



December 2020

# 2020 CENSUS

## Census Bureau Needs to Assess Data Quality Concerns Stemming from Recent Design Changes

Accessible Version

# GAO Highlights

Highlights of [GAO-21-142](#), a report to congressional addressees

December 2020

## 2020 CENSUS

### Census Bureau Needs to Assess Data Quality Concerns Stemming from Recent Design Changes

#### Why GAO Did This Study

As the Bureau was mailing out invitations to respond to the decennial census and was preparing for fieldwork to count nonresponding households, much of the nation began closing down to contain the COVID-19 pandemic.

In response to the pandemic, the Bureau has made a series of changes to the design of the census. Understanding the chronology of events and the Bureau's decisions, along with the factors and information sources that it considered, can help to shed light on the implications and tradeoffs of the Bureau's response.

This report, the first in a series of retrospective reviews on the 2020 Census, examines the key changes that the Bureau made in response to the COVID-19 outbreak and how those changes affect the cost and quality of the census. GAO performed its work under the authority of the Comptroller General to conduct evaluations on the 2020 Census to assist Congress with its oversight responsibilities. GAO reviewed Bureau decision memos, interviewed Bureau officials, and consulted contemporaneous COVID-19 case data for context on the Bureau's COVID-19 response.

#### What GAO Recommends

GAO is recommending that the Bureau update and implement its assessments to address data quality concerns identified in this report, as well as any operational benefits. In its comments, the Department of Commerce agreed with GAO's findings and recommendation. The Bureau also provided technical comments, which GAO incorporated as appropriate.

View [GAO-21-142](#). For more information, contact J. Christopher Mihm at 202-512-6806 or by email at [mihmj@gao.gov](mailto:mihmj@gao.gov) or Nick Marinos at 202-512-9342 or by email at [marinosn@gao.gov](mailto:marinosn@gao.gov)

#### What GAO Found

The U.S. Census Bureau (Bureau) responded to COVID-19 in multiple phases. The Bureau first suspended field operations in March 2020 for two successive 2-week periods to promote the safety of its workforce and the public. In April 2020, the Bureau extended this suspension to a total of 3 months for Non-response Follow-up (NRFU), the most labor-intensive decennial field operation that involves hundreds of thousands of enumerators going door-to-door to collect census data from households that have not yet responded to the census. At that time, the Department of Commerce also requested from Congress a 120-day extension to statutory deadlines providing census data for congressional apportionment and redistricting purposes, and the Bureau developed and implemented plans to deliver the population counts by those requested deadlines.

The Bureau implemented NRFU in multiple waves between July 16 and August 9, 2020, to ensure that operational systems and procedures were ready for nationwide use. The Bureau considered COVID-19 case trends, the availability of personal protective equipment, and the availability of staff in deciding which areas to start NRFU first.

On August 3, 2020, the Bureau announced that, as directed by the Secretary of Commerce, it would accelerate its operational timeframes to deliver population counts by the original statutory deadlines. The U.S. District Court for the Northern District of California in September 2020 issued an injunction that reversed the Secretary's August 2020 directions for design changes and the Bureau's adherence to the statutory deadlines, but the Supreme Court ultimately stayed this injunction in October 2020 and allowed the Bureau to proceed with its August 2020 design changes. As a result, the Bureau shortened NRFU by over 2 weeks and reduced the time allotted for response processing after NRFU from 153 days to 77 days.

GAO has previously noted that late design changes create increased risk for a quality census. The Bureau is examining ways to share quality indicators of the census in the near term and has a series of planned operational assessments, coverage measurement exercises, and data quality teams that are positioned to retrospectively study the effects of design changes made in the response to COVID-19 on census data quality. The Bureau is still in the process of updating its plans for these efforts to examine the range of operational modifications made in response to COVID-19, including the August 2020 and later changes.

As part of the Bureau's assessments, it will be important to address a number of concerns GAO identified about how late changes to the census design could affect data quality. These concerns range from how the altered time frames have affected population counts during field data collection to what effects, if any, compressed and streamlined post-data collection processing of census data may have on the Bureau's ability to detect and fully address processing or other errors before releasing the apportionment and redistricting tabulations. Addressing these concerns as part of the overall 2020 assessment will help the Bureau ensure public confidence in the 2020 Census and inform future census planning efforts.

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## Abbreviations

ACO	area census office
Bureau	U.S. Census Bureau
COVID-19	Coronavirus Disease 2019
IT	information technology
MAF	Master Address File
NRFU	Non-Response Follow-Up
PES	post-enumeration survey

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December 3, 2020

Congressional Addressees

Last March, as the U.S. Census Bureau (Bureau) was mailing out invitations to respond to the decennial census and was preparing for fieldwork to count nonresponding households, much of the nation began closing down to contain the Coronavirus Disease 2019 (COVID-19) pandemic.<sup>1</sup>

In response to the pandemic, the Bureau made a series of late changes to the design of the census. These changes affected the way the Bureau did its work as well as the time it took to do the work. The changes introduced risks to the quality of data that the Bureau provides for Congressional apportionment and redistricting purposes.<sup>2</sup> These data are also central to allocating hundreds of billions of federal dollars. Understanding the chronology of events that took place and decisions that the Bureau made in 2020, along with the factors and information sources that the Bureau considered, can help to shed light on the cost and quality implications and tradeoffs of the Bureau's response.

This report, the first 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, examines the key changes that the Bureau made in response to the COVID-19 outbreak and how those changes affect the cost and quality of the census. We performed our work under the authority of the Comptroller General to conduct evaluations on the 2020 Census to assist Congress with its oversight responsibilities.

To address our objective, we reviewed Bureau decision memos and planning documents. We also reviewed Bureau announcements related to the COVID-19 response and any characterizations of the resulting operational changes. We also interviewed Bureau officials to better understand downstream effects of operational changes made during the

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<sup>1</sup>The first mailed invitations to respond to the census were delivered on March 12, 2020, the day after the World Health Organization declared COVID-19 to be a pandemic, and the day before the U.S. declared COVID-19 to be a national emergency.

<sup>2</sup>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.

COVID-19 response, as well as to learn about any actions the Bureau is taking to monitor cost and quality effects of the changes.

To place the key points of the Bureau's COVID-19 response in chronological context, we examined COVID-19 case data from the Centers for Disease Control and Prevention. We found these data sufficiently reliable for the purposes of our reporting objective. We also accessed available data from the National Governors Association on contemporaneous state-by-state policy actions taken in response to the pandemic.

We conducted this performance audit from August 2020 to December 2020 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.

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## Background

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### Pre-Pandemic Plan for Census Called for Leveraging In-Person Data Collection in Order to Meet Statutory Deadlines

For the 2020 Census, the Bureau is required by law to count the population as of April 1, 2020 (Census Day) and deliver state population counts to the President by December 31, 2020 in order to determine the number of congressional seats apportioned to each state. The Bureau is also required by law to deliver population counts to the states within 1 year of Census Day for redistricting purposes—March 31, 2021, in the case of the 2020 Census. Even in normal circumstances, conducting the count to meet these deadlines is an enormous and complex undertaking, for which the Bureau spends years planning. This decennial, the COVID-19 pandemic made the effort all the more challenging for the Bureau.

Managing in-person contact was one of the challenges of conducting the census during a pandemic. Some data collection methods allowed census staff to avoid such contact. For example, people could self-respond to the census via the mail, phone, or internet. The Bureau also collected data on household occupancy and other characteristics through

administrative records it has determined to be of sufficiently high quality from agencies like the Internal Revenue Service and U.S. Postal Service. However, for a significant part of census data collection, census enumerators have to engage in in-person contact, in order to collect responses. Much of this work was designed to be conducted in spring 2020 (see table 1).

**Table 1: Several 2020 Census Operations Relied on In-Person Contacts by Design**

Planned number of enumerators	2020 Census field operations <sup>a</sup>	Original schedule
435,000	Non-Response Follow-Up Door-to-door interviews to collect data from households that have not yet responded to the census.	May 13, 2020– July 31, 2020
69,000	In-Person Group Quarters Enumeration Enumerate people who live in college and university dorms, correctional facilities, and skilled nursing facilities, among other facilities.	April 2, 2020– June 5, 2020
	Service-Based Enumeration Enumerate people in facilities such as transitional shelters, food kitchens, and non-sheltered outdoor locations that are primarily populated by people experiencing homelessness.	March 30, 2020– April 1, 2020
24,000	Update Leave Enumerators update address information and deliver census questionnaires for respondents to return in rural, remote, or sparsely populated areas of the United States and Puerto Rico, among other places. If a resident answers the door, the enumerator conducts a brief interview to verify the address information.	March 15, 2020– April 17, 2020

Source: U.S. Census Bureau (Bureau) planning documentation. | GAO-21-142.

<sup>a</sup>The Bureau also conducted smaller field operations to update address information and enumerate households in remote locations, both of which involved in-person contact.

The Bureau also set up outreach efforts to populations identified as hard-to-count that would include in-person activities, such as at community information sessions and fairs. For example, between February 2020 and May 2020, the Bureau scheduled outreach events in several major U.S. cities including events that focused on specific hard-to-count populations, such as young children.

Additionally, through its Mobile Questionnaire Assistance (MQA) operation, the Bureau worked in early 2020 to identify key locations such as houses of worship, community festivals, public transit hubs, libraries, community centers, and other locations where people naturally congregate to promote and assist with responding to the census. Through this and other community engagement efforts, the Bureau hoped to improve its outreach to and enumeration of hard-to-count population

subgroups, including young children, rural residents, and persons experiencing homelessness. The Bureau first prioritized locations based on historical data on self-response and later incorporated real-time self-response data.

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### COVID-19 Outbreak Overlapped with the Bureau's Scheduled Peak Census Field Activity

The outbreak of COVID-19, a strain of coronavirus to which the public does not have immunity, was first reported on December 31, 2019, in Wuhan, China.<sup>3</sup> In the weeks that followed, the virus quickly spread around the globe, as did recognition of the virus's severity. On January 31, 2020, the Secretary of Health and Human Services declared a public health emergency for the United States,<sup>4</sup> retroactive to January 27, and on March 11, 2020, the World Health Organization characterized COVID-19 as a global pandemic.<sup>5</sup> In order to limit social contact and slow the spread of the pandemic, states began implementing policies such as stay-at-home orders that restrict travel and closures of nonessential businesses.

As the early events of the COVID-19 outbreak unfolded in the United States, the Bureau was just beginning to collect data for the decennial census. On March 12, 2020, households began receiving the first of up to five planned mailed invitations to respond to the census, and self-response options were made available. At that time, the Bureau was also enumerating residents in remote Alaska and was preparing to deploy field staff for the Update Leave operation on March 15, 2020. Non-Response

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<sup>3</sup>COVID-19 is caused by a new coronavirus named Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2). There are several different types of coronaviruses, some of which are responsible for the common cold, and some of which cause severe respiratory illness and have high mortality rates.

<sup>4</sup>A public health emergency triggers the availability of certain authorities under federal law that enable federal agencies to take actions, such as temporarily reassigning certain state and local personnel and waiving certain administrative requirements.

<sup>5</sup>Subsequently, on March 13, 2020, the President declared COVID-19 a national emergency under the National Emergencies Act and a nationwide emergency under section 501(b) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). The President has also approved major disaster declarations under the Stafford Act for all 50 states, the District of Columbia, and five territories.



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Follow-Up (NRFU)—one of the most costly and labor-intensive decennial field operations—was scheduled to begin nationwide on May 13, 2020.<sup>6</sup>

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## Bureau Needs to Examine Effects on Data Quality of Its Design Changes in Response to COVID-19

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### Bureau Revised Its COVID-19 Response Multiple Times and Ultimately Truncated Its Field and Response Processing Operations

As figure 1 shows, the changes to the Bureau's operations took place amid escalating COVID-19 case counts and state-level policy responses.

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<sup>6</sup>The Bureau originally planned to enumerate college students living off-campus in April 2020 as part of what it called the early-NRFU operation, but this phase of NRFU was eliminated amid the COVID-19 operational suspensions. The Bureau worked with colleges remotely to collect data on these residents.

**Figure 1: The Census Bureau Adjusted Its Operational Timeline during the COVID-19 Pandemic**

**2020 U.S. Census Bureau's (Bureau) Operations Timeline**



Pandemic event denotes an occurrence external to the census that impacted Bureau decisions  
 Operational development denotes a key marker of progress or a decision made in implementing 2020 operations

Source: Bureau documentation and data from the Centers for Disease Control and Prevention and John Hopkins University of Medicine. | GAO-21-142

The Bureau's response to COVID-19 and the events that prompted them took place over multiple phases.

**Initial suspensions.** As part of its initial COVID-19 response and to promote the safety of its workforce and the public, the Bureau delayed its

field operations multiple times. On March 18, 2020, the Bureau announced it would suspend operations for 2 weeks. On March 28, 2020, the Bureau announced another 2-week suspension. By the end of these suspensions, the U.S. had reached over 600,000 total COVID-19 cases.

In recognition of the pandemic's community spread, the Bureau on April 13, 2020, announced that it would extend the suspension of NRFU to a total of 3 months. As a result, NRFU did not begin in earnest until August 9, 2020. The Bureau also adapted multiple operations as part of this phase of response. Examples include efforts to encourage additional facilities being contacted for Group Quarters enumeration to change to more virtual methods of enumeration, as well as shifting community partnership events and Mobile Questionnaire Assistance resources—designed to encourage self-response—from planned social gatherings to virtual events and less crowded physical locations like grocery stores and pharmacies.

**Plan for delayed delivery of population counts.** Also on April 13, 2020, the Bureau and Department of Commerce announced plans to deliver population counts for apportionment purposes by April 30, 2021, and for redistricting purposes by July 31, 2021—4 months later than the respective statutory deadlines. According to the announcement, the Department of Commerce had requested that Congress grant a 120-day extension to the Bureau's reporting deadlines. The Bureau also announced an extension to the self-response period and plans to conduct the NRFU operation through October 31, 2020.

This plan gave the Bureau 6 months from the end of NRFU to finish processing data to prepare the apportionment counts. This was 1 month longer than the Bureau had initially planned, but Bureau officials told us that the extra month was designed as a contingency for further potential disruptions to field operations, such as a second wave of COVID-19.

**Gradual resumption of operations.** The Bureau first resumed a revised Update Leave operation on May 4, 2020, and announced a phased approach to starting NRFU.<sup>7</sup> Between July 16 and August 9, 2020, the Bureau deployed three waves of a “soft launch” of NRFU by area census

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<sup>7</sup>During the resumption of operations, the Bureau instructed enumerators to no longer interview respondents about their address information when delivering questionnaires during Update Leave in order to minimize possible in-person contacts.

offices (ACO) in areas that the Bureau deemed sufficiently safe.<sup>8</sup> The Bureau selected initial ACOs using, among other criteria:

- the 2-week per capita COVID-19 case trends for all counties with greater than 20 percent land area or housing units within a given ACO's boundaries,
- the ability of the Bureau to deliver personal protective equipment to a given ACO's field workforce, and
- the availability of sufficient field staff (enumerators and census field supervisors) to do the work.

According to the Bureau, this soft launch approach was intended to ensure that operational systems and procedures were ready for nationwide use. The Bureau reported that the last ACOs started NRFU by August 9.

**Timeframes revised again to meet original statutory deadlines.** On August 3, 2020, the Bureau announced that it would accelerate its operational time frames, as directed by the Secretary of Commerce, to deliver population counts for apportionment and redistricting purposes by the statutory deadlines, 4 months earlier than the plan the Bureau was implementing. To meet the revised timeline, the Bureau announced that NRFU and the self-response period would now end on September 30, 2020—1 month earlier than previously announced. Bureau officials stated that streamlined post-data collection processing would account for the remainder of the necessary timeline compression.

The Bureau also announced a series of operational changes to meet the new timeframes. During the final 2 planned months of NRFU, enumerators received awards for working more hours in the field and were also given the option in most places of making phone calls to collect data instead of making personal visits. Additionally, the Bureau implemented a revised NRFU contact strategy to make fewer-than-originally anticipated visits to households self-reported as vacant on Census Day. The Bureau also temporarily reduced the scope of its NRFU re-interview operation and compressed the time that subject matter experts have to review apportionment population counts.

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<sup>8</sup>The Bureau implemented field operations through a nationwide network of 248 ACOs, which oversee local recruiting and operations and are organizational sub-units of offices in the Bureau's six regions.

In September 2020, however, the U.S. District Court for the Northern District of California issued a preliminary injunction, staying the August 2020 design changes, enjoining the Bureau's adherence to the statutory deadlines, and requiring the Bureau to continue data collection through the end of October.<sup>9</sup> On October 13, 2020, the Supreme Court granted a stay allowing the Bureau to cease data collection, while the appeal of the preliminary injunction continues to be reviewed by the United States Court of Appeals for the 9th Circuit.<sup>10</sup>

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### Data Quality Concerns Remain for the Bureau to Address during Assessment of Census

We have previously noted that late design changes increase the risks to a quality census. The Bureau made operational changes in response to COVID-19 and subsequent developments that include shortening the time frames for implementing operations, making fewer visits to certain non-responding households, and reducing the scope and time of quality checks on field data collection and data processing, respectively.

For its part, the Bureau has multiple mechanisms to assess the quality of the 2020 Census. For example, through its Data Quality Executive Governance Group, the Bureau oversees several teams of officials dedicated to studying the effects on quality of the initial COVID-19 response, each with a set of objectives or deliverables that they are planning to facilitate retrospective determinations of data quality. In response to recommendations and input from entities like the American Statistical Association, the Bureau is also working with a group of independent scientific consultants known as the JASON group to assess Bureau plans, processes, procedures, and metrics around 2020 Census data quality and help develop a near-term strategy for sharing indicators

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<sup>9</sup>National Urban League v. Ross, Case No. 20-cv-05799 (N.D. Cal. Sept. 24, 2020) (order granting motion for stay and preliminary injunction). The Department of Justice, on behalf of the Department of Commerce and the Bureau, appealed the order. National Urban League v. Ross, Case No. 20-16868(9<sup>th</sup> Cir., Sept. 25, 2020). When the 9<sup>th</sup> Circuit denied a stay of part of the preliminary injunction, the ruling was appealed to the U.S. Supreme Court.

<sup>10</sup>Ross v. National Urban League, Case No. 20A62, 592 U.S. \_\_\_\_ (2020).

of the quality of census data that is produced for apportionment and redistricting purposes, according to Bureau draft documentation.<sup>11</sup>

In addition to the efforts described above, the Bureau also has numerous planned assessments and evaluations of operations which, in conjunction with its post-enumeration survey (PES)—a survey conducted independently of each census to determine how many people were missed or counted more than once—help determine the overall quality of the census and document lessons for future censuses. The Bureau also plans to release in mid-December data generated by its Demographic Analysis effort, which is a specific set of techniques for developing national population estimates by age, sex, and race from administrative records including birth, death, and migration patterns. This will serve as an initial independent check on census counts.

The Bureau is still updating its plans for these efforts to examine the range of operational modifications made in response to COVID-19, including the August 2020 and later changes. For example, according to officials, the Bureau is revising its study plan template for its operational assessments, which were first designed before the onset of COVID-19, to include research questions that examine the effects of the COVID-19 response. The Bureau also indicated in late-August 2020 that the data quality teams that are working in part to inform those assessment efforts would be working through December 2020 to update the topics they are monitoring to reflect any relevant August 2020 design changes. *Standards for Internal Control in the Federal Government* indicate that agencies should analyze and respond to identified risks, including by considering relevant changes that have taken place within the agency's environment.<sup>12</sup>

In preparing this report, we identified a number of concerns for the Bureau's assessments to address regarding how late changes to the census design could affect data quality. Addressing these concerns as part of updating the Bureau's overall assessment of the quality of the

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<sup>11</sup>The American Statistical Association and Census Scientific Advisory Committee issued numerous recommendations in the Fall of 2020, including for the Bureau to document what it knows in near real-time about the quality of the population counts that it provides to the President and to Congress.

<sup>12</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: Sep. 10, 2014).

2020 Census will help to ensure public confidence and help the Bureau begin to plan for 2030.

### Initial Suspensions Due to COVID-19

- **Recall bias could affect census responses.** The reference date for the census is April 1. Yet, the Bureau ultimately continued NRFU and self-response through October 15, 2020. Recall bias—in this case, the ability to remember where one was living and how many people resided at a given address on April 1—has the potential to affect responses the farther removed from April 1 that they are.
- **Delays in enumerating persons experiencing homelessness could affect the population count.** Service-Based Enumeration (SBE) is a primary operation for counting persons experiencing homelessness and receiving services at facilities. Unlike for other components of the census, the Bureau conducts SBE at a point in time without a reference date due to the transitory nature of the population. This operation was originally scheduled for the end of March 2020—in proximity to Census Day. Due to COVID-19, however, the Bureau delayed this operation until late September 2020.

The Bureau told us that this decision was made in consultation with stakeholder groups and balanced the need for public safety amid the pandemic with closely mirroring the climate conditions of when SBE was originally scheduled to take place.

However, the economic recession that took place due to the pandemic could have implications for this portion of the census. According to the U.S. Bureau of Labor Statistics, at the end of March 2020 the unemployment rate was 4.4 percent, while at the end of September 2020 the rate was 7.9 percent. Estimates from the Bureau of Economic Analysis also show that Gross Domestic Product decreased at an annualized rate of 31.4 percent during the second quarter (April through June) of 2020. To the extent that such a drastic economic downturn could affect the rate of homelessness, the delayed operation has the potential to include responses of individuals

who had not been experiencing homelessness in March 2020 and may have already responded to the census.<sup>13</sup>

Because people experiencing homelessness are likely to have transient living arrangements, the Bureau's pre-COVID 19 plan of conducting SBE in proximity to April 1 would have furthered the overall goal of counting people in the right location as of April 1. Individuals counted in September 2020 may be at different locations than in March 2020, thus misrepresenting what the geographic distribution of the population was near census day. The Bureau told us that the counts coming from SBE are a small percentage of the total national count and that they expect the delay will have a minimal effect on the overall census, but they did not explain how, if at all, they plan to document any resulting possible limitations on the count of this segment of the population within other totals in the data products.<sup>14</sup>

- **Operational delays could affect coverage measurement.** The Bureau is still revising its field data collection methodology for its PES to determine how many people were missed or counted more than once. As with other decennial field operations, the PES involves the potential for person-to-person contact during enumeration, which raises the risk that, without the Bureau changing data collection procedures, people may not want to participate, affecting the quality of the survey's measurements.

Moreover, because deployment of the enumeration phase of the PES was also delayed as part of the Bureau's response to COVID-19, PES is also susceptible to increased recall bias as discussed above. The Bureau told us that its Demographic Analysis efforts were not affected by COVID-19.

#### Acceleration of Field Operations

- **The compression of NRFU timeframes creates uncertainty for the quality of NRFU across geographic areas and population subgroups.** There is a risk the data collected by the Bureau will be

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<sup>13</sup>The Bureau has procedures to de-duplicate census responses in cases when multiple responses exist for the same person. However, we observed during testing that it is possible for responses collected during SBE to not have sufficient information about the respondent to allow for such de-duplication.

<sup>14</sup>In addition to the apportionment and redistricting data products, the Bureau also produces a series of demographic and housing data products directly using 2020 Census data.



less complete due to changes the Bureau made to accelerate NRFU, at the Department of Commerce's direction. By early September, the time of the first of a series of court rulings that ultimately allowed the Bureau to end NRFU on October 15 (two weeks early), the Bureau reported completing over 68 percent of its NRFU workload, meaning that it had conducted most of the operation under procedures designed to meet an accelerated September 30 deadline (over four weeks early). Some of these procedures, such as offering pay bonuses to active enumerators for working more hours and exceeding a specified level of completed NRFU cases per hour, had not been previously tested, so the effects on the quality of data collected by NRFU, if any, are unknown.

While the Bureau reported high completion rates nationwide, national metrics can obscure important local variations. For example, on September 27 (covering data through September 26), when the Bureau reported that it was 95 percent complete nationally, it also reported that 14 of the 248 ACOs were at less than 85 percent complete. Further, two ACOs, Shreveport, Louisiana and Window Rock, Arizona, were below 75 percent complete at that time.<sup>15</sup>

While data quality effects nationally and within individual population subgroups, if any, due to changes to accelerate NRFU are not yet known, gaps in census data have historically disproportionately affected certain population subgroups, such as non-Hispanic Blacks, Hispanics, and American Indians on reservations. The Bureau has long-standing methods to impute, or statistically derive, the numbers and characteristics of residents of non-responding households using information on nearby households. While the Bureau reported getting census responses for over 99 percent of households by the end of NRFU, it is not yet known the extent to which imputation will be needed to determine missing demographic characteristics.

The Bureau told us that these methods of characteristic imputation were not designed to be applied to large segments of the population. Given these factors, if efforts to accelerate NRFU had any effects on

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<sup>15</sup>Our forthcoming December 2020 cost and progress update on the 2020 Census will provide final data on NRFU completion across the country and ACOs. For examples of prior installments in this series, see GAO, *2020 Census: Recent Decision to Compress Census Timeframes Poses Additional Risks to Census Count*, [GAO-20-671R](#) (Washington, D.C.: Aug. 27, 2020); *2020 Census: COVID-19 Presents Delays and Risks to Census Count*, [GAO-20-551R](#) (Washington, D.C.: June 9, 2020); and *2020 Census: Initial Enumeration Underway but Readiness for Upcoming Operations is Mixed*, [GAO-20-368R](#) (Washington, D.C.: Feb. 12, 2020).

data quality, there is the question of whether there was disproportionate impact on the quality of data for historically undercounted groups. The Bureau acknowledges that its PES will need to assess whether areas that remained relatively behind in NRFU production also contributed to any differential undercounts across population subgroups.

- **Increased reliance on sole-source administrative records data in some cases could affect the count.** As one of its major cost-saving innovations for the 2020 Census, the Bureau used administrative records from sources such as Medicare enrollment data and individual tax return data to determine housing unit occupancy as appropriate, and, if necessary, enumerate non-responsive households. Preliminary Bureau data show that administrative records helped enumerate or resolve as unoccupied nearly 14 percent of the households eligible for NRFU, thereby reducing costly field visits and the need for imputation.

The Bureau modified its plans for using some administrative records to complete the count rather than relying on potentially higher numbers of interviews with neighbors or other proxies for nonresponding housing units when compressing the NRFU timeline. Specifically, the Bureau's original plan had been to use a given source of administrative records to determine the population of a given household only when corroborated by another source of administrative records. However, facing the possibility of higher rates of incomplete cases or reliance on data from proxies, which the Bureau considers generally as less reliable than other forms of data collection, the Bureau decided late during NRFU to enumerate some cases using sole sources of administrative records when available.

While the Bureau noted that this change would reduce the NRFU workload for households that lack a population count, we have previously reported on limitations with certain sources of administrative records.<sup>16</sup> For example, Internal Revenue Service individual tax return data can exclude people who have insufficient income to file tax returns and could exclude residents who are not listed as dependents for tax purposes. A tax filer may also include dependents for tax purposes who do not live at the household's address full-time. Relying on tax return data for population counts

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<sup>16</sup>GAO, *2020 Census: Bureau Is Taking Steps to Address Limitations of Administrative Records*, [GAO-17-664](#) (Washington, D.C.: July 26, 2017).

without corroboration could introduce related errors to household-level census data.

The Bureau told us that how they determine the fitness for use of administrative records for any given household sources did not change during NRFU. The Bureau is reviewing the need to use administrative records during post-processing in hurricane-affected areas of Louisiana. Additionally, according to Bureau officials, they are mitigating the possibility that some of the sole source data may be missing young children, for instance, by linking any partial information the Bureau has about a household to a database on children it has created from administrative records.<sup>17</sup>

The Bureau also said that while they will be examining quality effects of the late design changes to application of administrative records, the risks should also be mitigated by the fact that the Bureau will only be applying this change to households that lack a population count during the closeout stage of NRFU, after most households have already been counted.

### Streamlining of Response Processing

- **The compressed timeframes for quality reviews and systems testing could affect the quality of the apportionment data file.** The Bureau's August 2020 design changes reduced the time between the end of NRFU and the provision of population counts for apportionment purposes from 153 days (as planned following the COVID-19 suspensions) to 92 days, which was further reduced to 77 days following court proceedings.

To meet this reduced time period, the Bureau streamlined reviews by subject matter experts of the accuracy of the state-by-state counts. According to officials, in August 2020 the Bureau did not remove any levels of review when reducing the time to complete operations, but as of October 2020 the Department of Commerce had not provided us with copies of the Bureau's streamlined processing timeline.

According to Bureau documentation, the Bureau had to re-process census population files state-by-state for many states during prior

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<sup>17</sup>GAO-17-664. As we reported in 2017, the Bureau has created a database that merges several administrative record sources to identify relationships between household adults and children.

decennial censuses when Bureau demographers uncovered critical errors during these reviews. Specifically, during post-data collection processing for the 2010 Census, all states had their processing files re-run at least once prior to apportionment tabulation, and 33 states had their files re-run at least twice. Bureau documentation indicates that there is little or no time left in the current streamlined processing schedule to reproduce files, let alone research and identify any root causes of errors that may be found.

The Bureau also completed testing for the 12 information technology (IT) systems needed to support response processing in October 2020 instead of January 2021, as previously planned.<sup>18</sup> This change occurred after the Bureau's August 3, 2020, announcement that it would accelerate its operational time frames to deliver population counts for apportionment purposes.

As a result, there was less time available to complete system integration testing and operational testing needed before response processing began. The shortened time for response processing discussed earlier added additional risk because there will have been less time available to address system defects or other issues. We have ongoing work intended to monitor the risks to the Bureau's remaining implementation of IT to support the 2020 Census and its efforts to mitigate these risks.

- **Compressed timeframes could limit the data available to review for apportionment purposes.** Bureau officials told us that, to enable the compressed time frame for post-data collection processing, they had to create a locked-down benchmark of the Master Address File (MAF) of all living quarters by September 27, 2020—prior to the end of NRFU and the self-response period. New addresses detected would not become part of the MAF for apportionment or redistricting purposes.

Bureau officials told us that the nature of field work is such that many addresses that get added during the end of NRFU are usually variants of existing addresses and thus do not contain new potential respondents. Bureau officials indicated that prior assessments did not

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<sup>18</sup>The Bureau is utilizing 52 systems to conduct the 2020 Census, 12 of which are needed to support response processing. We have previously reported on the Bureau's plans to deploy the 52 systems multiple times across 16 operational deliveries, which includes operations such as NRFU and response processing. For more information, see, for example, [GAO-20-671R](#); [GAO-20-551R](#); and [GAO-20-368R](#).

determine how many addresses were added during the final weeks of NRFU or what their characteristics were in prior censuses.

- **Uncertainty over disclosure avoidance plans could introduce risks.** The Bureau plans to implement a disclosure avoidance technique, known as differential privacy, to its publicly released statistical products to protect the confidentiality of its respondents and their data.<sup>19</sup> These products include detailed race tables, demographic profiles, and demographic and housing characteristics. The Bureau plans to issue fit-for-use redistricting products—which are expected to be the first data products that utilize differential privacy protections—by the March 31, 2021, statutory deadline.<sup>20</sup>

As of October 2020, the Bureau had not made changes to its plans and schedules for disclosure avoidance for the redistricting products to meet that deadline, but Bureau officials stated that this could change given the uncertainty in the near-term data collection and processing schedules.

In addition, officials in the Directorate for Research and Methodology reported that, because of compressed time frames, they did not plan to produce other data products (such as the Demographics and House Characteristics products) until sometime after March 2021. The officials reported that they do not yet have a schedule for developing these other data products, also because of uncertainty about the near-term schedule.

In September 2020, the Bureau’s Census Scientific Advisory Committee described a level of uncertainty related to the Bureau’s implementation of disclosure avoidance, and noted that the Bureau’s schedule had been ambitious.<sup>21</sup> Thus, the committee recommended that the Bureau delay the release of data products (including fit-for-

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<sup>19</sup>Differential 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.

<sup>20</sup>Redistricting products are used, among other things, to delineate voting districts by state. 13 U.S.C. § 141(c).

<sup>21</sup>The Census Scientific Advisory Committee was created to advise the Bureau’s Director on the full range of Census Bureau’s programs and activities, and provide formal review and feedback on internal and external working papers, reports, and other documents related to the design and implementation of census programs and surveys.

use redistricting products) until after the apportionment count to allow time to perform more analysis on the Bureau's disclosure avoidance plans.

- **Time constraints call into question the ability to provide redistricting data by statutory deadlines.** In September 2020, the Bureau announced that it would produce population counts for redistricting purposes by the original statutory deadline of March 31, 2021—four months earlier than what the Bureau had been planning since the initial COVID-19 suspensions—though it has provided no timeline for doing so.

Producing detailed tabulations for redistricting involves many steps. As we reported in December 2019, the Bureau must resolve incomplete and conflicting information within individual household responses.<sup>22</sup> According to Bureau data, 13 percent of the people counted in 2010 had missing or conflicting information on person characteristics (such as age, sex race, and whether the housing unit is owned or rented) that the Bureau had to resolve during this process.

The Bureau also has to review the address file for enumerated persons at a much more granular level of geography than simply state-by-state counts (e.g., census blocks). If the Bureau has to adhere to an accelerated timeframe for creating this data, it is unclear whether officials will have time to assure quality.

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## Lessons from Developing and Implementing Late Design Changes Could Be Helpful for 2030 Planning

**Some design changes from August 2020 could be helpful in future censuses.** The Bureau implemented numerous design changes late during NRFU in order to accelerate completion of the operation. If forthcoming Bureau assessments and evaluations are able to reveal which, if any, of these changes improved efficiency without introducing unacceptable risks to the quality of census data, then those innovations might also be worthy of considering for future decennials. If, on the other hand, any changes are shown to have introduced unacceptable risk or

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<sup>22</sup>GAO, *2020 Census: Changes Planned to Improve Data Quality*, [GAO-20-282](#) (Washington, D.C.: Dec. 20, 2019).

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harmed data quality, then the Bureau will know better what to avoid in the future.

**Learning from how the Bureau has attempted to remain agile in the face of external factors prompting late changes to the operational plan.** The Bureau relied on a number of governance structures it already had in place to help react to COVID-19 developments and other demands for late design changes. For example, it expanded the scope of preexisting quality teams to begin to examine the potential effects of the initial COVID-19 response on census operations and data quality.

In addition, the Bureau used its preexisting fusion center concept to translate streams of data on COVID-19 incidence into decisions about field operations, such as when to reopen specific census offices after suspending activity during the pandemic.<sup>23</sup> The evolving nature of the pandemic has forced the Bureau to be agile in its decision-making, and external interest in its decisions has subjected it to high levels of scrutiny. The culmination of this experience has the potential to highlight for the Bureau which of its governance structures or management processes worked well and which, if any, may have been less effective or redundant.

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### Pre-existing Contingency Funds Appear Sufficient to Cover Implementation of the Bureau's COVID-19 Response

Before the COVID-19 outbreak, the Bureau had an estimated \$2.03 billion in total unobligated contingency funds for 2020 operations. According to documentation from August 2020 and subsequent discussion with officials, the Bureau anticipates that these contingency funds will be more than sufficient to address both the initial COVID-19 response and the August 2020 design changes. Prior to implementation of the August 2020 design changes, the Bureau estimated that obligations to implement the initial COVID-19 suspensions of operations would account for all but \$994 million of that contingency funding, and with the August 2020 design changes added, the Bureau would still have at least \$187 million in contingency funding.

This means that, in the event that the Bureau is not authorized to extend the statutory deadlines for data products, the total cost of the Bureau's

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<sup>23</sup>The Bureau designed a fusion center to serve as a centralized management process for responding to disruptions to the 2020 Census.

COVID-19 response and August 2020 design changes is estimated at over \$1.8 billion of its contingency funds. Examples of major categories of new spending from what the Bureau had planned pre-COVID-19 include:

- **Service dates for area census office (ACO) staff.** The Bureau retained its core staff at the 248 ACOs following the 3-month suspension of operations during COVID-19. The Bureau estimated that extending salaries for these employees during this time would cost \$195 million above the Bureau's original plan. The Bureau also estimated that paying temporary leave to enumerators who became exposed to COVID-19 during operations would add another \$90 million in costs.
- **Outreach and partnership activities.** Before COVID-19, the Bureau had planned to finish its 2020 paid advertising campaign in June 2020 and cease other partnership and outreach activities at the planned end of NRFU in July 2020. Following the COVID-19 suspensions, the Bureau estimated that extending these activities, as well as distributing an extra mailing to encourage self-response, would add \$160 million in costs.
- **Changes to IT contracts and additional devices for field staff.** The Bureau is relying on significant IT contractor support to conduct the 2020 Census. Specifically, the Bureau is utilizing five major IT contracts to provide critical capabilities needed to conduct the census, including call center support; handheld device procurement and provisioning; and system and infrastructure development, testing, deployment, and cybersecurity services. For example, the Bureau's Decennial Device-as-a-Service contract provided handheld device procurement, provisioning, and distribution for 2020 Census field data collection operations, such as NRFU.

Due to the COVID-19 pandemic, the Bureau stated that it made substantial changes to its five major IT contracts, such as extending software licenses, purchasing additional handheld devices, and increasing the number of IT support staff. In total, as of October 2020, Bureau officials stated that these changes had a cost impact of approximately \$357 million. Table 2 provides a description of each of the five major IT contracts and examples of changes made to the contracts to address COVID-19 impacts.



**Table 2: Examples of Changes to 2020 Census Information Technology (IT) Contracts Due to COVID-19**

Major IT contract	Description	Example of changes the U.S. Census Bureau made to address COVID-19 impacts
Technical Integrator	Provides 2020 Census IT infrastructure and systems development, testing, deployment, and cybersecurity services.	<ul style="list-style-type: none"> <li>Extension resulted in the contractor extending the employment of technical integrator staff.</li> <li>Extended the term of equipment licenses and services, such as Amazon Web Services.</li> </ul>
Decennial-Device-as-a-Service	Provides mobile device procurement, provisioning, and distribution for 2020 Census field data collection operations.	<ul style="list-style-type: none"> <li>Purchased an additional 125,000 mobile phones and 5,500 tablets.</li> <li>Extended mobile device management capabilities, cellular services, and IT support services.</li> </ul>
Census Schedule A Human Resources and Recruiting, Payroll System - Recruiting and Assessment and Learning Management System	Provides 2020 Census IT recruiting, selection, and learning management services.	<ul style="list-style-type: none"> <li>Increased the number of help desk support staff to support recruiting and assessment services.</li> <li>Purchased additional licenses for software that supports recruiting and assessment services.</li> </ul>
Field IT Deployment	Provides IT infrastructure and telecommunications for 2020 Census field sites, including Paper Data Capture Centers and Area Census Offices.	<ul style="list-style-type: none"> <li>Increased the number of staff and extended IT support hours for Paper Data Capture Centers and Area Census Offices.</li> </ul>
Census Questionnaire Assistance	Provides call center capability to assist respondents with completing the 2020 Census questionnaire through the internet self-response and phone response options.	<ul style="list-style-type: none"> <li>Increased call center staff support from March 2020 through October 2020.</li> </ul>

Source: GAO analysis of U.S. Census Bureau information. | GAO-21-142

- NRFU production awards program.** To increase the number of total hours worked and enable the Bureau to accelerate NRFU by a month as part of the August 2020 design changes, the Bureau developed a program that would award enumerators and census field supervisors for exceeding Bureau targets for weekly hours worked and productivity. These awards would escalate for employees who met the eligibility requirements for multiple weeks over a period of time. Overall, the Bureau anticipated this program adding over \$320 million in costs.

As of the time of this report, some costs associated with the August 2020 design changes are unknown. For instance, the Bureau may have to pay certain employees overtime in order to implement compressed response processing operations. Officials told us that any effects of these costs on contingency funds would only become apparent if they exceeded what had previously been budgeted for overtime for those activities.

Officials also noted that onboarding and training costs for additional enumerators recruited as a result of the need to accelerate NRFU were likely to be lower than the \$229 million that the Bureau allotted. Officials noted that this is because the Bureau did not need to replace as many enumerators from attrition as expected. Finally, when announcing the Bureau's plan to abide by the September 2020 court ruling on the August 2020 design changes, the Bureau offered a \$500 award to enumerators who would travel to help complete NRFU in states that were experiencing production shortfalls, though at the time of this report it is unclear how many enumerators accepted this offer.<sup>24</sup>

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## Conclusions

Conducting a census amid a global pandemic posed unprecedented challenges to the Bureau. Major events, ranging from a global pandemic to multiple directed revisions to operational timeframes, have affected the way that the Bureau has implemented the 2020 Census. Given these disruptions, it will be critical for the Bureau to ensure that it is learning as much as it can from the effects of its design changes. We have identified data quality concerns prompted by these late design changes, such as whether they will affect historically undercounted population subgroups or whether the Bureau will have sufficient time to correct errors found in the data. There may also be efficiencies or other benefits from innovations the Bureau made out of necessity that it can replicate in future censuses.

The Bureau is updating planned operational assessments and evaluations for the 2020 Census, as well as its post enumeration survey. As the Bureau formalizes its updated approach, it will be important that it carefully and thoroughly evaluate issues stemming from the operational changes made in response to COVID-19. Doing so will help ensure public confidence in the 2020 Census and inform future census planning efforts.

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## Recommendations for Executive Action

The Secretary of Commerce and the Director of the U.S. Census Bureau should update and implement assessments, evaluations, and coverage measurement efforts to address the effects of the Bureau's response to

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<sup>24</sup>Places that the Bureau targeted for this award included the Window Rock reservation for the Navajo Nation, as well as the states of Alabama, Georgia, Louisiana, Mississippi, Montana, and South Carolina.

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COVID-19 that we identified, including data quality concerns and potential operational benefits from innovations. (Recommendation 1)

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## 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 Department of Commerce agreed with our findings and recommendation. The 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 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 J. Christopher Mihm at (202) 512-6806 or by email at [mihmj@gao.gov](mailto:mihmj@gao.gov) or Nick Marinos at (202) 512-9342 or by email at [marinosn@gao.gov](mailto: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.



J. Christopher Mihm  
Managing Director, Strategic Issues



Nick Marinos  
Director, Information Technology and Cybersecurity

*List of Addressees*

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

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

The Honorable Carolyn B. Maloney  
Chairwoman  
The Honorable James Comer  
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Committee on Appropriations  
House of Representatives

The Honorable Joaquin Castro  
House of Representatives

The Honorable Judy Chu  
House of Representatives

## Appendix I: Comments from the Department of Commerce



UNITED STATES DEPARTMENT OF COMMERCE  
The Secretary of Commerce  
Washington, D.C. 20230

November 26, 2020

Mr. J. Christopher Mihm  
Managing Director, Strategic Issues  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Dear Mr. Mihm:

The U.S. Department of Commerce appreciates the opportunity to comment on the U.S. Government Accountability Office (GAO) draft report titled "2020 Census: Census Bureau Needs to Assess Data Quality Concerns Stemming from Recent Design Changes" (GAO-21-142).

Despite the challenges posed by the pandemic, severe weather conditions, and instances of civil unrest, the Census Bureau successfully completed field collection. From our preliminary analysis, we accounted for more than 99.98% of the addresses in the Nation, achieving more address resolutions than any prior census. All states, the District of Columbia, and the Commonwealth of Puerto Rico had total completion rates of more than 99.0%. All but one state achieved more than 99.9%. Now that data collection has concluded, the Census Bureau staff are focused on data processing and assessing data quality. We plan to release information and findings on data quality as results become available. The Census Bureau's Data Quality Executive Governance Group is providing guidance for the development of these quality indicators.

The Census Bureau agrees with the report's descriptions of schedule and operational changes made due to COVID-19. The Census Bureau also concurs with the one recommendation in this report and is already taking steps in this regard. We will prepare a formal action plan regarding this recommendation upon issuance of the final report.

Thank you for your continued interest in and efforts towards improving the 2020 Census.

Sincerely,

A handwritten signature in black ink that reads "Wilbur Ross".

Wilbur Ross

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## Text of Appendix I: Comments from the Department of Commerce

November 26, 2020

The Secretary of Commerce

Washington, D.C. 20230

Mr. J. Christopher Mihm

Managing Director, Strategic Issues

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

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**Appendix I: Comments from the Department of  
Commerce**

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Thank you for your continued interest in and efforts towards improving the 2020 Census.

Wilbur Ross

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## Appendix II: GAO Contact and Staff Acknowledgments

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### GAO Contact

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### Staff Acknowledgments

In addition to the contact named above, Ty Mitchell, Kate Sharkey, Jon Ticehurst (Assistant Directors), Devin Braun, Andrea Starosciak (Analysts-in-Charge), Mark Abraham, Ann L. Czapiewski, Alan Daigle, Alexandra Edwards, Rob Gebhart, Lisa Hardman, Jason T. Lee, Kerstin Meyer, Lisa Pearson, Farrah Stone, and Peter Verchinski, made key contributions to this report.



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