

**GAO**

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## 2010 CENSUS

# Key Enumeration Activities Are Moving Forward, but Information Technology Systems Remain a Concern

Statement of Robert Goldenkoff, Director  
Strategic Issues



**GAO**

Accountability \* Integrity \* Reliability

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Highlights of [GAO-10-430T](#), a testimony before the Subcommittee on Federal Financial Management, Government Information, Federal Services and International Security, Committee on Homeland Security and Governmental Affairs, U.S. Senate

## Why GAO Did This Study

In March 2008, GAO designated the 2010 Census a high-risk area in part because of information technology (IT) shortcomings and uncertainty over the ultimate cost of the census, now estimated at around \$15 billion. The U.S. Census Bureau (Bureau) has since made improvements to various IT systems and taken other steps to mitigate the risks of a successful census. However, last year, GAO noted that a number of challenges and uncertainties remained, and much work remained to be completed under very tight time frames.

As requested, this testimony provides an update on the Bureau's readiness for an effective headcount, covering (1) the status of key IT systems; (2) steps the Bureau has taken to revise its cost estimates; and (3) the extent to which critical enumeration activities, particularly those aimed at hard-to-count populations, are on track. The testimony is based on previously issued and ongoing GAO work.

## What GAO Recommends

GAO is not making new recommendations in this testimony, but past reports recommended that the Bureau strengthen its testing of key IT systems, better document and update its cost estimates, and ensure the accuracy of the address list used to mail out questionnaires. The Bureau generally agreed with these recommendations and is in varying stages of implementing them.

View [GAO-10-430T](#) or [key components](#). For more information, contact Robert Goldenkoff at (202) 512-2757 or [goldenkoffr@gao.gov](mailto:goldenkoffr@gao.gov).

## 2010 CENSUS

### Key Enumeration Activities Are Moving Forward, but Information Technology Systems Remain a Concern

#### What GAO Found

Overall, the Bureau's readiness for a successful headcount is mixed. On the one hand, ongoing performance issues are affecting key IT systems, especially a workflow management system essential for the Bureau's field operations and a payroll processing system that will be used to pay more than 1 million temporary workers. Indeed, an important performance test the Bureau held in December 2009 revealed significant performance issues with each system. Bureau officials stated that many of these issues were resolved in further testing; however, others remain unresolved, and new defects were identified. The Bureau is going to great lengths to address these issues. However, little time remains before the systems need to become fully operational.

In addition, the Bureau revised its cost estimate from \$2.7 billion to \$2.3 billion for nonresponse follow-up, the largest and most costly field operation where census workers follow up in person with nonresponding households. However, the Bureau's analyses of cost are not complete. According to the Bureau, it continues to reexamine the cost of two other nonresponse follow-up related operations.

On the other hand, the rollout of key enumeration activities is generally on track, and the Bureau has taken action to address some previously identified problems. For example, the Bureau has taken several steps to reduce the number of unreadable fingerprint cards of temporary workers, a problem that plagued an earlier field operation. Among other actions, the Bureau plans to digitally capture a third and fourth set of fingerprints if the first two sets cannot be read for background security checks. The Bureau has also developed new procedures for counting those living in group quarters, such as dormitories and prisons. For example, the Bureau is using a single address list containing both group quarters and housing units, rather than separate lists as in the 2000 Census, to reduce the chance of double counting. The Bureau's 2010 Census communications campaign is also more robust than the one used in the 2000 Census. Key differences from the 2000 campaign include increased partnership staffing, targeted paid advertising based on market and attitudinal research, and a contingency fund to address unexpected events. To increase participation rates, the Bureau plans to mail a second, replacement questionnaire to census tracts that had low or moderate response rates in the 2000 Census. To help ensure a complete count of areas along the Gulf Coast, the Bureau plans to hand deliver an estimated 1.2 million census forms in areas devastated by hurricanes Katrina, Rita, and Ike. This effort will help ensure that households—even those that were not on the Bureau's address list but appear inhabitable—will be included in the census.

Moving forward, it will be important for the Bureau to quickly identify the problems affecting key IT systems and test solutions. Further, given the complexity of the census and the likelihood that other glitches might arise, it will be important for the Bureau to stay on schedule, monitor operations, and have plans and personnel in place to quickly address operational issues.

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Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the Census Bureau's (Bureau) readiness to conduct the 2010 Census. With just over 5 weeks remaining until Census Day, April 1, 2010, the decade-long process of researching, planning, testing, and evaluating procedures for the nation's largest peacetime mobilization has come to a close, and the complex and costly business of data collection is now underway.

The population count began on January 25, north of the Arctic Circle, in the Inupiat Eskimo village of Noorvik, Alaska, when the Director of the Census Bureau took the lead in counting the first 700 or so residents of the more than 300 million people who reside in our country. The Bureau is scheduled to mail census forms to most of the nation's households in mid-March, and simultaneously launch additional operations aimed at counting people in migrant worker housing, boats, tent cities, homeless shelters, nursing homes, dormitories, prisons, and other diverse dwellings, all in an effort to ensure a complete and accurate enumeration. In short, a successful census will require the near perfect alignment of thousands of interdependent activities; partnerships with local, state, and tribal governments and various community and other organizations; and automated systems, as well as over a million temporary employees, all laboring under extremely tight time frames.

At this critical juncture, it is important to examine the Bureau's preparedness for the headcount, taking stock of the Bureau's progress over the course of the decade, and the challenges that still need to be addressed to ensure a successful enumeration. As you know, the road to Census Day has been a rocky one, fraught with operational setbacks and cost overruns. The hurdles the Bureau has experienced to date—including weaknesses in the Bureau's information technology (IT) acquisition and contract management function and uncertainty over the ultimate cost of the census—now estimated at around \$15 billion—led us to designate the 2010 Census a high-risk area in March 2008.<sup>1</sup> In the last year, however, we testified that the Bureau had made commendable progress in rolling out key components of the census, making improvements to various IT systems and certain risk management efforts, among other activities. At the same time, we cautioned that a number of operations and support

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<sup>1</sup>GAO, *Information Technology: Significant Problems of Critical Automation Program Contribute to Risks Facing 2010 Census*, [GAO-08-550T](#) (Washington, D.C.: Mar. 5, 2008).

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systems still needed to be designed, planned, and tested; little time remained to address a range of outstanding IT issues; and, perhaps most importantly, the Bureau faced significant challenges finalizing an automated system used to manage field data collection known as the Paper-Based Operations Control System (PBOCS).<sup>2</sup>

As requested, my remarks today will focus on the Bureau's readiness for the 2010 Census and the challenges and opportunities that lie ahead. In particular, I will update the Subcommittee on the progress the Bureau is making in addressing issues that prompted us to designate the 2010 Census a high-risk area: (1) the reliability of key IT systems, and (2) the quality of its cost estimates, as well as (3) a broad range of activities critical to an effective headcount, some of which were problematic in either earlier 2010 operations or in the 2000 Census. The activities include procedures for fingerprinting temporary employees; the Bureau's efforts to count people residing in nursing homes, dormitories, and other group living arrangements known as "group quarters"; the rollout of key marketing efforts aimed at improving the participation of hard-to-count populations and how Recovery Act<sup>3</sup> funds are being used as part of that effort; the Bureau's plans for a mailing a second, follow-up questionnaire and the removal of late mail returns; and the Bureau's plans to secure a complete count in the hurricane-affected areas along the Gulf Coast.

My testimony today is based on our ongoing and completed reviews of key census-taking operations.<sup>4</sup> In our review, we analyzed key documents including plans, procedures, and guidance for the selected activities, and interviewed cognizant Bureau officials at headquarters and local census offices. In addition, to examine the Bureau's group quarters activities, we observed the group quarters validation operation at Atlanta, Georgia; Fresno, Los Angeles, and San Bernardino, California; Philadelphia, Pennsylvania; and Washington, D.C.. We selected these locations because of their geographic diversity, variety of group quarters, and hard-to-count populations. We also made onsite observations of certain census

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<sup>2</sup>See for example, GAO, *2010 Census: Fundamental Building Blocks of a Successful Enumeration Face Challenges*, [GAO-09-430T](#) (Washington, D.C.: Mar. 5, 2009), and GAO, *2010 Census: Census Bureau Continues to Make Progress in Mitigating Risks to a Successful Enumeration, but Still Faces Various Challenges*, [GAO-10-132T](#) (Washington, D.C.: Oct. 7, 2009).

<sup>3</sup>American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5 (Feb. 17, 2009).

<sup>4</sup>See related GAO products at the end of this statement.

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promotional events in Boston, Massachusetts; Washington D.C.; and Atlanta.

On February 2, 2010, we provided the Bureau with a statement of facts for our audit work, and on February 5, 2010, the Bureau provided written comments. The Bureau made some suggestions where additional context or clarification was needed and, where appropriate, we made those changes. We conducted our work in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audits 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.

In summary, key IT functions—namely the Bureau’s personnel and payroll system and PBOCS—continue to face performance problems and have not yet demonstrated the ability to function reliably under full operational loads. With key deadlines looming, it will be important for the Bureau to identify the defects affecting the IT systems, test solutions, and quickly implement changes. Likewise, the Bureau’s analyses of cost are not complete. While the Bureau has finalized its reexamination of nonresponse follow-up (NRFU) cost, now estimated at \$2.3 billion, it continues to update the costs for other NRFU-related operations. In other areas, the Bureau continues to make progress. For example, the Bureau has improved its fingerprinting procedures for temporary workers, and its plans to count people in group quarters and to market the census—especially to hard-to-count populations—are generally on track and more robust compared to similar efforts during the 2000 Census.

The performance of the IT systems notwithstanding, a successful outcome is far from guaranteed. To be sure, the 2010 Census is unprecedented in its scope and complexity, and experience from past enumerations suggests that various glitches are all but inevitable once the headcount is fully underway. Given this difficult operating environment, as the Bureau well knows, it will be critical to (1) stay on schedule; (2) closely monitor operations with appropriate cost, performance, and scheduling metrics; and (3) have appropriate plans and personnel in place to quickly address operational issues.

Importantly, I also want to stress, as we have in the past, that the Census Bureau cannot conduct a successful enumeration on its own. Indeed, the decennial census is a shared national undertaking, and it is now up to the general public to fulfill its civic responsibility to mail back the census

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questionnaires in a timely fashion.<sup>5</sup> According to the Bureau, each percentage point increase in the mail response rate saves taxpayers around \$85 million and yields more accurate data compared to information collected by enumerators from nonrespondents. The bottom line, Mr. Chairman, is that in a few weeks, a key determinant of the success of the 2010 Census will be, both literally and figuratively, in the hands of the American people.

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## Background

As you know, Mr. Chairman, the decennial census is a constitutionally mandated enterprise critical to our nation. Census data are used to apportion seats and redraw congressional districts, and to help allocate hundreds of billions of dollars in federal aid to state and local governments each year.

In developing the 2010 Census, a long-standing challenge for the Bureau has been the reliability of its IT systems. For example, in March 2009, we reported that the Bureau needed to develop a master list of interfaces between systems; set priorities for the testing of interfaces based on criticality; and develop testing plans and schedules.<sup>6</sup> In the months that followed, while the Bureau strengthened its management and oversight of its IT systems, additional work was needed under very tight time frames.

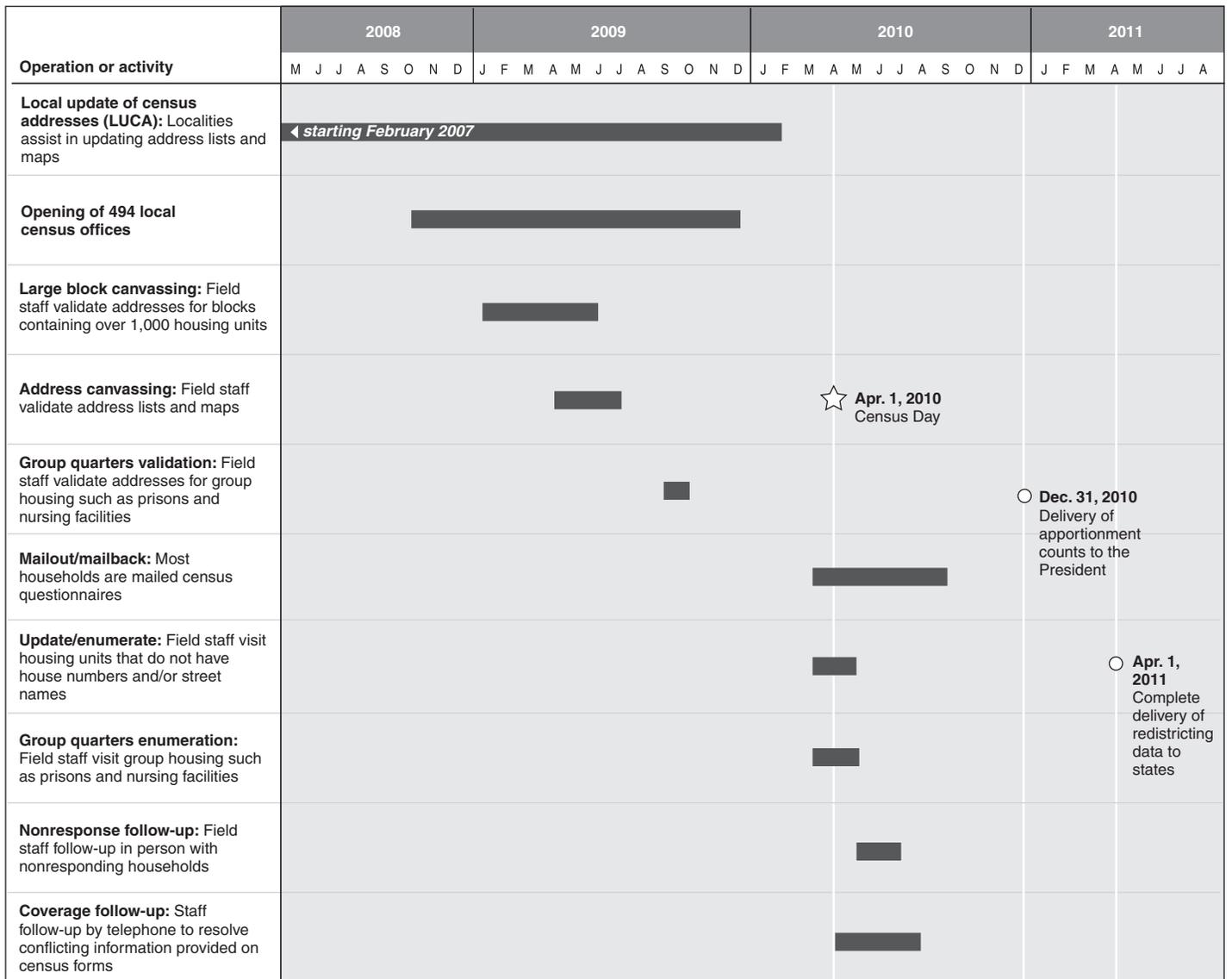
More generally, now that the census has moved to the operational phase, it will be important for the Bureau to stay on schedule. The enumeration has several immutable deadlines, and an elaborate chain of interrelated pre- and post-Census Day activities are predicated upon those dates. Specifically, the Department of Commerce—the Bureau’s parent agency—is legally required to (1) conduct the census on April 1 of the decennial year, (2) report the state population counts to the President for purposes of congressional apportionment by December 31 of the decennial year, and (3) send population tabulations to the states for purposes of redistricting no later than 1 year after the April 1 census date. To meet these reporting requirements, census activities need to take place at specific times and in the proper sequence. A time line of key census operations is shown in figure 1.

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<sup>5</sup>GAO-10-132T.

<sup>6</sup>GAO, *Information Technology: Census Bureau Testing of 2010 Decennial Systems Can Be Strengthened*, GAO-09-262 (Washington, D.C.: Mar. 5, 2009).

**Figure 1: Time Frames for Key Census Activities**



Source: GAO summary of U.S. Census Bureau information.

Because of these tight deadlines, as the enumeration progresses, the tolerance for any operational delays or changes becomes increasingly small. Consequently, as the enumeration progresses, it will be important for the Bureau to closely monitor key performance metrics to ensure that the various operations are on track and quickly address any glitches.

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Indeed, the interrelated nature of census activities raises the risk that a shortcoming in one operation could trigger other activities to spiral downward. For example, a lower than expected mail response rate would drive up the follow-up workload, which in turn would increase staffing needs and costs. Of course the reverse is also true, where a success in one operation could have a number of positive downstream impacts.

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## Key IT Systems Are Experiencing Significant Performance Issues

Although the Bureau has made progress in testing and deploying IT systems for the 2010 Census, significant performance issues have been identified with both the workflow management system—PBOCS—as well as with the Decennial Applicant Personnel and Payroll System (DAPPS), the automated system the Bureau is using to handle the payroll of the more than 1 million temporary employees that are to work on the census.

In March 2009, we reported that the Bureau had a number of problems related to testing of key IT systems, including weaknesses in test plans and schedules, and a lack of executive-level oversight and guidance.<sup>7</sup> In that report, we recommended that the Bureau complete key system testing activities and improve testing oversight and guidance. The Bureau agreed with our recommendations. Since that time, we have been monitoring and tracking the Bureau's progress and, last October, we testified that the Bureau had taken steps to improve its management and testing of key IT system for the 2010 Census, such as naming a Decennial Census Testing Officer whose primary responsibilities include monitoring testing for decennial census activities.<sup>8</sup> The Bureau had also completed limited end-to-end testing<sup>9</sup> of PBOCS. The Bureau developed this workflow management system—which is designed to manage the work assignments and related maps for hundreds of thousands of enumerators—late in the decade when it moved from handheld computers, which it found unreliable, to a paper-based approach for some field operations. These operations include NRFU, when enumerators collect data through personal interviews from the tens of millions of households that fail to mail back a census questionnaire.

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<sup>7</sup>GAO-09-262.

<sup>8</sup>GAO-10-132T.

<sup>9</sup>End-to-end testing helps verify that a defined set of interrelated systems can function as intended in an operational environment.

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However, critical performance issues still need to be addressed and additional testing remains to be completed. For example, in December 2009, the Bureau completed two iterations of a key performance test, known as the Decennial Application Load Test. For the test, more than 8,000 field staff at about 400 local census offices performed a combination of manual and automated tests to assess the performance of key IT systems, including DAPPS and the first release of PBOCS. In the first test, DAPPS failed, and other key systems, including PBOCS, performed slowly. There were system communication errors as well.

Bureau officials stated that many of these issues were resolved during the second iteration of testing; however, others remain to be resolved and new issues were identified. For example, DAPPS performed slowly during the second iteration of testing. This issue must be resolved and retested. To the Bureau's credit, the performance test helped to identify significant issues before systems are needed for key field operations.

DAPPS program officials stated that the current version of the program has been deployed since October 2008 and has been processing payroll for a smaller number of temporary census employees (about 140,000). However, three major issues, involving system hardware, software, and the operating system, were identified as the likely causes of DAPPS system failure during the first load test. At least one of these issues was known to exist before the load test, but has not yet been resolved. The officials stated that they are taking several steps to resolve these issues, including upgrading and reconfiguring the system, and deploying additional hardware to support the system. An additional load test is also planned for DAPPS. The officials stated that they plan to have all issues resolved by the end of February, and acknowledge that it is critical that DAPPS be fully functional under a heavy load by mid-March, when the Bureau will begin hiring a large number of temporary employees (about 600,000) for NRFU who will need to be paid using the system.

In addition to issues mentioned with DAPPS, the December load test was not intended to be a comprehensive test of PBOCS, which has multiple releases at varying stages of development and testing. The first release of this system was deployed for early census field operations in January 2010, but it has known defects, such as limited functionality, slow performance, and problems generating certain progress and performance reports. In addition, the development and testing of two other releases is needed before the system is ready for other key field operations, such as the enumeration of residents in group quarters, scheduled to begin in March 2010.

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In recognition of the serious implications that a failed PBOCS would have for conducting of the 2010 Census, the Bureau has taken additional steps to mitigate the outstanding risks. For example, in June 2009, the Bureau chartered an independent assessment team, chaired by the Bureau's Chief Information Officer, to monitor and report on, among other things, the system's development and testing progress. These efforts are encouraging. However, the aggressive development and testing schedule presents various challenges. For example, two of the three releases of PBOCS were not included in the recent performance test because development of these releases had not yet been completed. This increases the risk that performance issues, such as those described above, may reoccur in future releases of the system and the Bureau's ability to resolve and retest these issues before the system is needed for key field operations will be limited.

In addition to DAPPS and PBOCS, the Bureau will rely on six other key automated systems to conduct the census. Progress has been made with respect to system testing. However, much system testing remains to be completed in the next few months, as shown in the following table.

**Table 1: Status of key system testing activities (as of January 2010)**

<b>Census system</b>	<b>Description</b>	<b>Status of testing activities</b>
Headquarters Processing – Universe Control and Management	Organizes address files into enumeration “universes,” which serve as the basis for enumeration operations and response data collection.	System development is divided into three phases. According to the Bureau, the first of three phases was deployed for initial operations in July 2009, which was completed in January 2010. Limited functionality of the second release was deployed in December 2009 and deployment of the remaining functionality is planned to be completed by September 2010.
Headquarters Processing – Response Processing System	Receives response data and edits the data to help eliminate duplicate responses by, for example, identifying people who have been enumerated more than once.	System development is divided into six components. Testing of the first of six components, intended to receive response data, began in August 2009. The program plans to complete testing of the five remaining components by December 2010. The first component of this system is needed for operations in February 2010.
Master Address File/Topologically Integrated Geographic Encoding and Referencing system	Provides geographic information and support to aid the Bureau in establishing where to count the U.S. population for the 2010 Census.	The system has been functioning in a limited capacity since September 2007; however, additional testing is needed for 2010 Operations. As of January 2010, all nine test plans for 2010 Operations have been finalized. Testing activities for one test plan have been completed; seven are under way; and one has not yet started. Geographic information needed to support key operations, such as NRFU, is planned to be delivered by April 2010.
Field Data Collection Automation (FDCA)	Provides automation support for field data collection operations. It includes the development of handheld computers for the address canvassing operation and the systems, equipment, and infrastructure that field staff will use to collect data.	Development and testing for FDCA has been completed. The FDCA applications related to address canvassing were deployed and the operation completed. Map printing software has been deployed to field offices. The FDCA contractor is supporting map printing activities.
Decennial Response Integration System	Collects and integrates census responses from all sources, including forms and telephone interviews.	Six increments of system development and testing have been completed; however, additional regression testing is needed. The program is also conducting additional interface testing and operational testing before the system is needed for operations in February 2010.
Data Access and Dissemination System II (DADS II)	Replaces legacy systems for tabulating and publicly disseminating data.	The system consists of two subsystems, each with three iterations of development and testing. For one subsystem, the program is testing the second of the three iterations. For the other subsystem, the program is currently testing the third iteration. DADS II is needed for operations beginning in December 2010.

Source: GAO analysis of U.S. Census Bureau data.

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Given the importance of IT systems to the decennial census, it is critical that the Bureau ensure that DAPPS, PBOCS, and other key systems are thoroughly tested. The limited amount of time to resolve what are, in certain cases, significant performance issues creates a substantial challenge for the Bureau.

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## The Bureau Has Revised Its Cost Estimate for Nonresponse Follow-up, but Needs to Complete Additional Updates as Planned

In 2008, we reported that the Bureau had not carried out the necessary analyses to demonstrate that the then life-cycle cost estimate of about \$11.5 billion for the 2010 Census was credible, and we recommended that the Bureau better document and update the estimate, to which it generally agreed.<sup>10</sup> Since then, two early census field operations have experienced major differences between their estimated and actual costs. For address canvassing, where census workers verify address lists and maps, actual costs exceeded the Bureau's initial estimate of \$356 million by \$89 million, or 25 percent. In contrast, for group quarters validation, where census workers verify addresses of group housing, actual costs were below the Bureau's estimate of \$71 million by about \$29 million, or 41 percent.<sup>11</sup>

Because of cost overruns during address canvassing, as well as concerns over the increased number of vacant units due to foreclosures, the Bureau has implemented our recommendation and reexamined the assumptions and other data used to support the cost estimate for NRFU, the most costly and labor-intensive of all census field operations. Earlier this month, the Bureau provided us with the results from that reexamination. Although we have not fully assessed the Bureau's analysis, our preliminary review shows that the Bureau now estimates that NRFU will cost about \$2.3 billion, a decrease of around \$400 million (15 percent) from its

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<sup>10</sup>See GAO, *2010 Census: Census Bureau Should Take Action to Improve the Credibility and Accuracy of Its Cost Estimate for the Decennial Census*, [GAO-08-554](#) (Washington, D.C.: June 16, 2008). In [GAO-08-554](#), we reported that the Bureau had not performed sensitivity analysis (examining each cost estimate assumption or factor independently, while holding all others constant), or uncertainty analysis (capturing the cumulative effect of risks, which provides a level of confidence for the estimate), and had not obtained an independent cost estimate. As noted in GAO's *Cost Estimating and Assessment Guide* ([GAO-09-3SP](#)), these steps provide a basis for determining whether a cost estimate is credible and are key best practices for cost estimation. See GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, [GAO-09-3SP](#) (Washington, D.C.: March 2009).

<sup>11</sup>In a preliminary assessment, the Bureau attributed cost overruns in address canvassing to increased initial workload, underestimated quality control workload, and training additional staff. The Bureau has not yet provided a cost assessment for group quarters validation.

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previous estimate of about \$2.7 billion. In updating the estimate, the Bureau considered a number of cost drivers. For example, the Bureau reviewed 1) field work assumptions—such as miles driven per case, pay rates, hours worked per week, and attrition—which the Bureau updated based on actual Census 2000 data, national and field tests, and address canvassing results; 2) factors affecting response rate and hence NRFU workload—such as the national trend in survey response, use of a bilingual questionnaire and replacement mailing for 2010, and the vacancy rate; and 3) enumerator productivity rates, based on regional managers' concerns over enumerating vacant units and non-English-speaking households. Further, in its analysis, the Bureau cited holding pay rates for NRFU temporary staff at 2009 levels, rather than the proposed 2010 pay rate, as one of the reasons for the reduction in NRFU costs.

According to the Bureau, two cost drivers—workload, based on the mail response rate, and productivity—are uncertain and could have a significant effect on the ultimate cost of NRFU. For example, the Bureau states that if the response rate decreases by 2 percentage points due to extreme circumstances, such as an immigration backlash, costs could increase by \$170 million. Likewise, if PBOCS continues to experience performance problems causing 2 weeks of lost productivity, the Bureau says it would need to hire and train more staff to complete NRFU in order to deliver the apportionment counts to the President by December 31, 2010, which, according to the Bureau, could increase costs by about \$138 million.

As we previously recommended, revising cost estimates with updated data is an important best practice for cost estimation. However, the Bureau's analyses of cost are not complete. While the Bureau has finalized its reexamination of NRFU cost, it continues to update the costs for other NRFU-related operations. These operations include the NRFU Reinterview, a quality assurance procedure designed to ensure that field procedures were followed and to identify census workers who intentionally or unintentionally produced data errors. It also includes the Vacancy/Delete Check operation, which is a follow-up to NRFU and is designed to verify the status of addresses classified as vacant, or addresses determined to be nonexistent (deletes) during NRFU, as well as cases added since the NRFU workload was initially identified. According to the Bureau, emerging information about the Vacancy/Delete Check operation suggest that the workload may be much higher than originally expected and could increase costs from \$345 million to \$482 million—almost \$137 million, or 40 percent. The Bureau said it will update the cost estimates of both these operations once additional information becomes available.

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A reliable cost estimate is critical to the success of any program because it provides the basis for informed investment decision making, realistic budget formulation, meaningful progress measurement, proactive course correction when warranted, and accountability for results.

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## The Implementation of Key Enumeration Activities Continues to Make Progress

In contrast to the IT systems, the rollout of other activities is going more smoothly. Indeed, the Bureau has taken steps to address certain previously identified problems, and its plans to improve the count of hard-to-enumerate groups are generally more robust compared to similar activities during the 2000 Census. Those activities include procedures for fingerprinting temporary employees; the Bureau's efforts to count people residing in nursing homes, dormitories, and other group living arrangements known as "group quarters"; the rollout of key marketing efforts aimed at improving the participation of hard-to-count populations; the Bureau's plans for a mailing a second, follow-up questionnaire and the removal of late mail returns; and the Bureau's plans to secure a complete count in the hurricane-affected areas along the Gulf Coast.

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## Bureau Has Taken Steps to Reduce the Number of Unclassifiable Fingerprints of Temporary Workers

The Bureau plans to fingerprint its temporary workforce for the first time in the 2010 Census to better conduct background security checks on its workforce of hundreds of thousands of temporary census workers.<sup>12</sup> However, the Bureau found that during address canvassing, an operation that the Bureau conducted in the summer of 2009 to verify every address in the country, 22 percent of the workers (approximately 35,700 people) hired for the operation had unclassifiable prints. The Federal Bureau of Investigation (FBI) determined that the issue was generally the result of errors that occurred when the prints were first taken at the local census offices.

To fingerprint workers during address canvassing, Bureau employees captured two sets of fingerprints on ink fingerprint cards from each temporary worker by the end of the workers' first day of training. The cards were then sent to the Bureau's National Processing Center in Jeffersonville, Indiana, to be scanned and electronically submitted to the FBI. If the first set of prints were unclassifiable, then the National Processing Center sent the FBI the second set of prints. If the results

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<sup>12</sup>For the 2000 Census, temporary employees were subject only to a background check on their names.

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showed a criminal record that made an employee unsuitable for employment, the Bureau either terminated the person immediately or placed the individual in a nonworking status until the matter was resolved.

To help ensure the success of fingerprinting operations for NRFU—which will peak at approximately 484,000 fingerprint submissions over a 3-day period from April 28-30, 2010—the Bureau will follow similar procedures, but has taken additional steps to improve fingerprint image quality. They include refining training manuals used to instruct local census office staff on how to take fingerprints, scheduling fingerprint training closer to when the prints are captured, and increasing the length of training. Further, the Bureau plans on using an oil-free lotion during fingerprinting that is believed to raise the ridges on fingertips to improve the legibility of the prints.

The Bureau has also revised its procedures for refingerprinting employees when both fingerprint cards cannot be read. During address canvassing, if both sets of fingerprints were unclassifiable, workers were allowed to continue working if their name background check was acceptable, and would be refingerprinted only if they were rehired for future operations. Under the revised policy, the Bureau plans to digitally capture a third and fourth set of fingerprints if the FBI cannot classify the first two sets. The Bureau plans to purchase approximately 1,017 digital fingerprint scanners. Each local census office will receive a minimum of one machine, with the remaining scanners to be distributed at the discretion of the Regional Director. The Bureau estimates that this additional step could reduce the percentage of workers with unclassifiable prints from 22 percent down to approximately 10 to 12 percent, or an estimated 60,000 to 72,000 temporary workers for NRFU. We did not receive a response from the Bureau whether it will allow those workers with unclassifiable prints to continue to work on NRFU operations.

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### Operational Changes Made for 2010 Position the Bureau to More Accurately Classify and Identify Group Quarters

During the decennial census, the Bureau conducts separate operations to count people residing in group quarters facilities. The Bureau defines group quarters as “places where people live or stay in a group living arrangement that are owned or managed by an entity or organization providing housing and/or services for the residents,” such as boarding schools, correctional facilities, health care facilities, military quarters, and college and university housing. According to Bureau estimates, more than 8.1 million people, or approximately 3 percent of the population, live in group quarter facilities.

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During the 2000 Census, the Bureau did not always accurately enumerate group quarters because, among other reasons, group quarters were sometimes hard to distinguish from conventional housing units (see fig. 2), or the address of an administrative building was in a separate geographic location than where the people actually lived, as was sometimes the case with prison complexes. For example, in prior work,<sup>13</sup> we found that the population count of Cameron, Missouri, was off by nearly 1,500 people because the population of the state's Crossroads Correctional Center was inadvertently omitted from the town's headcount. Similarly, North Carolina's population count was reduced by 2,828 people, largely because the Bureau had to delete duplicate data on almost 2,700 students in 26 dormitories (see fig. 3) at the University of North Carolina at Chapel Hill (UNC).<sup>14</sup> Precision is critical because, in some cases, small differences in population totals could potentially impact apportionment and/or redistricting decisions.

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<sup>13</sup>GAO, *Data Quality: Improvements to Count Correction Efforts Could Produce More Accurate Census Data*, [GAO-05-463](#) (Washington, D.C.: June 20, 2005).

<sup>14</sup>The students were counted twice because, during the 2000 Census, the Bureau inadvertently included the UNC dormitories on both the group quarters and conventional housing unit address lists (they should have only been on the group quarters list). As a result, two questionnaires were delivered to the dormitories—one distributed by the university, and one sent to them through the mail.

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**Figure 2: Group Homes Could Resemble Conventional Housing**



Source: GAO.

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**Figure 3: Students in 26 UNC Dormitories Were Counted Twice in the Census**



Source: GAO.

The Bureau developed and tested new procedures to address the difficulties it had in identifying and counting this population during the 2000 Census. For example, the Bureau moved from manual to GPS-generated mapspots, which should reduce the chance of human error and group quarters populations being counted in the wrong jurisdiction; moved from a telephone interview to a field verification approach, which should increase accuracy; and moved to a single address list, which should reduce the chance of double counting. In addition, following the 2004 Census Test, we recommended that the Bureau revisit group quarter procedures to ensure that this population was properly located and counted.<sup>15</sup> The Bureau implemented our recommendation and revised its group quarters procedures to clearly instruct census workers to properly correct and delete addresses. Further, to better ensure a more accurate group quarters count, the Bureau employed a three-prong effort consisting of those operations shown in table 2.

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<sup>15</sup>GAO, *2010 Census: Basic Design Has Potential, but Remaining Challenges Need Prompt Resolution*, GAO-05-9 (Washington, D.C.: Jan. 12, 2005).

**Table 2: Group Quarters Validation is the First Operation in a Three-Prong Effort to Accurately Enumerate Group Quarters**

Operation name	Dates	Purpose
Group Quarters Validation	9/28/09 to 10/23/09	<ul style="list-style-type: none"><li>Determine the status of the address as either a group quarter, housing unit, transitory location, nonresidential, nonexistent, duplicate, or vacant.</li><li>Determine the type of facility (i.e., correctional facility, health care facility, military quarters, dormitory, etc.) and confirm group quarter's geographic location.</li><li>Verify group quarters name, address, contact name and phone number.</li></ul>
Group Quarters Advance Visit	2/1/10 to 3/19/10	Confirm locations of group quarters and identify contact officials to facilitate actual enumeration.
Group Quarters Enumeration	3/30/10 to 5/14/10	Visit each group quarter to obtain a complete list of the names of the people living or staying at the group quarter and enumerate all people living or staying there.

Source: GAO analysis of U.S. Census Bureau information.

For the 2010 group quarters operations, the Bureau drew from a number of sources to build its list of group quarters addresses including data from the 2000 Census, address submissions provided by state and local governments, Internet-based research, and group quarters located during door-to-door address canvassing. During the first of the three group quarters operations (group quarters validation), approximately 25,000 temporary workers identified over 240,000 group quarters facilities from a workload of over 2 million potential group quarters in both the United States and Puerto Rico. The remaining approximately 1.76 million addresses were identified during group quarters validation as conventional housing units, transitory locations, nonresidential, nonexistent, or duplicates. All addresses that were verified as housing units or transitory locations were added to the appropriate address extracts for subsequent enumeration operations. In addition, over 7,000 addresses from the group quarters validation workload could not be properly processed in the Bureau's database because they were returned with insufficient information. However, a contingency plan was implemented to ensure these locations were included in the census.

The changes made to group quarters operations appear promising, and the Bureau plans to evaluate coverage of the group quarters population. However, the Bureau will not evaluate each of the three group quarters operation's effectiveness, cost, or value added. Such evaluations could be useful in improving the operations, identifying possibly duplicative operations, and identifying potential cost savings for 2020. For example, given the large number of non-group quarters included in the workload for group quarters validation (about 88 percent), the Bureau may want to

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consider ways to begin the operation with a more concise initial workload. Additionally, in both group quarters validation and group quarters advance visit operations, census workers personally visit group quarters, verify the facility contact information, provide confidentiality information, and collect occupancy numbers. Because these activities appear to be duplicative, the Bureau may want to reexamine the need to conduct both operations.

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### The Bureau's Communications Campaign Is Aimed at Hard-to-count Groups

A complete and accurate census is becoming an increasingly daunting task, in part because the nation's population is growing larger, more diverse, and more reluctant to participate. To overcome these challenges, the Bureau has developed the Integrated Communications Campaign aimed at, among other things, improving the mail response rate and reducing the differential undercount.<sup>16</sup> An undercount occurs when the census misses a person who should have been included; an overcount occurs when an individual is counted in error. What makes these errors particularly problematic is their differential impact on various subgroups. Minorities, renters, and children, for example, are more likely to be undercounted by the census while more affluent groups, such as people with vacation homes, are more likely to be enumerated more than once. As shown in table 3, the 2010 communications campaign consists of four components: the partnership program, paid advertising, public relations, and an educational program called Census in Schools.

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<sup>16</sup>Differential undercount describes subpopulations that are undercounted at a different rate than the total population.

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**Table 3: 2010 Census Communications Campaign Components**

Component	Description
Partnership program	Engages key government and community organizations and gains their commitment to support the census, focusing resources on hard-to-count communities. Among other contributions, partners help recruit census workers, help locate space for Questionnaire Assistance Centers and for testing census job applicants, sponsor community events to promote census participation, and motivate individuals to complete their census forms.
Paid advertising	Uses numerous paid media sources, such as TV, radio, the Internet, and magazines to encourage census participation, particularly by hard-to-count populations, such as minorities, renters, and linguistically isolated populations.
Public relations	Engages audiences via media activities to create credible, memorable messages.
Census in Schools	Provides schools with lesson plans and teaching materials to support existing curricula so that students can get the message home to parents and guardians that answering the census is important and confidential.

Source: U.S. Census Bureau.

The 2010 communications campaign's initial budget of \$410 million was increased by \$220 million in additional funds appropriated by the American Recovery and Reinvestment Act of 2009<sup>17</sup> (Recovery Act).<sup>18</sup> As a result, the Bureau was able to greatly expand its communications campaign activities. For example, the Bureau hired about 3,000 partnership staff, over 2,000 more than originally planned, and increased its paid advertising purchases targeted to specific ethnic or language audiences by more than \$33 million (85 percent) over its initial plan of about \$39 million. The increased funding should enhance the Bureau's capacity to reach out to hard-to-count communities. In all, the Bureau plans to spend about \$72 million on paid advertising targeted to specific ethnic or language audiences, which is about \$11 million more than the almost \$61 million the Bureau plans to spend targeting the general population.

However, even with the additional Recovery Act funds, the Bureau plans to spend less for some components of the 2010 paid media buys than it did for 2000, when compared in constant 2010 dollars. For example, although

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<sup>17</sup>Pub. L. No. 111-5, div. A, tit. II, 123 Stat. 115, 127; H.R. Conf. Rep. No. 116-16 at 417 (2009).

<sup>18</sup>In the conference report accompanying the Act, the conferees stated that "of the amounts provided, up to \$250,000,000 shall be for partnership and outreach efforts to minority communities and hard-to-reach populations." According to the Bureau, it plans to use \$220 million for expanding the communications campaign and \$30 million for expanding its coverage follow-up operation, where census workers follow up to resolve conflicting information provided on census forms.

the total budget for the 2010 paid advertising is \$253 million, which is about \$12 million (5 percent) more than 2000, the Bureau plans to spend about \$133 million of it on the total advertising buy (excluding production, labor, and other management costs), which is about \$27 million (17 percent) less compared to the about \$160 million spent in 2000. Table 4 shows the Bureau's 2010 budget for paid media buys by target audience compared to what was spent in 2000.

**Table 4: Paid Advertising Buys by Target Audience, 2000 vs. 2010**

<b>Component</b>	<b>2000 Census (2000 actual expenditures in 2010 constant dollars)</b>	<b>2010 Census (budgeted)</b>
Total buy	\$160,406,244	\$133,003,094
Mass audience	84,441,528	60,811,800
Ethnic/Language audience	75,964,716	72,191,294
Hispanic	27,535,788	25,496,100
Black (including African and Caribbean)	24,816,618	22,978,350
Asian	14,603,328	13,521,600
Native Hawaiian and Pacific Islanders	214,326	1,100,000
American Indian/Alaska Native	4,088,232	3,785,400
Emerging audiences <sup>a</sup>	2,198,664	2,035,800
Puerto Rico	1,892,484	2,400,000
Island areas	615,276	0
New legacy languages <sup>b</sup>	Not applicable	874,044

Source: GAO analysis of U.S. Census Bureau information.

Notes: <sup>a</sup>Emerging audiences includes Polish, Russian, and Arabic Speaking.

<sup>b</sup>New legacy languages includes Portuguese, German, Italian, Greek, French, and Yiddish.

Decreased spending on paid advertising may seem like a step in the wrong direction for promoting census participation. However, by better targeting paid advertising buys the Bureau expects to reach those who have historically been the hardest to count. For example, the Bureau based its decisions on how to allocate spending across different ethnic and language audiences based on a variety of factors, such as historical response data for an area, prevalence of hard-to-count households in a market, population size, and availability of in-market media. The Bureau also received input from staff in census regional offices, as well as from an independent 2010 Census advisory group called the Race and Ethnic Advisory Committee. Further, the Bureau targeted the paid advertising messages based on market and attitudinal research. For example, the

Bureau’s attitudinal research identified five mindsets people have about the census, ranging from what Bureau research identified as “leading edge”—those who are highly likely to respond—to the “cynical fifth” who are less likely to participate because they doubt that the census provides tangible benefits. The Bureau used this information to develop messages to motivate each cohort to participate in the census. To target the cynical fifth, for example, the Bureau developed advertising that focus on the message that the census is important to their community.

In addition, as shown in table 5, the Bureau has made other noteworthy changes to 2010 paid advertising and partnership program activities, which are aimed at expanding outreach to hard-to-count groups and better monitoring campaign effectiveness.

**Table 5: Key Differences Between 2000 and 2010 Paid Advertising and Partnership Program Activities**

<b>Paid advertising and partnership program activities</b>	<b>2000 Census</b>	<b>2010 Census</b>
Campaign development and targeting	Targeted advertisements by segmenting the population into three groups of census participation likelihood, based on measures of civic participation in an area, such as school board involvement.	Advertisements targeted based in part on actual Census 2000 participation rates and attitudinal research.
Implementation	Hired about 600 partnership staff.	Hired about 3,000 partnership staff.
	Partnership staff spoke 35 languages.	Partnership staff speak 124 languages.
	No rapid response/media contingency fund for unexpected events.	Established a \$7.4 million rapid response/media contingency fund to address unexpected events such as lower response rates in certain areas.
Monitoring	No real-time metrics to measure effectiveness of paid media and limited real-time tracking of partnership activities.	Established metrics to measure effectiveness of paid media and partnership program, such as real-time tracking of attitudes through national polling and value added contributions of partner organizations.
	Partnership tracking system cumbersome and not user-friendly.	Revamped partnership tracking system by, among other things, allowing for up to date monitoring of partner activity.

Source: GAO analysis of U.S. Census Bureau information.

In summary, our analysis suggests that the paid advertising and partnership activities, along with the other components of the Bureau’s communications campaign, are generally more robust than the Bureau’s promotional efforts during the 2000 Census in that the entire effort is more comprehensive, and activities appear to be more data-driven and targeted. Moving forward, the key challenge facing the campaign is that it must not

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only raise awareness of the census, it must also influence behavior, a far more difficult task.

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## Second Census Questionnaire Has Potential to Increase Response Rate, but Will Be Available in English Only

The Bureau's strategy to mail a second, or replacement, census questionnaire will be implemented for the first time in 2010 and is an important step towards improving response and decreasing costs. According to Bureau studies, mailing a replacement questionnaire increases overall response from households that do not respond to the initial questionnaire, which could generate significant cost savings by eliminating the need for census workers to obtain those responses via personal visits.

The Bureau plans to mail approximately 30 million replacement questionnaires to all households in census tracts that had the lowest response rates in Census 2000 (known as blanket replacement). Also, the Bureau plans to mail approximately 12 million replacement questionnaires to nonresponding households in other census tracts that had low-to-moderate response rates in 2000 (known as targeted replacement). In order to enhance the effectiveness of the replacement mailing, the Bureau will include a cover letter to distinguish the initial and replacement questionnaires and thus avoid receiving duplicate responses. However, replacement questionnaires will be provided in English-only, regardless of whether the household will receive a bilingual English/Spanish questionnaire in the initial mailing.<sup>19</sup> According to a Bureau official, mailing a bilingual replacement questionnaire was logistically impractical for 2010, given the limitations of the printing process and the five-day time frame for the targeted replacement mailing. Thus, in looking forward to the 2020 Census, it will be important for the Bureau to evaluate potential changes to the mailing strategy that would include, at a minimum, sending bilingual replacement questionnaires to those households that initially received a bilingual questionnaire.

The Bureau plans to mail replacement questionnaires between April 1 and April 10 and develop an initial list of nonresponding households on April 7 (see table 6 for key dates in this process). Because the Bureau will likely receive replacement questionnaires after April 7, it must be able to effectively remove these late mail returns from the list of nonresponding

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<sup>19</sup>The Bureau has identified about 13 million households that will receive a bilingual questionnaire for the 2010 Census.

households, or NRFU workload. Removing late mail returns is important because it prevents enumerators from visiting households that already returned their census forms, thus reducing NRFU workload and cost, as well as respondent burden. As shown in table 6, the Bureau plans to remove late mail returns from the NRFU workload four times using one automated and three manual processes. The Bureau has some experience with the manual process because some local census offices did some testing of late mail removals during the 2000 Census. In addition, they have developed quality assurance procedures for the manual removal process. Moving forward, it will be important for the Bureau to ensure that local census offices follow these procedures so that households are not unnecessarily visited by an enumerator or inadvertently removed from the follow-up workload and missed in the census count.

**Table 6: Replacement Mailing and Late Mail Returns Removal Are on a Tight Schedule**

Activity	Date
Initial Census Questionnaires mailed	March 15-17, 2010
Census Day	April 1
Blanket replacement mailing questionnaires mailed	April 1-3, 2010
Targeted replacement mail questionnaires mailed	April 6-10, 2010
NRFU workload created	April 7, 2010
Automated removal of late mail returns	April 21, 2010
First manual removal of late mail returns (even numbered assignment areas)	April 24-25, 2010
Second manual removal of late mail returns (odd numbered assignment areas)	May 1-2, 2010
Third manual removal of late mail returns	June 2010 <sup>a</sup>

Source: GAO analysis of U.S. Census Bureau data.

<sup>a</sup>The third clerical removal occurs when 95 percent of the work in a local census office is completed and the remaining assignments are brought in to redistribute.

## The Bureau Has Tailored Operations to Enumerate Hurricane-Affected Areas

The scale of the destruction in areas affected by hurricanes Katrina, Rita, and Ike has made getting a complete and accurate population count in parts of Mississippi, Louisiana, and Texas especially challenging (see fig. 4). Hurricane Katrina alone destroyed or made uninhabitable an estimated 300,000 homes. As we have previously testified,<sup>20</sup> the Bureau, partly in

<sup>20</sup>GAO, *2010 Census: Efforts to Build an Accurate Address List Are Making Progress, but Face Software and Other Challenges*, [GAO-10-140T](#) (Washington, D.C.: Oct. 21, 2009).

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response to recommendations made in our June 2007 report,<sup>21</sup> developed supplemental training materials for natural disaster areas to help census address listers, when developing the census address list, identify addresses where people are, or may be, living when census questionnaires are distributed. For example, the materials noted the various situations that address listers might encounter, such as people living in trailers, homes marked for demolition, converted buses and recreational vehicles, and nonresidential space such as storage areas above restaurants. The training material also described the clues that could alert address listers to the presence of nontraditional places where people are living and provided a script they should follow when interviewing residents on the possible presence of hidden housing units.

**Figure 4: Locating and Counting People Displaced by Storms Presents a Challenge Because Occupied Housing Units Could Be Hard to Identify**



Source: GAO.

To ensure a quality count in the hurricane-affected areas, the Bureau will hand-deliver an estimated 1.2 million census questionnaires in these areas through the Update Leave operation, where census workers update addresses and provide a mail-back census questionnaire to each living quarter in their assigned areas. The Bureau estimates that it will be delivering questionnaires starting March 1, 2010, to housing units that

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<sup>21</sup>GAO, *2010 Census: Census Bureau Has Improved the Local Update of Census Addresses Program, but Challenges Remain*, [GAO-07-736](#) (Washington, D.C.: June 14, 2007).

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appear inhabitable in much of southeast Louisiana, south Mississippi, and Texas, even if they do not appear on the Bureau's address list. Occupants will be asked to complete and return the questionnaire by mail. Census workers will also identify modifications for the Bureau's address list, including additions, deletions, corrections, and spotting duplicate information. By hand delivering questionnaires, the Bureau hopes to ensure that housing units that may have been missed will receive and return questionnaires, ultimately improving the accuracy of the count. Finally, the Bureau stated that it must count people where they are living on Census Day and emphasized that if a housing unit gets rebuilt and people move back before Census Day, then that is where those people will be counted. However, if they are living someplace else, then they should be counted where they are living on Census Day.

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## Concluding Observations

Mr. Chairman, with less than two months to go until Census Day, the Bureau's readiness for the headcount is mixed. On the one hand, with data collection already underway, the ability of key IT systems to function under full operational loads has not yet been demonstrated. The issues facing these systems need to be resolved, and additional testing must take place, with little time remaining. Likewise, questions remain regarding the ultimate cost of the 2010 Census, as the Bureau continues to analyze the cost of NRFU-related operations.

On the other hand, certain operations, such as the communications campaign and efforts to enumerate group quarters, generally appear to be on track and more robust compared to similar efforts for the 2000 Census, better positioning the Bureau for a complete and accurate headcount. In the coming weeks and months ahead, we will continue to monitor the Bureau's progress in addressing these issues, as well as the implementation of the census as a whole, on behalf of the Subcommittee.

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Mr. Chairman and members of this Subcommittee, this concludes my statement. I would be happy to respond to any questions that you might have at this time.

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## Contacts and Acknowledgments

If you have any questions on matters discussed in this statement, please contact Robert N. Goldenkoff at (202) 512-2757 or by e-mail at [goldenkoffr@gao.gov](mailto:goldenkoffr@gao.gov). Other key contributors to this testimony include Peter Beck, Steven Berke, Clayton Brisson, Virginia Chanley, Benjamin Crawford, Dewi Djunaidy, Vijay D'Souza, Jennifer Echard, Elizabeth Fan,

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*2010 Census: Census Bureau Continues to Make Progress in Mitigating Risks to a Successful Enumeration, but Still Faces Various Challenges.* [GAO-10-132T](#). Washington, D.C.: October 7, 2009.

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*2010 Census: Basic Design Has Potential, but Remaining Challenges  
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