher-than-expected workload resulting from compressed time frames.

Further, the Bureau's increased use of automation and technology, combined with its decision to use a phased approach to starting NRFU field operations earlier at a subset of area census offices (ACOs), was critical to its ability to remotely identify and address IT issues before full deployment. For example, in mid-July 2020, the Bureau identified an issue with the software used to deliver and manage NRFU mobile device applications. This affected its ability to train NRFU enumerators at six ACOs. Specifically, the Bureau determined that the design of the NRFU software was optimized improperly and failed to perform as expected. This resulted in enumerators in training being temporarily unable to log into their NRFU devices. The Bureau had completed a permanent solution for this issue before NRFU started at all ACOs in mid-August 2020.

Ultimately, the Bureau's use of technology and its ability to adapt to COVID-19 helped it achieve higher-than-projected workload productivity during the NRFU operation, as defined by cases completed per hour (see table 4).

Table 4: Bureau Projected-Compared-to-Actual Workload Productivity for the Non-Response Follow-up Operation

2020 Census Operation	Projected (cases per hour)	Actual (cases per hour)
Non-Response Follow-Up	1.55	1.92

Source: U.S. Census Bureau production data. | GAO-21-478

Automated Case Assignment Increased Cases Completed Per Hour, but the Bureau Has Not Yet Analyzed Other Metrics

Bureau officials also attribute the increased 2020 Census productivity to the implementation of its optimized case assignment and routing (a capability known as the “optimizer”). The Bureau’s optimizer assigns and routes cases algorithmically to determine the most efficient order in which to enumerate households and is part of the Bureau’s automated case assignment approach.²⁴

The Bureau modified its strategy for using optimization versus manual case assignment during testing. During the 2018 Census Test, Bureau officials found that their automated case assignment approach was most effective during initial data collection but less effective at targeting the toughest cases to resolve late in NRFU data collection. In February 2019, the Bureau finalized a multiphase NRFU Contact Strategy to attain complete data from persistently nonresponsive cases. This strategy helped implement a recommendation from our December 2018 report to plan for procedural changes during late phases of data collection. In so doing, the Bureau provided a roadmap and business rules for when to transition from a fully optimized, automated case assignment process early in NRFU to a more manual process with relaxed restrictions later in the operation.²⁵

Bureau officials acknowledged in discussion with us during this review that an incomplete understanding of how the optimizer works may have contributed to some dissatisfaction among field staff. Specifically, we recently reported that only approximately 22 percent of area census office managers (ACOM) who responded to our final survey in early October 2020 reported satisfaction with the accuracy and efficiency of the optimizer to assign cases. Additionally, when we interviewed census field supervisors (CFS), who act as front-line supervisors to enumerators during field operations, many cited specific frustrations with the optimizer. For example, they said they felt the optimizer created some illogical

²⁴The optimizer assigns and routes cases to minimize enumerator travel and improve the timing of when households are contacted to when a respondent is expected to be home. The optimizer uses a number of inputs to ensure efficient case assignment, which includes variables like the enumerator’s starting address, work availability, the location of open cases, and best time to contact probabilities from administrative record modeling.

²⁵GAO, *2020 Census: Additional Steps Needed to Finalize Readiness for Peak Operations*, [GAO-19-140](#) (Washington, D.C.: Dec. 10, 2018).

routes and sent enumerators to households in a confusing order. Some CFSs also stated that the optimizer created late start times and uneven distribution of cases among available enumerators. These CFSs expressed concern that the optimizer negatively affected NRFU efficiency.²⁶

Bureau officials acknowledged the concerns but told us they believe that the optimizer worked as designed, and they consider the optimizer to be one of the 2020 Census success stories. Bureau officials also stated that field staff may be unaware of all of the inputs the optimizer uses to identify the best routes, work availability, and time frames to maximize in-person interviews. Therefore, the routes calculated by the optimizer can appear counterintuitive. However, Bureau officials pointed out the 2020 Census is the first time they used the optimizer and that after additional testing, training, and use in future censuses, census field staff will be more comfortable with the optimizer's capabilities.

Bureau officials stated that the goal of optimization was to increase efficiency and that the productivity measure cases completed per hour is how they measure success. Our prior work has shown that a key attribute of successful performance measures is balance, which exists when a suite of measures ensures that an organization's priorities are covered.²⁷ Performance measurement efforts that overemphasize one or two priorities, such as one facet of productivity, at the expense of others may skew the performance and keep its managers from understanding the effectiveness of their activities in supporting the Bureau's optimization efforts.

While the number of completed cases per hour is an important performance measure, the Bureau has not yet analyzed additional relevant performance metrics that it readily has and that can be used to assess the effectiveness of its automated cases assignment approach and possibly point toward further improvements. For example, in an October 2014 presentation justifying this innovation's potential to improve efficiency and reduce cost, the Bureau also identified total miles traveled per case and total hours worked as performance measures. The Bureau's nationwide productivity measure by itself may also obscure insightful

²⁶GAO, *Decennial Census: Bureau Should Assess Significant Data Collection Challenges as It Undertakes Planning for 2030*, [GAO-21-365](#) (Washington, D.C.: Mar. 22, 2021).

²⁷GAO, *Tax Administration: IRS Needs to Further Refine Its Tax Filing Season Performance Measures*, [GAO-03-143](#) (Washington, D.C.: Nov. 22, 2002).

subnational variations or patterns of productivity, such as by geography. Expanding its range of performance measures when assessing the effectiveness of its optimization efforts could help the Bureau learn how it might further refine these efforts in future operations. Doing so may also help the Bureau communicate the optimizer's benefits to field staff.

Without expanding its range of performance measures when assessing the effectiveness of optimization, the Bureau may miss opportunities to either refine its automated case assignment approach to achieve higher productivity or better understand cost drivers in future operations. Such assessments may also help the Bureau communicate the optimizer's benefits to field staff.

The Bureau Deployed Tools to Facilitate Remote Management and Is Continuing to Incorporate Feedback from Its Field Workforce

The 2020 Census field operations relied heavily on automation and technology. This allowed the Bureau to both reduce its footprint and potential points of exposure to COVID-19. For example, the Bureau provided most address canvassers and enumerators with the capability to work completely remotely and perform all administrative and data collection tasks directly from their mobile devices. CFSs were also able to work remotely and communicate with their staff via these devices. In addition, CFSs, census field managers, and ACOMs could monitor field operations using automated alerts and regular progress reports. These enhanced capabilities supported the Bureau's reduction in the number of area census offices to 248 from 494 in 2010, with potential cost savings as a result. The changes also had the unintended benefit of reducing the need for in-person interactions during the COVID-19 pandemic.

Our repeated surveys of ACOMs and interviews with CFSs pointed to successes and challenges with remote management tools. For example, respondents to our early July 2020 survey of ACOMs reported higher rates of satisfaction regarding the timeliness and clarity of Bureau communication about its pandemic plan when compared to respondents to our early April 2020 survey. We previously reported that responses to our early April 2020 survey underscored the need for the Bureau to ensure open lines of communications for ACOMs to ask questions and get timely responses on pandemic planning.²⁸ From mid-April to early July 2020, reported satisfaction among responding ACOMs increased for

²⁸[GAO-20-671R](#).

communication timeliness (from 35 to 48 percent) and clarity (from 42 to 53 percent).

ACOM satisfaction was relatively low regarding devices for remote work, but respondents to later waves of the survey expressed greater satisfaction. We asked ACOMs to rate their satisfaction with the sufficiency of hardware and systems to support ACO staff working remotely. In response to the former, the respondent satisfaction rate was 57 percent. This number rose to about 68 percent when we asked again in late August 2020. ACOMs responding during NRFU to our August 2020 survey also gave high marks to the use of phone, text, and email communications by the managers and supervisors under them. Approximately 81 percent of responding ACOMs reported satisfaction on this item.

We continued to find that automated CFS alerts had mixed usefulness. The alerts provided through the Bureau's Operational Control System (OCS) are intended to help CFSs manage staff, but in June 2018, we reported that CFS system alerts were being acted upon inconsistently because CFSs viewed many of them as erroneous and therefore dismissed them. Consistent with this finding, our ACOM survey results collected toward the end of the 2020 Census NRFU operation show that only about 41 percent of responding managers were satisfied with the usefulness of CFS alerts. These alerts are designed to show when enumerators are not working their scheduled hours or when they have potentially falsified data. We previously reported during the address canvassing operation for the 2020 Census that CFSs also found that alerts were not always useful.²⁹ According to Bureau officials, they plan to review the implementation of new technology, which includes CFS alerts, as part of the NRFU assessment plan.

By contrast, ACOMs were relatively satisfied with the accuracy and usefulness of automated reporting tools. In our early October 2020 survey of ACOMs, approximately 64 and 68 percent of the respondents expressed satisfaction with the accuracy and usefulness, respectively, of the OCS production reports for field operations. Bureau officials stated that the Bureau also surveyed and debriefed field managers on the OCS report and alerts. Bureau officials stated that they will evaluate and

²⁹[GAO-20-415](#).

assess those surveys and plan to include the results as part of its operational assessments.

Bureau officials have reported conducting debriefing sessions with all levels of temporary field operations staff. They are evaluating and assessing those debriefing sessions. The Bureau anticipates release of all the debriefing reports by August 2021.

The Bureau Has Not Fully Implemented Our Recommendation to Better Use CFSs

In December 2018, we found that the Bureau could make improvements to better use CFSs. Bureau documentation defined the CFS role as providing front-line guidance and answering enumerator questions. We reported that CFSs went underutilized in part because the Bureau did not recruit and position them to assume front-line supervising and coaching responsibilities.³⁰ We recommended that the Bureau identify and implement changes to align CFS screening, authorities, and information flows to allow greater use of the CFS position to provide supervisory support to enumerators.

The Bureau took some important actions to address the recommendation such as updating the CFS hiring assessment to include questions on supervisory experience. To date, though, the Bureau had not altered information flows to ensure that CFSs receive the same updates to their guidance and procedures that managers within the area census office receive and that we found would help them provide more assistance to enumerators. To fully implement this recommendation for future fieldwork, the Bureau will also need to demonstrate how the CFSs will have the information they need to carry out their responsibilities to provide supervisory support to enumerators.

Administrative Records: Expanded Use Reduced Fieldwork and Need to Statistically Derive Household

³⁰[GAO-19-140](#).

Data, though the Bureau Is Still Studying Effects of COVID-19 Changes

The Bureau's Use of Administrative Records Reduced Some Fieldwork and Helped to Reduce Need to Statistically Derive Household Data

As planned, the Bureau used administrative records from sources such as the U.S. Postal Service, the Internal Revenue Service (IRS), and the Centers for Medicare & Medicaid Services. The Bureau used these sources to determine—when information of sufficient quality in those sources existed—the occupancy status of addresses so that the Bureau could enumerate them and reduce unnecessary field visits during NRFU. The Bureau also established relaxed quality thresholds—consistent with prior testing and research—for using these data to enumerate nonresponding addresses at the end of NRFU.

In July 2019, Bureau reporting indicated that it could use administrative records to remove as much as 22.5 percent of the NRFU workload after one visit. Officials said that they did not estimate at that time how many of those cases would be resolved through self-response or successful field enumeration and thus not require use of administrative records. After receiving self-responses and successfully completing field enumerations, the Bureau used administrative records to remove roughly 13 percent of cases from the full NRFU contact strategy after one visit, according to preliminary data.

The Bureau changed its plan for administrative records that resulted in a somewhat larger NRFU workload but that refined the Bureau's modeling and improved the count. During operational delays stemming from COVID-19, the Bureau added rounds of administrative records processing between June and September 2020 that had the net effect of decreasing the number of addresses that the Bureau was confident were either vacant or nonexistent. If the Bureau had reason to think that an address could be occupied, then the household at that address would receive the full NRFU contact strategy of up to six visits and thus be more likely to be counted in the census.

By the end of NRFU, more than 2.3 million addresses that had originally been flagged as vacant or nonexistent had their occupancy statuses revised so that they could receive six NRFU visits instead of just one. This increased NRFU fieldwork, with more than 800,000 of these

households being enumerated in the field. Thus, these additional rounds of modeling helped refine the quality of the Bureau's NRFU contact strategy. During this time, the Bureau also processed data that came in from the tax filing season, which IRS had extended to July in response to COVID-19. This helped the Bureau identify more occupied households that it could enumerate.

To help complete the count, the Bureau also modified its business rules for using administrative records during NRFU. The Bureau decided to use sole sources of administrative records to enumerate households when possible. The Bureau had planned to enumerate households with an administrative records source only if that source could be corroborated by another source. In hurricane-stricken areas of Louisiana, the Bureau also advanced the stage of completion of NRFU at which it would enumerate nonresponding households. The Bureau made this decision to obtain census data to help complete data collection as much as possible and avoid the need to impute, or statistically derive, household data using nearby households.³¹ In total, the Bureau enumerated an additional 0.73 percent (roughly 450,000 cases) that in past censuses would have required imputation.

Operational Assessments and Experiments Underway Will Answer Questions about Data Quality

The Bureau will include studies of its use of administrative records as part of its assessment of the quality of the 2020 Census. The Bureau is examining the effectiveness of its household occupancy modeling as part of the NRFU operational assessment. This assessment is expected to produce initial results in the fall of 2021 and final results by November 2022. The Bureau is also scheduled to produce an evaluation estimating the accuracy of enumerations done using administrative records by June 2022. In an early observation on effectiveness in April 2021, the Bureau noted that the reduction of the NRFU workload and the enumeration of households that might have otherwise needed to be imputed were successful outcomes of this innovation area.

An important feature of these studies will be assessing any implications for data quality of changes the Bureau made to its use of administrative

³¹As part of the Bureau's revised operational time frames, NRFU ended on October 15. The Bureau's changing time frames were in part due to a court challenge to Census' intention to produce apportionment counts by the statutory date of December 31, 2020. See *Ross v. National Urban League*, 592 U.S. ___, 141 S. Ct. 18 (2020).

records. According to Bureau officials, no limitations on the quality of administrative records sources have emerged that the Bureau had not already identified through testing and research and incorporated into its design. However, the Bureau's design was to enumerate households using only corroborated sources of administrative records in part because of these previously-identified limitations.³² As we recommended in our first report in this retrospective series in December 2020, it will be important for the Bureau to use the studies described above to examine the effects on quality of its change to sole-source administrative record enumeration, among other late design changes.³³

Cybersecurity and Data Protection: The Bureau Has Made Progress in Addressing Challenges, but Additional Work Remains to Protect Respondent Data

The large-scale technological changes to support the 2020 Census innovations introduced great potential for efficiency and effectiveness gains. However, these changes also introduced many cybersecurity and data protection challenges. In August 2016, we identified several of these challenges and reported that the Bureau is addressing many of them.³⁴ As of June 2021, the Bureau made significant progress in addressing many of the challenges we identified, as well as newly identified challenges. However, additional work remains to ensure the protection of respondent data.

³²For example, we previously noted the Bureau's observation that administrative records sources that rely heavily on utility or publicly available property tax records will underrepresent noncitizens and recent immigrants who are less likely to have established housing. See GAO, *2020 Census: Bureau Is Taking Steps to Address Limitations of Administrative Records*, [GAO-17-664](#) (Washington, D.C.: July 26, 2017).

³³[GAO-21-142](#).

³⁴GAO, *Information Technology: Better Management of Interdependencies between Programs Supporting 2020 Census Is Needed*, [GAO-16-623](#) (Washington, D.C.: Aug. 9, 2016).

The Bureau Established a Dedicated Team That Combats Misinformation and Disinformation Threats to the Integrity of the 2020 Census

The spread of misinformation and disinformation about the 2020 Census had the potential to negatively affect self-response rates.³⁵ According to the Bureau, if a substantial segment of the public was unconvinced that the Bureau could safeguard response data against data breaches and unauthorized use, then response rates (to include internet self-response) may have been lower than projected, leading to an increase in cases for follow-up and subsequent cost increases.

The Bureau took steps to mitigate the spread and impact of misinformation and disinformation by, among other things:

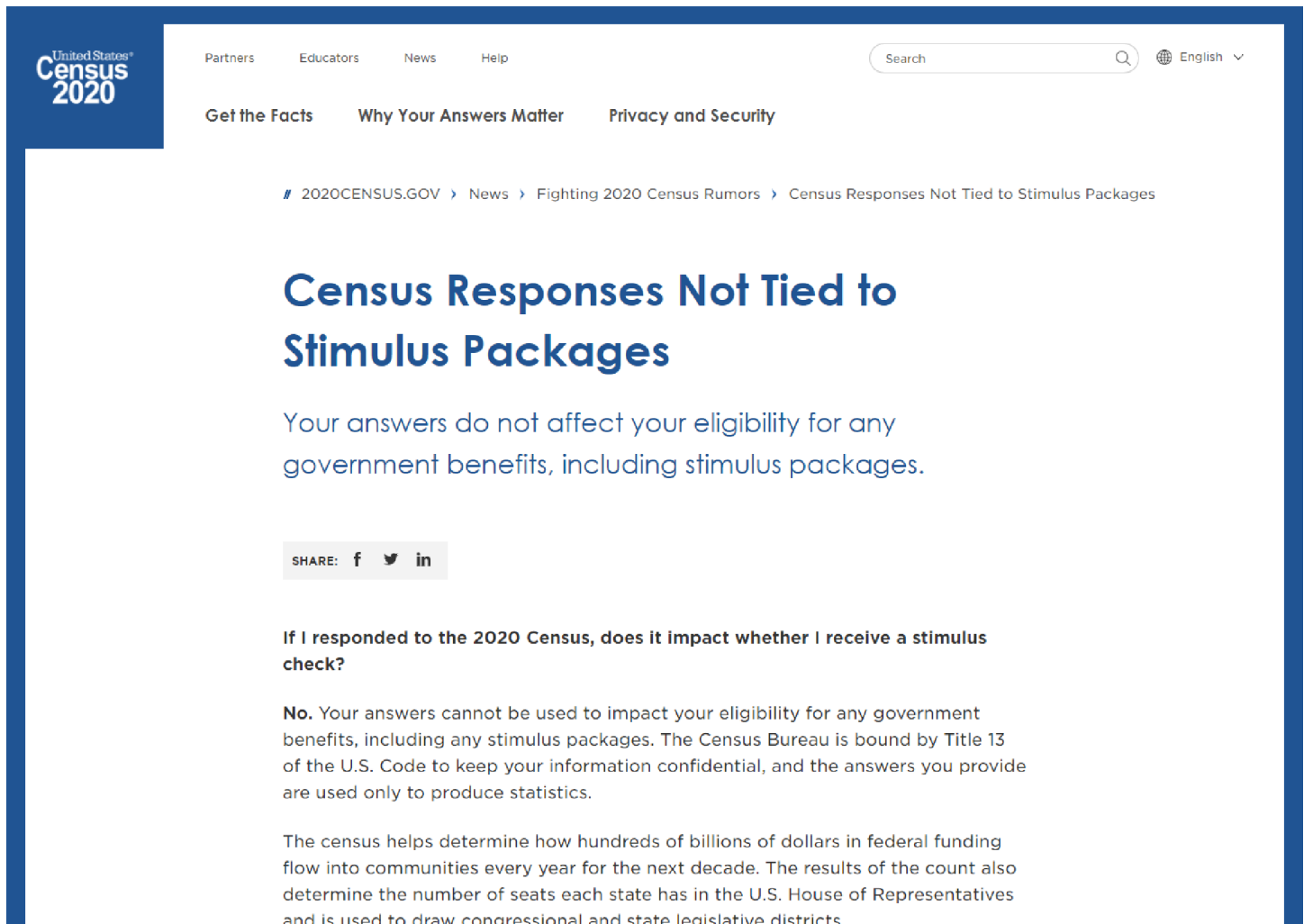
- **Establishing a dedicated Trust and Safety team.** This team, established in February 2019, is comprised of representatives from various Bureau organizations including, among others, the Communications Directorate, the Decennial Census Programs Directorate, the Office of the Chief Information Officer, and the Field Division. The team coordinated and integrated the Bureau's efforts with external technology and social media platforms, partner and stakeholder organizations, and cybersecurity officials. Among other things, the team identified and responded to threats, established partnerships, and adapted procedures based on ongoing and future Census operations.
- **Identifying and responding to threats.** The Bureau's Trust and Safety team leveraged specialized tools to monitor traditional media and social media, and then track, categorize, and respond to misinformation and disinformation that was shared. The team informed the public of the risks associated with disinformation and misinformation through the Bureau's education and communication campaigns, and by posting information on the Bureau's website.³⁶ For example, in March 2020, in response to misinformation, the Bureau issued a statement on its website to clarify that an individual's 2020 Census response could not be used to affect eligibility for any

³⁵Misinformation is false information shared without the intent to mislead. Disinformation is manufactured information that is deliberately created or disseminated with the intent to cause harm.

³⁶<https://2020census.gov/en/news-events/rumors.html>.

government benefits, including any potential stimulus payments. Figure 4 depicts the Bureau’s response on its website.

Figure 4: Example of the Census Bureau Response to Misinformation about 2020 Census – March 2020



Source: U.S. Census Bureau website. | GAO-21-478

- **Establishing partnerships.** According to the Bureau, consistent and efficient information sharing with partners was critical to the team’s efforts to identify, evaluate, and mitigate misinformation and disinformation related to the 2020 Census. To help maintain an effective relationship, Bureau officials stated that they coordinated with several technology companies and social media partners weekly. In partnership with the Bureau, social media companies modified relevant Terms of Service to include support for the 2020 Census.

According to Bureau officials in the Trust and Safety team, as a result of this communication and coordination, social media partners have removed misleading content about the 2020 Census that violated these Terms of Service.

- **Adapting procedures based on lessons learned.** The team reviewed the performance from early operations in the 2020 Census and adapted the policies and practices for later operations. Specifically, the Bureau applied lessons learned from the Address Canvassing operation to operations such as NRFU. For example, based on experiences from the Address Canvassing operation, the Bureau identified, monitored, and responded to potential physical threats to the safety of Bureau employees. Additionally, according to a Trust and Safety Team official, the Bureau adapted policies and procedures, including escalating reports from employees in the field to the Trust and Safety team for situational awareness, and coordinating responses with security teams and stakeholders. After the completion of data collection in October 2020, the team conducted another lessons learned exercise and identified best practices to mitigate emerging threats as the Bureau enters data dissemination operations. For instance, one of the best practices identified was pre-empting fraud and scams by proactively informing partners of suspicious activities and providing them with authoritative content.

By establishing a dedicated team and taking key actions, the Trust and Safety team has been able to mitigate this challenge and assist other agencies in combatting misinformation and disinformation. For example, as of March 2021, the team is working with the Centers for Disease Control and Prevention (CDC) to aid its monitoring of misinformation and disinformation related to COVID-19 vaccines. According to Bureau officials, the Bureau provides its analysis of rumors, misinformation, disinformation, and trends to CDC. Additionally, the Bureau reported its team is supporting CDC's efforts to engage with relevant external stakeholders, including civil society, fact check organizations, and social media companies, to present subject matter expertise and discuss corrective messaging.

The Bureau Secured Mobile Devices Used during Data Collection

The 2020 Census was the first decennial in which the Bureau provided mobile devices to enumerators in the field to collect personally identifiable information from households during NRFU. Many threats to mobile devices are similar to those for traditional computing devices; however, the threats and attacks to mobile devices can be facilitated by

vulnerabilities in their design and configuration, as well as the ways consumers use them. Common vulnerabilities include a failure to enable password protection and operating systems that are not kept up to date with the latest security patches. In addition, because of their small size and use outside of an office setting, mobile devices are easier to misplace or steal, leaving sensitive information at risk of unauthorized use or theft.

The Bureau used several security measures to protect mobile devices from malicious behavior. These security measures included, among others, multifactor authentication, encryption, and a mobile device management solution.³⁷ For example, the mobile device management solution had multiple features that helped protect sensitive data collected by the Bureau. Specifically, if a device was lost, stolen, or not meeting configuration requirements, the Bureau had the ability to remove all data from the device. Additionally, the mobile device management solution enforced limits on specific websites and applications employees could access on their devices. Finally, through the mobile device management solution, the Bureau monitored the devices for compliance 24 hours per day through its network operations center and security operations center.

When NRFU activity concluded, the Bureau shifted its focus toward sanitizing and decommissioning the mobile devices used to conduct enumeration activities during the decennial Census. Bureau officials in the Office of the Chief Information Officer reported that each returned device was sanitized, inspected for compliance requirements, and verified to ensure no Census data or applications remained on the device. In April 2021, Bureau officials stated that they had reclaimed and sanitized the majority of the devices used to conduct enumeration activities during the decennial Census. Specifically as of early April 2021, the Bureau reported that it had successfully sanitized nearly 99.2 percent of the more than 640,000 mobile devices (i.e., smartphones and tablets) used during the 2020 Census.

The Bureau's efforts to mitigate risks associated with using mobile devices to collect personally identifiable information contributed to the overall effectiveness of NRFU operations for the 2020 Census. By

³⁷Multifactor authentication—the use of more than one of the combinations of the following factors: something you know (e.g., a password), something you have (e.g., an identification badge), or something you are (e.g., a fingerprint or other biometric)—is a stronger form of authentication than single-factor authentication. Encryption of data can be used to help protect the integrity and confidentiality of data and computer programs by rendering data unintelligible to unauthorized users and by protecting the integrity of transmitted (in transit) or stored (at rest) data.

securing and decommissioning mobile devices used to conduct field work, the Bureau reduced its cybersecurity risks and efficiently secure valuable data collected from households that did not self-respond to the survey.

The Bureau Worked to Secure Its Decennial Systems, but Still Must Execute Cybersecurity Corrective Actions in a Timely Matter

The Bureau took steps to protect its systems and data by working with federal partners such as the Department of Homeland Security (DHS) for cybersecurity assistance. However, the Bureau still has work remaining to address cybersecurity corrective actions in a timely manner. For the 2020 Census, the Bureau significantly changed how it conducted the census, in part, by re-engineering key census-taking methods and infrastructure, and using new IT applications and systems. To do this, the Bureau used 52 new and existing IT systems, and the infrastructure supporting them. Because the Bureau collected personally identifiable information on more than 100 million households across the country, it was important that the agency properly secured these systems.

In preparation for the 2020 Census, the Bureau worked with federal partners to protect its data, systems, and infrastructure. Since January 2017, DHS provided cybersecurity assistance (including issuing recommendations) to Commerce and the Bureau in preparation for the 2020 Census. Among other things, DHS provided cybersecurity assistance to the Bureau through:

- management coordination and executive support, including a CyberStat Review;³⁸
- cybersecurity threat intelligence and information sharing enhancement through, among other things, DHS cyber threat briefings to the Bureau's leadership;

³⁸According to the Office of Management and Budget, CyberStat Reviews are face-to-face, evidence-based meetings intended to ensure agencies are accountable for their cybersecurity posture. The Office of Management and Budget, DHS, and Commerce participated in the Fiscal Year 2017 CyberStat Review related to the Bureau.

-
- network and infrastructure security and resilience, including National Cybersecurity Protection System support;³⁹
 - incident response and management readiness through a Federal Incident Response Evaluation assessment;⁴⁰
 - risk management and vulnerability assessments on specific targets provided by the Bureau; and
 - enhanced operational support through 2020 Census operations.

As a result of these activities, DHS provided recommendations for the Bureau to strengthen its cybersecurity efforts. Among other things, the recommendations pertained to strengthening incident management capabilities and specific findings related to penetration testing and web application assessments of select systems, and phishing assessments that sought to gain access to sensitive personally identifiable information. Due to the sensitive nature of the recommendations, we are not identifying the specific recommendations or specific findings associated with them in this report.⁴¹ However, in April 2019, we reported that the Bureau had not established a formal process for documenting, tracking, and completing corrective actions for all of the recommendations provided by DHS.⁴² Therefore, we recommended that the Bureau implement a formal process for tracking and executing appropriate corrective actions to remediate cybersecurity weaknesses identified by DHS. In February 2020, we reported that the Bureau had developed a process for tracking

³⁹The National Cybersecurity Protection System, which includes the EINSTEIN program, is an integrated system-of-systems that is intended to deliver a range of capabilities, including intrusion detection, intrusion prevention, analytics, and information sharing. This program was developed to be one of the tools to aid federal agencies in mitigating information security threats.

⁴⁰As a result of the CyberStat Review, DHS conducted a Federal Incident Response Evaluation assessment in October 2017. The purpose of the assessment was, in part, to review the Bureau's incident management practices and provide recommendations that, if addressed, would strengthen the Bureau's cybersecurity efforts.

⁴¹The National Institute of Standards and Technology defined penetration testing as security testing in which the evaluators mimic real-world attacks to identify ways to circumvent the security features of an application, system, or network. Penetration testing often involves issuing real attacks on real systems and data, using the same tools and techniques used by actual attackers.

⁴²GAO, 2020 Census: *Further Actions Needed to Reduce Key Risks to a Successful Enumeration*, [GAO-19-431T](#) (Washington, D.C.: Apr. 30, 2019).

IT-related recommendations and begun implementing it.⁴³ A year later, the Bureau had taken actions to fully implement our recommendation by executing this formal process and addressing the recommendations provided by DHS.

In terms of addressing cybersecurity weaknesses that the Bureau identified, the Bureau's risk management framework required it to conduct a full security assessment for nearly all the systems expected to be used for the 2020 Census. If deficiencies were identified, the Bureau was to determine the corrective actions—known as plans of actions and milestones (POA&M)—needed to remediate those deficiencies. However, we reported in April 2019 that the Bureau did not always address POA&Ms in accordance with its established deadlines.⁴⁴ Thus, we recommended that the Bureau ensure that identified corrective actions for cybersecurity weaknesses are implemented within prescribed time frames. The Bureau has made some progress toward addressing this recommendation by reducing the number of corrective actions that it considered “high” or “very high” risk. Nevertheless, as of March 2021, 88 of the 151 total open “high” and “very high” risk corrective actions (about 58 percent) were delayed past their scheduled completion dates.⁴⁵

Officials from the Bureau's Office of the Chief Information Officer attributed their delays in addressing the corrective actions to technical challenges and dependencies between systems. According to those officials, the Bureau conducts quarterly briefings with system and information security stakeholders to discuss the delayed corrective actions in depth. However, as of the end of May 2021, the Bureau has not yet taken actions to fully implement this recommendation.

To the Bureau's credit, it had not reported any major cyber incidents or data breaches as of May 2021. However, cybersecurity will continue to be an area to watch as the Bureau processes data to be included in upcoming data products that are to be released in 2021.

⁴³GAO, 2020 Census: *Initial Enumeration Underway but Readiness for Upcoming Operations Is Mixed*, [GAO-20-368R](#) (Washington, D.C.: Feb. 12, 2020).

⁴⁴[GAO-19-431T](#).

⁴⁵According to Bureau officials, only 11 of the 151 corrective actions that it considered “high” or “very high” risk are related to systems handling decennial survey data. As of March 2021, none of those 11 corrective actions are delayed past their completion date.

The Bureau Has Work to Complete to Protect Respondent Data and Address Concerns Related to the Quality of Future Data Products

To protect the confidentiality of respondent data as required by statute,⁴⁶ the Bureau plans to apply a disclosure avoidance technique, known as differential privacy, to its publicly-released statistical products for the 2020 Census.⁴⁷ These products include redistricting files, detailed race tables, demographic profiles, and demographic and housing characteristics.⁴⁸

The use of differential privacy is a new innovation for the 2020 Census, as the Bureau used other methods to protect respondent privacy in prior decennials. For example, in the 2010 Census the Bureau used, among other things, techniques such as data swapping to prevent the re-identification of individual respondent data. However, in 2018, using advances in technology since the 2010 Census, the Bureau was able to reconstruct sex, age, race, and ethnicity information for the enumerated population using data that had been published from the 2010 Census. Thus, the Bureau plans to transition to differential privacy for this decennial in an effort to mitigate the risk of re-identification.

However, as we have previously reported, the delays and changes to operational schedules as a result of COVID-19 created uncertainty in the plans and schedules related to the implementation of differential privacy.⁴⁹ For example, the Bureau originally planned to make final decisions on the implementation of differential privacy in December 2020. Because of

⁴⁶Title 13 of the U.S. Code generally prohibits the Secretary of Commerce, a Commerce employee, or local government census liaisons from using information collected for the decennial census for any purpose other than statistical purposes. 13 U.S.C. § 9(a)(1). Additionally, it is prohibited under Title 13 to make a publication that identifies any particular individual or allow anyone other than sworn officers and Commerce employees to examine individual reports. 13 U.S.C. § 9(a)(2)-(3).

⁴⁷Differential privacy is a disclosure avoidance technique aimed at limiting statistical disclosure and controlling privacy risk. According to the Bureau, using differential privacy means that publicly available data will include some statistical noise, or data inaccuracies, to protect the privacy of individuals. Differential privacy provides algorithms that allow policy makers to decide the trade-off between data accuracy and privacy.

⁴⁸In March 2021, Alabama filed a lawsuit challenging the Bureau's use of differential privacy. *Alabama v. U.S. Dept. of Commerce*, Case No. 3:21-cv-00211 (M.D. Ala. Mar. 10, 2021).

⁴⁹[GAO-21-206R](#).

changes to the data collection and data processing schedule, the Bureau planned to make these final decisions in June 2021—or about 6 months later.

The Bureau has made some progress in implementing differential privacy. Among other things, it has held several meetings with the data stewardship executive policy committee to discuss decisions regarding matters such as outreach to data users and other stakeholders.⁵⁰ In addition, the Bureau developed five sets of demonstration data products—or mock data files to show what the final redistricting files might look like—in October 2019, May 2020, September 2020, November 2020, and April 2021. According to the Bureau’s chief scientist, these demonstration products are designed to help data users better understand how the Bureau is using disclosure avoidance for the 2020 Census, and the effect of differential privacy on both the quality of the data as well as the protection of respondent’s personally identifiable information. The Bureau has also conducted outreach to tribal communities and other data users to obtain input on these demonstration data products for continued development.

However, the Bureau still has important work left to complete before the redistricting data products can be delivered at the end of September 2021. To this end, the next few months will be critical to the Bureau’s implementation of disclosure avoidance. For example, as previously mentioned, the Bureau’s data stewardship executive policy committee was expected to make key decisions in June 2021 on the implementation of differential privacy and the trade-off between data quality and privacy protections in the Bureau’s publicly-available data.⁵¹ The Bureau is currently planning for a final delivery of redistricting data—which are expected to be the first data products that will use differential privacy protections—to states in September 2021. This would be 5 months after

⁵⁰The Bureau’s data stewardship executive policy committee makes privacy policy decisions for the Bureau.

⁵¹On June 9, 2021, the Bureau announced that the data stewardship executive policy committee had made several of these key decisions related to the implementation of differential privacy. However due to the timing of the announcement, we were unable to include our analysis of these key decisions in this report. We currently have ongoing work evaluating the Bureau’s plans and challenges in implementing differential privacy, and we will continue to monitor the Bureau’s activities related to this announcement.

delivery of apportionment data, a gap that is 2 months greater than what the Bureau had planned.⁵²

As of May 2021, the Bureau had not finalized plans and schedules for the delivery of additional data products, such as demographics and housing characteristics data, to be produced after the redistricting files are delivered. Further, the Bureau had not yet developed time frames for disclosure avoidance-related activities to occur for those data products. For example, Bureau officials in the Directorate for Research and Methodology reported plans to produce demonstration data products for demographics and housing characteristics data, but had not defined a time frame for doing so. Bureau officials noted that while they had not yet made decisions, they intended to do so later. We are continuing to monitor the decision process through on-going work.

Conclusions

A host of challenges associated with the COVID-19 pandemic and related late design changes accompanied the 2020 Census. While the Bureau was adapting to these challenges, it also implemented a series of planned innovations that spanned areas such as how the Bureau compiled its address list at the beginning of the census to how it protected respondent privacy at the end of the census. Each of the Bureau's innovation areas led to important accomplishments including reducing fieldwork and enhancing data quality.

While the Bureau moderated decennial cost increases to be less than it previously estimated in 2017, the Bureau did not position itself to identify specific cost savings that will be attributable to its innovation areas. The Bureau has made great strides in its cost estimating. An effective cost estimate is, among other things, intended to allow Congress and agency officials to use data on actual costs to weigh alternatives and measure performance. However, the Bureau did not track its innovation areas within its cost estimation and budget execution framework. Better

⁵²Redistricting products are used, among other things, to delineate voting districts by state. See 13 U.S.C. § 141(c). As part of the Bureau's initial plan in response to COVID-19, the dates for the apportionment and redistricting data products were April 30, 2021, and July 31, 2021, respectively. The Bureau delivered the apportionment results at the end of April 2021, and plans to finalize the redistricting product by September 30, 2021.

integrating these activities will position the Bureau to demonstrate the value of future designs.

The enhanced capability to respond to the census across a range of modes, including the internet, and without a census-issued identification code contributed to the Bureau stopping the historical decline in self-response rates. As the Bureau experienced, these flexible response options can also create larger workloads for the Bureau to verify. If not accounted for, such effects of future innovations could have schedule implications that jeopardize the Bureau's ability to deliver apportionment and redistricting data products in a timely manner. As the Bureau undertakes a planned evaluation of its post-data collection processes and timelines, learning from its 2020 experience will be important because the public's use of the internet to respond to the census is likely to be an increasingly important fixture of the census.

At a granular, case-by-case level, the Bureau achieved greater-than-expected productivity during fieldwork that the Bureau attributes in large part to its use of optimized, rather than manual, supervisor-driven case assignments. We recognize the Bureau's efforts to improve the efficiency with which field staff receive and complete cases. As the Bureau builds on this success, identifying and reporting additional measures of effectiveness (beyond simply cases completed per hour) through its planned assessments and evaluations will help the agency better understand how optimization affected fieldwork and may be further leveraged in the future.

Recommendations for Executive Action

We are making three recommendations to the Department of Commerce:

The Secretary of Commerce and the Director of the U.S. Census Bureau should track the Bureau's future design innovations within the Bureau's cost estimation and budget execution framework (Recommendation 1).

The Secretary of Commerce and the Director of the U.S. Census Bureau should for future decennials research and test how innovations or design changes affect the methodologies and time required for post-data collection steps. (Recommendation 2).

The Secretary of Commerce and the Director of the U.S. Census Bureau should identify and report additional measures on the effectiveness of

optimization as part of the Bureau's operational assessments and evaluations (Recommendation 3).

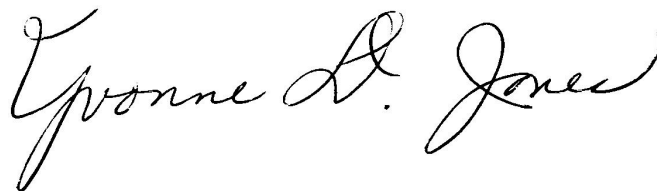
Agency Comments and Our Evaluation

We provided a draft of this report to the Department of Commerce. In its written comments, reproduced in appendix I, the U.S. Census Bureau agreed with our findings and recommendations. The U.S. Census Bureau also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the Secretary of Commerce, the Undersecretary of Economic Affairs, the Acting Director of the U.S. Census Bureau, and the appropriate congressional committees. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report please contact Yvonne D. Jones at (202) 512-2717 or by email at jonesy@gao.gov or Nick Marinos at (202) 512-9342 or by email at marinosn@gao.gov.

Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix II.



Yvonne D. Jones
Director, Strategic Issues



Nick Marinos
Director, Information Technology and Cybersecurity

Letter

List of Addressees

The Honorable Gary C. Peters
Chairman
The Honorable Rob Portman
Ranking Member
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Jeanne Shaheen
Chair
The Honorable Jerry Moran
Ranking Member
Subcommittee on Commerce, Justice, Science, and Related Agencies
Committee on Appropriations
United States Senate

The Honorable Ron Johnson
Ranking Member
Permanent Subcommittee on Investigations
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Carolyn B. Maloney
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The Honorable James Comer
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The Honorable Matt Cartwright
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The Honorable Jamie Raskin
Chairman
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The Honorable Gerald E. Connolly
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The Honorable Jody Hice
Ranking Member
Subcommittee on Government Operations
Committee on Oversight and Reform
House of Representatives

The Honorable Judy Chu
House of Representatives

The Honorable Raul Ruiz
House of Representatives

Appendix I: Comments from the U.S. Census Bureau



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

May 21, 2021

Ms. Yvonne D. Jones
Director, Strategic Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Jones:

The U.S. Census Bureau appreciates the opportunity to comment on the U.S. Government Accountability Office (GAO) draft report titled, "2020 Census: Innovations Helped with Implementation, but Bureau Can Do More to Realize Future Benefits" (GAO-21-478).

The Census Bureau agrees with the descriptions in the draft report of its 2020 Census innovations, operations, and costs, as well as the adaptations that it made due to the COVID-19 pandemic and other unexpected natural disasters over the last year. The Census Bureau also concurs with the three recommendations in the report and notes that it has already taken steps to implement Recommendation 1 for the 2030 Census. The Census Bureau will prepare a formal action plan addressing all three recommendations upon GAO's issuance of the final report.

Thank you for your continued interest in and efforts towards increasing the benefits from the 2020 Census and improving future census planning.

Sincerely,

A handwritten signature in blue ink, appearing to read "RJ".

Ron S. Jarmin
Acting Director



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

Text of Appendix I: Comments from the U.S. Census Bureau

May 21, 2021

Ms. Yvonne D. Jones Director, Strategic Issues

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

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Sincerely,

Ron S. Jarmin Acting Director

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact

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In addition to the contact named above, Ty Mitchell, Kate Sharkey, Jon Ticehurst (Assistant Directors), Devin Braun, Shawn Ward (Analysts-in-Charge), Mark Abraham, Andrew Avery, Jennifer Beddor, Christopher Businsky, Ann L. Czapiewski, Alan Daigle, Ahmad Ferguson, Sam Gaffigan, Rob Gebhart, Lisa Hardman, Ceara Lance, Jason T. Lee, Carlton Maynard, Melissa Melvin, Lisa Pearson, Andrea Starosciak, Farrah Stone, Peter Verchinski, and Tim Wexler made key contributions to this report.

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