Testimony of

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Top Management Challenges for the 2020 Census: 2010 Lessons Learned, Looking Ahead to 2020

Chairman Carper, Ranking Member Brown, and Members of the Subcommittee:

I appreciate the opportunity to testify today on lessons learned from the 2010 Census and to look ahead to 2020. Decennial operations were successfully completed in 2010, and Census is now preparing its assessment of decennial accuracy, to be issued next year. It is clear, however, that this Constitutionally-mandated function carried with it a high cost and a level of risk that should not be repeated.

As we look ahead, there can be no question that the next decennial must incorporate bold approaches in order to achieve cost containment while maintaining or improving accuracy in enumerating an ever-growing and increasingly hard-to-count population. The next census thus

calls for new design elements and meticulous planning and testing—along with unprecedented transparency on the part of the Census Bureau, including early and continuous engagement with key stakeholders.

My testimony today is informed by the extensive oversight we have provided over the last decade to both the planning of the decennial and its execution. Our 2010 decennial oversight program sent over 100 OIG staff to every state and the District of Columbia to observe temporary Census workers check address lists and maps and interview respondents in person and over the phone—and back to Census Bureau headquarters to track final Census count review operations. We spoke with numerous Census Bureau officials, met with regional managers, interviewed dozens of local Census office teams, surveyed hundreds of Census employees, and observed hundreds of temporary field workers. We provided feedback to stakeholders on headquarters activities and from the field—in reports, in testimony, and in real-time communication. Census was very responsive when addressing problems we identified in the field, taking immediate action to rectify issues most in need of attention.

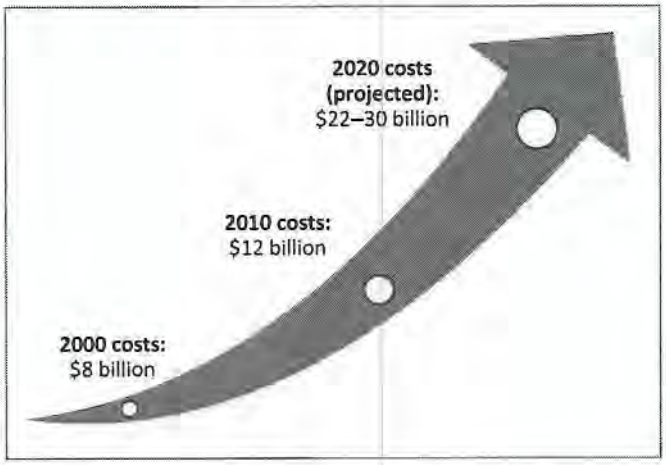
From this unique perspective, we saw Census Bureau successes as well as missed opportunities. Among its successes, the bureau followed through on its plans to transition the decennial long form to the American Community Survey (ACS), leaving the entire decennial survey with only 10 short-form questions designed for easier response. Census conducted a strategic communications campaign, which contributed to a noteworthy mailback participation rate of 74 percent nationally. And the 2009 address canvassing operation used handheld computers, representing the bureau's first foray into computer-automated field data collection for a decennial census.

However, plans for automated field data collection had to be greatly curtailed. Because of setbacks developing the handheld computer, this device was abandoned for nonresponse followup, which once again was paper-based. Problems implementing the handheld computer and related automation compelled late-stage preparations for a pen-and-paper nonresponse followup, which led to major cost escalation, disruption of workflow, and high operational risk. Because of these circumstances and cost estimation weaknesses, the lifecycle cost for the 2010 decennial—originally estimated at more than $11 billion—reached a total exceeding $12 billion.

The bureau is implementing an ambitious program to evaluate the quality of the 2010 decennial counts, as well as the design, methods, processes, and operations. Census should take full advantage of the results to build upon its success and overcome shortcomings as it plans and designs the 2020 Census.

Considering the current trends in population and likely cost growth, the Government Accountability Office (GAO) recently estimated that if 2010 were used as a model for the next census, the total price tag could rise to as high as $30 billion; the bureau's own estimate is $22 billion (see figure 1). By either estimate, such cost growth is simply unsustainable. Census must make fundamental changes to the design, implementation, and management of the decennial census to obtain a quality count for a reasonable cost. And in order to decide on, design, and implement these changes, this effort must start now. This decade's early years are critical for setting the course for how well the 2020 count is performed and how much it will ultimately cost.

Figure 1. **Increasing Lifecycle Costs for Decennial Census (2000–2020 Projected)**



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

Although the pace of decennial census change can at times seem dauntingly slow, Census has implemented continual improvements in recent decades in operations, coverage methods, and automation. Nevertheless, important initiatives designed to improve accuracy and contain costs—in areas such as use of administrative records, address file improvements, and automation of field data collection—have had only limited success, leading to recurring calls for change at the beginning of each new decade.

My testimony today covers 7 challenges that, in our view, the Census Bureau must effectively address for the 2020 Census. These challenges include changes to the decennial design aimed at cost containment, accuracy, and reduction in respondent burden. Importantly, they also call for fundamental improvements in decennial planning, management, testing, and transparency to help ensure that the missed opportunities of previous decades are not repeated in 2020.

Top management challenges for the 2020 Census are as follows:

1. **Revamp cost estimation and budget processes to increase accuracy, flexibility, and transparency;**
2. **Use the Internet and administrative records to contain costs and improve accuracy;**
3. **Implement a more effective decennial test program using the American Community Survey as a test bed;**
4. **Effectively automate field data collection;**
5. **Avoid massive end-of-decade field operation through continuous updating of address lists and maps;**
6. **Implement improved project planning and management techniques early in the decade; and**
7. **Establish a Census Bureau director position that spans administrations.**

The Census Bureau and Department of Commerce have the primary responsibility for successfully meeting most of these challenges. However, because fully addressing two of these challenges—the greatly expanded use of administrative records and the continuity of Census Bureau leadership—requires legislative action, the bureau and Department need to work closely with Congress to effect these changes.

Challenge 1: Revamp cost estimation and budget processes to increase accuracy, flexibility, and transparency

Throughout the decade, the Census Bureau remained uncertain of what the 2010 decennial's total cost would ultimately be. With a lifecycle cost estimate of more than $11 billion in 2003, the projection topped $14 billion in 2008—due, in part, to escalating IT costs and major flaws in the bureau's cost assumptions—and ultimately totaled in excess of $12 billion as decennial operations concluded in 2010. These fluctuating estimates made planning difficult and consumed an inordinate amount of time and attention on the part of the Department, Congress, Office of Management and Budget (OMB), and other stakeholders. This instability was symptomatic of weaknesses in the bureau's planning, cost estimation, and budgeting processes.

In 2008, GAO reported that the Census Bureau's 2010 lifecycle cost estimate lacked adequate documentation and was not comprehensive, accurate, or credible. The bureau's cost estimate did not adequately document changes in cost assumptions and did not include certain cost factors, such as the cost of fingerprinting temporary workers. For example, the 2009 address canvassing operation was over budget by $88 million because changes in productivity and workload were not taken into account. Without a well-grounded cost estimate, the bureau's annual budget requests were not reliable indicators of actual funding needs for planning and conducting the decennial. The bureau needs to develop a comprehensive cost estimate, including known cost factors and update the estimate throughout the decade to account for changes in decennial plans, assumptions, and incurred costs.

As part of its 2020 decennial planning efforts to date, the bureau has developed initial budget scenarios for four proposed enumeration options. Among these options are targeted address canvassing, administrative records use, and an Internet response option. For each of the options for which a budget scenario was developed, the bureau calculated a range of estimated costs, each with minimum and maximum amounts. The bureau plans to update these scenarios annually to improve future budget requests.

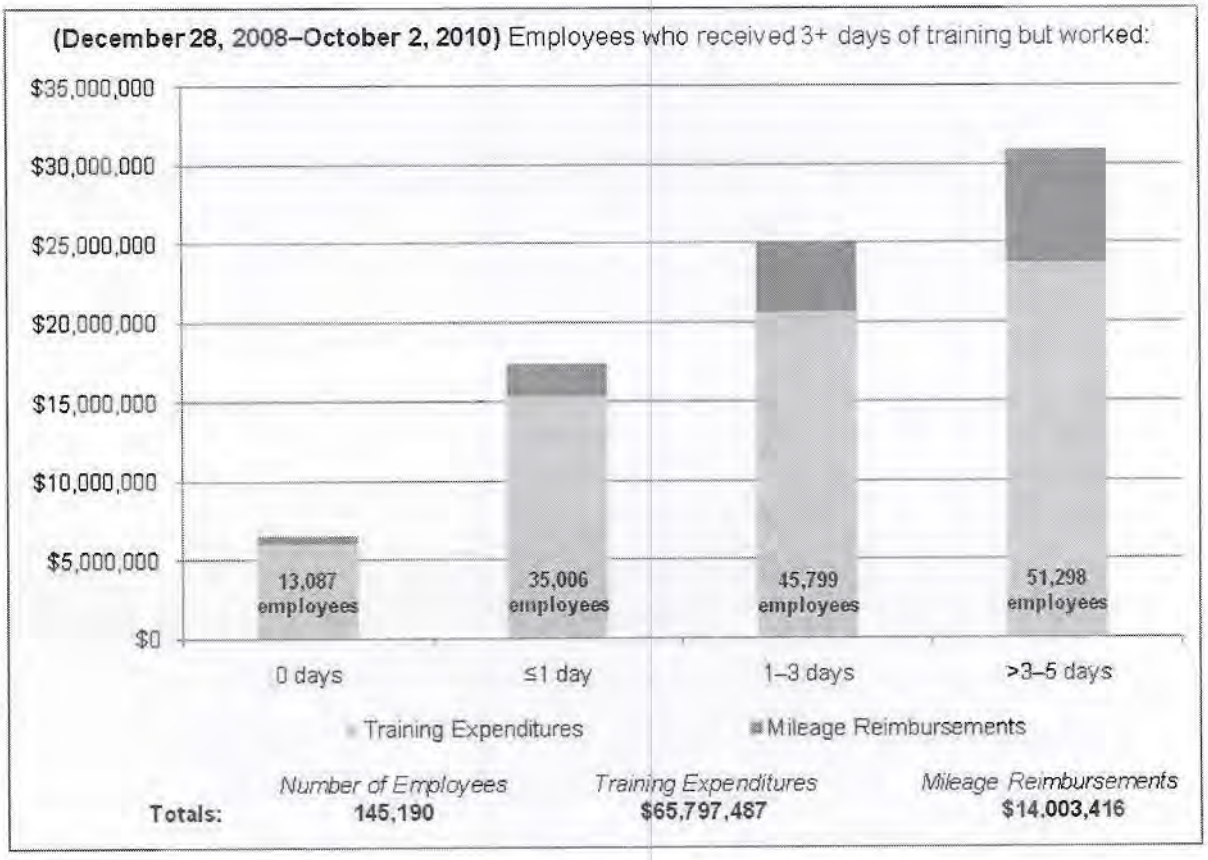
In addition to improving the quality of budget estimates, the Census Bureau also needs to identify areas for achieving cost savings. We have reported on the bureau's deliberate hiring and training of more temporary employees than necessary to offset turnover (a practice the bureau calls "frontloading"). However, frontloading frequently resulted in hiring many more enumerators than needed. For example, more than 140,000 temporary field employees received training (for at least 24 hours) but worked 40 or fewer nontraining production hours—costing the bureau in excess of $80 million in the process. Overhiring is to be expected with any large operation; nonetheless, the employees cost the bureau a great deal of money to train but provided little production (see figure 2).

We have recommended that the bureau re-evaluate its practice of frontloading; the bureau also needs to develop a better process to estimate workload and develop and revise cost assumptions.

In general, less labor-intensive field operations would reduce wage, training, and travel costs—and potentially reduce the number of field offices, along with space requirements and associated IT infrastructure.

In planning for the 2010 decennial, there was a lack of transparency as the bureau made changes to the originally-conceived census design. For example, in a June 2001 document presenting the potential lifecycle cost savings of the 2010 decennial design, the bureau estimated $155 million in savings from maintaining and updating the address list throughout the decade and using a targeted approach to address listing. This design would avoid an end-of-decade massive address listing operation. In March 2004, Census issued an internal planning memorandum stating that it had abandoned this approach. However, key stakeholders were not aware of this change.

Figure 2. **Cost of Training Employees Who Worked Only 0–5 Days**



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

Similarly, the Census Bureau did not maintain a transparent budget management process during the decennial census. The bureau shifted funds from activities running surpluses to cover those running deficits. However, it did not maintain traceability of these shifts, which prevented visibility into overruns and underruns in the various decennial activities and operations.

The bureau's 2020 decennial strategy of developing a set of budget scenarios and identifying key decision points is a positive approach to addressing the high degree of uncertainty that inevitably

exists early in the decennial planning cycle. Census should continue to make its planning transparent, and stakeholders must recognize that once a baseline design and cost estimate are developed, periodic modifications are inevitable. Design and budget changes will occur as a result of research and testing, as a better understanding of the implementation details emerges, and as new information and analysis become available. Thus, the bureau should obtain agreement as early as possible on the basic design components of the 2020 decennial, develop realistic and well-substantiated budget estimates, and work continually with the Department, OMB, and Congress to discuss design changes and make appropriate budget modifications as circumstances warrant.

Challenge 2: Use the Internet and administrative records to contain costs and improve accuracy

By not using the Internet and administrative records as key decennial data collection methods for 2010, the Census Bureau turned aside promising cost reductions and data quality improvements. Cost savings from Internet use could potentially have accrued from reducing paperwork and associated data capture costs—for the 2010 decennial, the bureau processed over 164 million paper forms—and less expensive field work, with a smaller temporary work force. Quality could likely have improved through easier access to foreign language Internet questionnaires and automated checks of census responses for consistency and completeness.

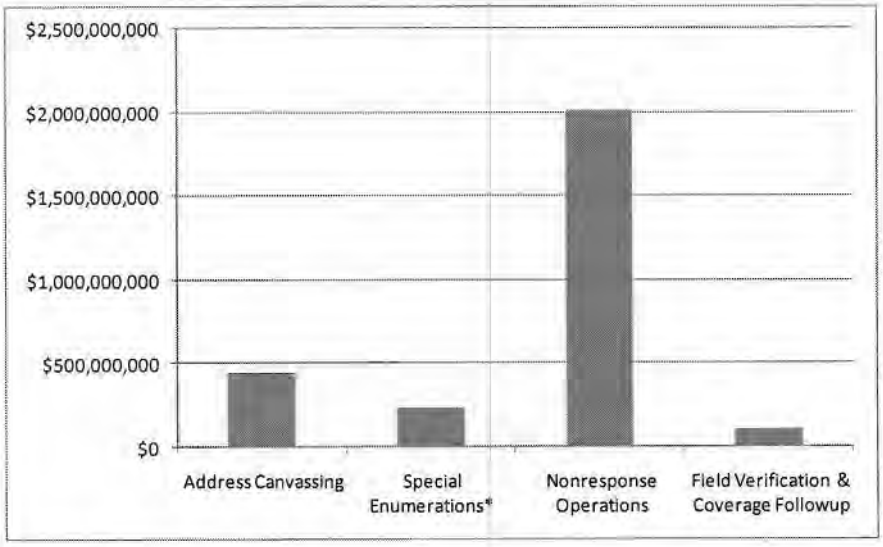
Administrative records—information collected for the administration of programs and provision of services by federal, state, and local governments and commercial entities—could have reduced the cost of the nonresponse operations (which, at $2 billion, were the most costly of the 2010 decennial; see figure 3) and helped the bureau avoid inaccurate enumerations. Greater use of administrative records also offered the potential to enhance the decennial census in a number of important areas, ranging from improving the master address file to finding households or individuals who may otherwise be missed.

Using the Internet to collect census data is not new. Statistical agencies in other countries, including Australia, Canada, and New Zealand have employed the Internet to collect census data, and the United Kingdom's plan for its 2011 census includes an Internet option.

An Internet response option would not be new to this country either. The Census Bureau offered an Internet response option in the 2000 decennial but did not publicize its availability. While it received only 65,000 unique electronic submissions, the Internet was deemed a viable response option. The bureau did not, however, implement this option for the 2010 decennial and consequently executed paper-intensive operations, which were cumbersome, error-prone, and expensive.

The bureau included an Internet response option in its Decennial Response Integration System contract, which was awarded in 2005. However, in 2006, the bureau eliminated use of the Internet for this purpose, maintaining that it did not increase response and citing IT security concerns and cost. In 2008, it again rejected an Internet option due to operational and security concerns. The bureau now intends to use the Internet in 2020 and is planning an Internet test as part of the American Community Survey (ACS). Given the pervasiveness of the Internet and the public's ever increasing reliance on it, we find it difficult to envision a 2020 Census without an Internet response option—albeit one that addresses IT security concerns.

Figure 3. **2010 Census Field Operations Costs**



* Includes enumerating people living in group homes and facilities, transitory locations such as campgrounds and marinas, and hand-delivering questionnaires or conducting doorstep interviews for special areas or populations. *Source:* OIG analysis of U.S. Census Bureau and public information

Administrative records would be useful to the decennial by providing, en masse, individually-submitted data on the receipt of services (such as housing assistance, social services, and health services) and for the payment or documentation of taxes. As various federal government agencies already expend resources to collect these data, directing Census to collect the same information could be considered duplicative effort and costs. The Census Bureau has conducted years of research on the use of these personal administrative records, developing a wealth of knowledge in the processing, matching, and deletion of duplicates for billions of records on an annual basis. Prior censuses and surveys also provide data that the bureau could reuse in support of the 2020 decennial census.

These personal administrative records contain information that individuals have already provided to the government such as their names, addresses, age, sex, race, and a wide variety of demographic, socioeconomic, and housing information. In fact, the Census Bureau has been using the U.S. Postal Services address file, which is an administrative record, to support key address list development activities. It has also employed a variety of administrative records to support its economic and demographic statistics programs.

However, extensive use of administrative records for the decennial has not come to fruition. The bureau abandoned a major part of its plan to use administrative records for the 2000 decennial by December 1996. For 2010, efforts to contain costs focused on automating field data collection; administrative records were only used for limited applications, including the location of group quarters and for the selection of cases for coverage followup operations.

For 2020, the use of administrative records, to contain costs and improve quality, must be explored. Recently, the National Research Council (NRC)—in line with research plans proposed

within the Census Bureau in the past and now being considered, at least in part, for 2020—urged the bureau to assess the use of administrative records in the 2020 decennial to:

- Improve the Census master address file by identifying missing addresses or entire localities that would benefit from a targeted address canvassing operation;
- Help validate decisions about inconsistent response data concerning particular individuals or households (e.g., a college student listed as living with his parents could be verified or edited using administrative records);
- Target specific field operations by focusing fieldwork on missing respondents or households for coverage improvement or to identify specific subpopulations that require special enumeration procedures;
- Evaluate census results (coverage measurement and evaluation);
- Provide an alternative to last-resort interviews as, after six unsuccessful interview attempts, people who are not household members—such as neighbors who may not be able to answer all of the questions and who may resent the burden of responding—are interviewed; and
- Provide input to methods currently used to fill in missing questionnaire information.

Further, the NRC saw the potential use of administrative records to help eliminate duplicate persons without committing the time, effort, and expense of a followup or field operation.

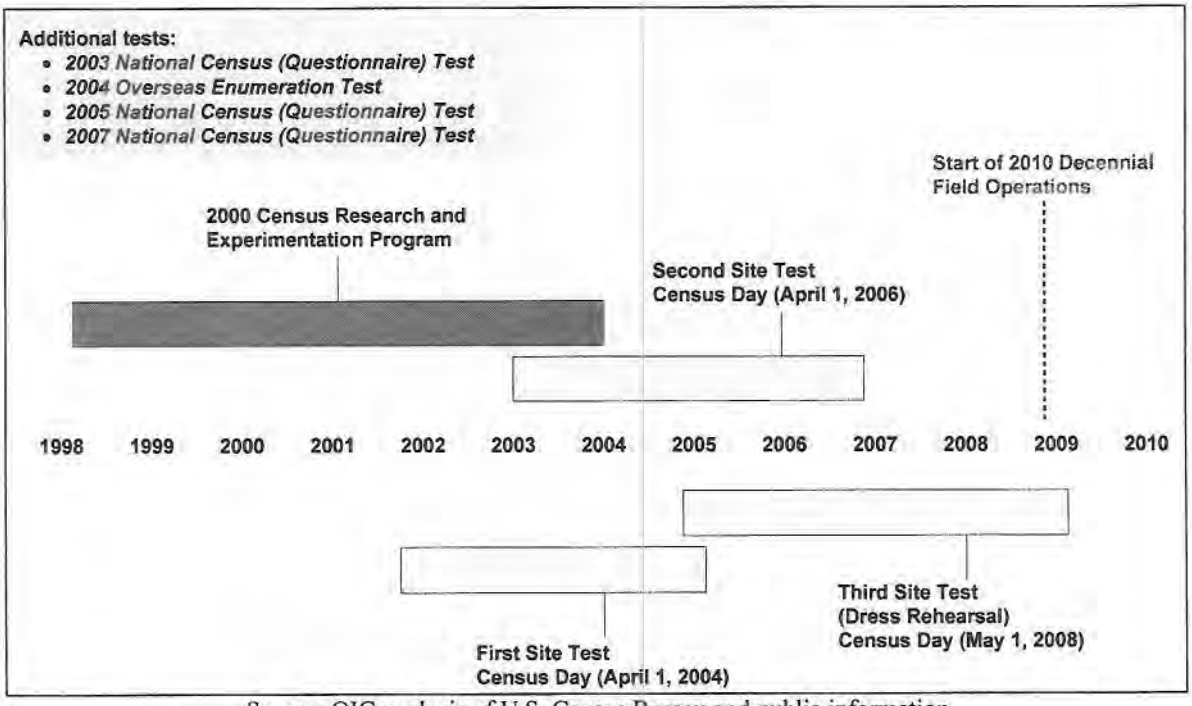
Popular sentiment about uses of personal information has been evolving with the advent of the Internet; however, the public's view concerning extensive use of administrative records for the decennial census is unknown. The constitutional mandate to conduct a census by definition impacts the privacy of every American—whether it is accomplished by in-person interviews, mail, the Internet or telephone, or through the use of existing records. Census must determine the public's willingness to accept the bureau's use of information collected and maintained by other government agencies—such as Social Security information, tax records, and food stamp registers—for decennial census purposes. The bureau should keep stakeholders—including the American public—apprised of its progress as it researches, plans, and refines the use of administrative records.

The Census Bureau recently restructured its organization in an effort to revitalize its Research and Methodology Directorate; of the five centers the bureau is establishing, the new Center for Administrative Records Research and Applications in particular is designed to help with related decennial innovations. However, the current statutory system does not require the level of interagency cooperation that would allow the Census Bureau to utilize administrative records to their full potential. The bureau possesses appropriate authority to request and use administrative records from all government sources under 13 U.S.C. § 6, and the Privacy Act permits other agencies to disclose their records to the bureau. In contrast, relevant legislation governing other federal agencies either does not compel those agencies to provide their records to the bureau in response to requests, or states that agencies are only required to provide certain information to the bureau, limiting the use of the requested information. Congressional guidance on the disclosure and permitted uses of administrative records for the decennial census would greatly benefit the Census Bureau.

Challenge 3: Implement a More Effective Decennial Test Program Using the American Community Survey as a Test Bed

For the 2010 decennial, the Census Bureau embarked on a decade of early decennial planning and testing, which included three major site tests in 2004, 2006, and 2008. In addition to these site tests, Census conducted an overseas enumeration test and three questionnaire content and design tests in 2003, 2005, and 2007 (see figure 4).

Figure 4. **Census Bureau Decennial Testing (2000–2010)**



Source: OIG analysis of U.S. Census Bureau and public information

Although the Census Bureau scheduled its site tests at 2-year intervals, each one transpired over 3 years of planning, implementation, and evaluation—resulting in overlap with prior or subsequent tests. This overlap made it difficult for the bureau to build on experiences and incorporate feedback from previous tests into the operational design it examined in the next test. Further, the results of the research and experimentation program from the 2000 Census were intended for use in the design and test of the 2010 Census; however, this program was not completed until 2004, after planning for the first site test was well underway.

This proved particularly problematic in the case of the handheld computers. The bureau tested internally-developed prototypes in both 2004 and 2006 and found serious problems in both tests. Because of the poor handheld performance and the tests' timing, the bureau did not effectively use these tests to help define requirements for the handheld computer contract.

Weaknesses in the decennial test program were also evident in the portion of the 2006 test that the bureau conducted on an American Indian reservation. The objective was to improve coverage of reservation populations, which are considered hard to count. The enumeration procedures

tested showed almost no effect on mitigating long-standing obstacles to producing an accurate count. Yet the bureau had no time to develop and test possible improvements.

The bureau had planned to conduct a large-scale operational test of major components, operations, and systems, beginning with address canvassing in 2007 followed by enumeration operations in 2008. This test was intended as a dress rehearsal of the 2010 decennial. However, for a number of reasons—including the late decision to revert to a paper-based nonresponse followup operation—Census cancelled the majority of the operations to be tested. As a result, actual decennial operations became the proving ground for enumerating some traditionally difficult groups, such as the homeless, residents of military bases, and group quarters residents.

The bureau is now planning to conduct a larger number of smaller tests—and more closely align its research with its testing program. Census also plans to utilize the American Community Survey (ACS), a mandatory nationwide survey that collects housing and population information throughout the decade (data used primarily for the distribution of federal funds but not for apportionment). Following the 2000 decennial, the ACS replaced the decennial long form for the purpose of providing more current information. ACS is conducted on a continuing basis, sampling about 250,000 addresses every month. By expanding the sample to accommodate decennial testing, ACS will provide an ideal test bed for conducting smaller assessments of new processes and procedures. We suggest that Census use the ACS to explore areas such as questionnaire content and design, response options (such as the Internet), use of administrative records (on Internet and administrative record use, see Challenge 2), and targeted field data collection procedures and methodologies.

Conducting smaller tests in ACS and perhaps other surveys (such as the Current Population Survey) and special censuses could also facilitate the introduction of new technologies for the 2020 decennial. This would provide the Census Bureau a greater opportunity to evaluate new technology in the field before the decennial census, as well as pave the way for the bureau to use decennial technology in other surveys and thus amortize the necessarily large IT investments over a number of programs—rather than building systems for one-time use.

Although we advocate a series of smaller tests throughout the decade, we also believe it is ultimately important for the bureau to conduct a large-scale test that assesses the functionality of the major operations and IT systems to validate that these components work together as intended in an operational environment. If possible, the bureau should conduct this large-scale operational test earlier in the decade, in order to provide more time to solve problems and make improvements before the start of 2020 decennial operations.

Challenge 4: Effectively Automate Field Data Collection

Leading up to the 2010 decennial, Census planned to reduce field operations costs by using inexpensive, mobile, handheld computing devices—equipped with global positioning system capabilities—to automate the workload assignment, data collection, and information processing functions. If executed well, automation held the promise of reducing labor costs, improving quality, and enhancing operational efficiency.

In 2006, the Census Bureau awarded a $595 million field data collection automation (FDCA) contract for the development of more than a half million handheld computers. However, the

project experienced constant setbacks, including technical problems, escalating costs, and missed deadlines. Poor performance in the 2007 address canvassing dress rehearsal exacerbated concerns that the handhelds would not be ready in time. Census regional offices, responsible for the massive decennial data collection operation, would be particularly affected and expressed major concerns about the change to an automated field data collection process.

In April 2008, the decision was made to abandon use of the handhelds for nonresponse followup so that the bureau and contractor could focus on improving the handhelds for the following year's decennial address canvassing operation. This change necessitated hasty preparations to make this nearly $2 billion operation paper-based.

The principal explanation for the significant problems the bureau encountered was the failure of senior bureau managers in place at the time to anticipate the complex IT requirements involved in automating the decennial. Census had originally intended to develop the handhelds in-house and tested prototypes in both the 2004 and 2006 site tests. However, the devices posed serious technical problems in both tests. Based on the 2004 test, the bureau decided to contract for automation of field operations, but by then it was late in the decade to plan and implement a complex acquisition that could meet ambitious fixed deadlines for the dress rehearsal tests starting in 2007 and decennial operations starting in 2009. After contract award, the bureau's requirements remained in flux.

It was not until January 2008—nearly 2 years after contract award—that the bureau finally delivered a first draft of a complete, user-validated set of requirements for the handhelds and supporting infrastructure. It had no contingency plan in the event the handhelds proved unusable. The problems experienced in developing the handhelds and the need to revert to paper-based operations for all but address canvassing so close to the start of the decennial introduced a high degree of risk into nonresponse followup and other operations.

Automating field data collection—to replace the millions of paper forms and maps that enumerators carry and reduce forms processing—remains a viable goal for 2020. However, based on the 2010 experience, Census must change its approach to planning, managing, and overseeing complex IT acquisitions including making improvements in the following areas:

- *Requirements development*. The bureau did not successfully convey the IT system requirements to its contractor or collaborate effectively to ensure the contractor fully understood the requirements. Weaknesses in requirements specifications and collaboration, along with poor financial planning, caused the FDCA contract to increase by nearly $200 million while delivering far less capability than planned. This is not a new problem: during our oversight of the 2000 decennial, we reported that inadequate control of requirements disrupted the development of the data capture system and caused major cost growth. Census must establish an effective process for defining and controlling requirements.

- *Cost estimation and budgeting*. At the time the FDCA contract was awarded, funding requests were significantly less than what the project would cost based on the bureau's own analysis. According to bureau documentation, for the first 6 months of the contract—when having adequate resources for planning, requirements analysis, and design was critical—the project had approximately half the needed funding, leading to

the first of several replanning efforts. Moreover, as requirements changed, the bureau did not incorporate the resulting cost increases into project cost and budget estimates. For 2020 decennial acquisitions, the bureau should develop well-substantiated cost estimates, promptly determine the cost impacts of requirements and other changes, update project cost estimates and budget requests accordingly, and ensure that sufficient funds are available in project budgets.

- *Independent assessments.* Until late in the development process, key stakeholders remained unaware of the serious problems with the FDCA contract. Independent reviews—performed by experts not under the supervision, direction, or control of the program—can provide the Census Bureau, Department of Commerce, and other stakeholders with an objective second opinion on cost, schedule, and technical progress and critical issues.

- *Field participation.* Effectively introducing new technology for field operations means re-engineering longstanding business processes and requires the solid support of the regional offices, which have responsibility for conducting the decennial field operations. The bifurcated structure of the decennial—with the bulk of planning at headquarters but responsibility for the fieldwork in the regions—makes this a significant challenge. With ultimate responsibility for overseeing the enumerators knocking on doors and collecting information, regional Census staff must be integrally involved in and supportive of automation efforts.

- *Transparency and oversight.* An analysis conducted in 2004 by a bureau contractor indicated that the scope of FDCA carried a high risk. The Department lacked an effective oversight function and did not successfully address the high-risk nature of the acquisition. For 2020, Departmental oversight beginning early in the acquisition process and at key milestones is essential. If performed well, oversight can reveal, early in the process, whether the bureau has considered all reasonable project alternatives—and whether it is assuming too much risk. In this way, the Department can work with the bureau to address problems before unnecessary costs accumulate. Supported by early independent cost estimates and independent assessments, Department oversight can play a critical role in ensuring decennial IT investments stay on track.

For the 2010 decennial, the Census Bureau tried to contain costs by automating the largest, most costly decennial operations. Unfortunately, it lacked the knowledge and experience to manage and implement the large, complex IT acquisition that was necessary to do so. Census must shore up its IT acquisition processes early in the decade to prepare for successfully implementing an automated data collection solution for nonresponse followup, as well as the other doorstep operations.

Challenge 5: Avoid Massive End-of-Decade Field Operation Through Continuous Updating of Address Lists and Maps

The Census Bureau describes "an accurate, comprehensive, and timely [address] list" as "one of the best predictors of a successful census." If the list is incomplete or inaccurate, people may be missed or counted more than once. Errors in the bureau's master address file (MAF) can also

increase costs, and the public burden, by requiring visits to nonexistent or duplicate locations in nonresponse followup.

Because the Census Bureau enumerates the population for the purposes of apportionment, redistricting, and distribution of federal funds, all addresses in the decennial census must be associated with a geographic location. The bureau attempts to locate all MAF addresses spatially in its nationwide automated geographic system (called the Topologically Integrated Geographic Encoding and Referencing system, or TIGER). Throughout the last decade, the bureau updated the MAF/TIGER database through a limited number of automated, clerical, and field operations.

Over the decade, the bureau also implemented a major initiative to align all street features to GPS map coordinates. Although this resulted in significant accuracy improvements to the maps, the bureau cancelled further operations mid-decade to fund the escalating field data collection automation costs. Meanwhile, some of the early decade accomplishments would not have reflected new housing developments and future roads, necessitating updating during address canvassing.

In preparation for the 2010 enumeration, the bureau conducted a massive address canvassing operation in spring 2009. During this operation, nearly 160,000 temporary employees were instructed to walk every street of the country to update the maps and address list according to specified protocols.

Address canvassing was costly, totaling $444 million and running nearly 25 percent over budget. It was also error-prone: our extensive field observations during address canvassing revealed that the temporary workforce hired for this mammoth task did not consistently draw roads or locate housing units accurately on maps. While address canvassing was underway, we reported that listers were not following important procedures. The bureau responded quickly to this finding by communicating to field staff and regional directors about the issue. However, by that point, many areas had completed production. Our observations and analysis of later operations confirmed numerous map and address list problems.

The issues we identified in 2010 address canvassing were not surprising. We have communicated longstanding concerns about the efficacy and cost effectiveness of this operation to the Census Bureau. For example, following the address canvassing operation in the 2000 Census, we made numerous recommendations aimed at improving Census's strategy for updating the MAF.

Subsequently, after the 2006 site test of address canvassing, we recommended that the bureau perform an analysis of the costs and benefits of 100 percent address canvassing and consider whether alternative, less costly strategies for developing the address list for the 2010 decennial were feasible. The bureau responded that anything less than 100 percent address canvassing was unacceptable. A 2004 report by the National Research Council similarly called for more analysis of the necessity of conducting a complete address canvassing operation and questioned the cost-benefit of this decision, stating that Census should justify why selective targeting of areas for address canvassing is either infeasible or inadequate—and how the costs of the complete canvass square with the benefits.

The Census Bureau now plans to update the address list and maps continuously throughout the decade and consider three address canvassing options for the 2020 decennial—full, targeted, and

no additional address canvassing. The bureau should keep stakeholders apprised of its progress on continuous updating and should maintain transparency into its decision making regarding the extent of address canvassing that will be implemented at the end of the decade. This decision should be supported by relevant research data and cost-benefit analysis.

Challenge 6: Implement Improved Project Planning and Management Techniques Early in the Decade

The Census Bureau describes the decennial census as the nation's largest peacetime mobilization. For the 2010 Census, the bureau planned, managed, and tracked over 9,000 activities spanning several years and representing 44 major operations. Census identified more than two dozen major program risks, each requiring program monitoring and contingency plan development. Effective project planning and management are particularly critical not only to allay major cost growth but also to meet the immovable decennial deadline with accurate results: by law, the bureau must deliver apportionment counts to the president within 9 months of the census date, which in recent years equates to the last day of the decennial year.

To meet this deadline, the bureau must have a well-defined decennial plan—with consistent task plans, schedules, and cost estimates. Initially, the plan will necessarily be preliminary and should identify various alternative designs. As the bureau assesses alternatives and design, cost, and budget information solidifies, it should establish the baseline plan and refine the details. Despite the scale of the bureau's planning effort and its gains in project management as compared to 2000, our quarterly reports to Congress since August 2009 have identified significant problems in project planning and risk management that Census must resolve to help achieve cost containment and meet the 2020 Census schedule.

Specifically, the bureau did not use key project management best practices in planning and managing the 2010 decennial. It did not (1) ensure that all applicable tasks were entered into its project management system; (2) provide a consistent level of detail for all tasks; (3) verify, up front, the correctness of all start and end dates entered; and (4) use its project management system to track the cost of performing each task. The bureau therefore had incomplete and unreliable information for monitoring progress.

Without complete and accurate schedule information, the Census Bureau could not calculate the decennial's critical path—the set of activities having the longest path through the schedule—leaving the bureau unable to assess the impact on the overall schedule of delays in these tasks. To compensate, Census developed a list of separate critical activities based on management judgment and updated it weekly; however, in some cases, inaccurate scheduling information weakened the list's reliability as a management tool.

Having omitted key data from its project management system, the bureau could not link the cost, schedule, and progress of tasks—and therefore could not fully assess the likely impact on the final decennial cost of variances in the cost and schedule of individual tasks. This approach, called earned value management, is required by OMB on major investment projects and is a best practice because it can alert management to potential problems sooner than data on expenditures examined alone.

In addition, the schedule did not account for the entire decade of work leading up to the decennial. Lack of a full lifecycle schedule contributed to many of the problems we identified with the 2010 testing strategy—for example, not enough time was allotted for test results to inform future testing (see Challenge 3). We support the bureau in its steps to create a lifecycle schedule for the 2020 Census.

Although the bureau's 2010 risk management program represented a significant improvement over the previous decennial census, disciplined risk identification and contingency planning occurred late in the decade. In fact, two contingency plans remained incomplete even as decennial operations ended.

By employing best practices for program and risk management early in the decennial cycle, and following through during the decade, the bureau can achieve a more effective planning and management process. While the bureau's project management system had the capability to support these practices, the system was not fully utilized for 2010. Census needs to improve how it uses its project management system in order to obtain accurate, reliable, and complete data for decennial planning and oversight.

Establishing uniform processes to develop the baseline schedule early—and integrate it with budget, cost, and contract information—will help provide the bureau objective management information. For the 2020 decennial, the bureau should implement appropriate risk management from the outset and finalize contingency plans prior to the start of decennial operations. These improvements will provide more reliable information to Census management and stakeholders; promote transparency in decennial planning, management, and oversight; help contain risk and cost; and reduce the likelihood of late-decade budget request increases in the 2020 decennial.

The bureau acknowledges the need to improve project management and is taking actions to establish a program management office under the proposed 2020 decennial directorate. Early discussions indicate the office will lead and document the strategy for schedule, budget, acquisition, performance management, and risk management that will ideally address management weaknesses from the 2010 decennial.

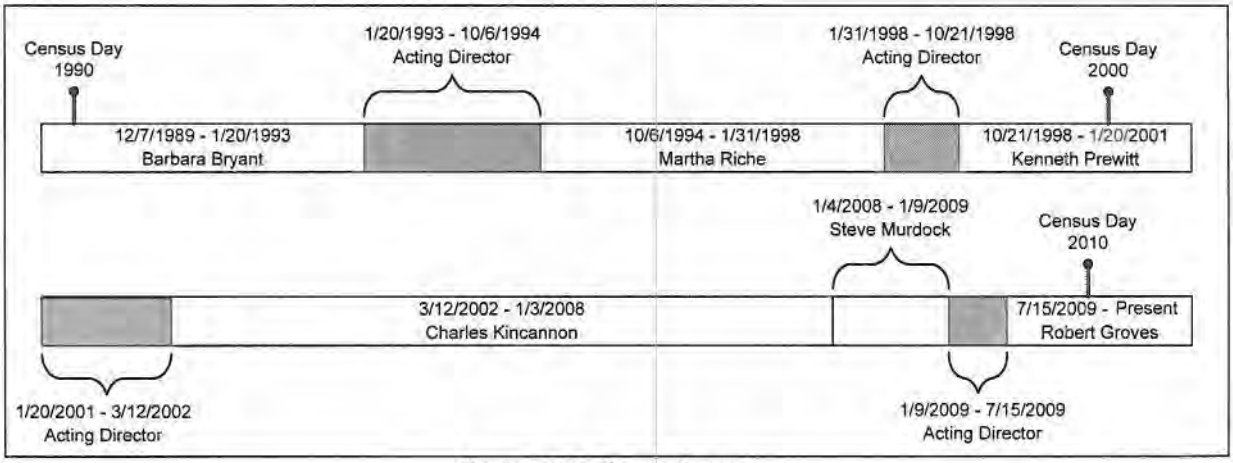
Challenge 7: Establish a Census Bureau Director Position That Spans Administrations

In our 2008 OIG *Top Management Challenges* report, we described the Census Bureau—particularly headquarters—as an insular organization that eschews open dialogue with outside parties and even its own regional operations. Considerable progress toward changing the culture has been made since that time, but leadership continuity is essential to maintain momentum as planning begins for the 2020 decennial. Absent stable, committed leadership, any organization tends to revert to its embedded culture. Because of the long planning cycle for the decennial, it is particularly critical that one individual be able to set the direction and lead the Census Bureau according to a consistent vision.

Such leadership continuity has not been the hallmark of previous decennial census cycles. For example, there have been six Census Bureau directors—two of them acting—responsible for the 2010 Census throughout its lifecycle. And, as shown in figure 5, the current director was appointed less than 9 months before Census Day (April 1). Similarly, the 2000 decennial lifecycle saw 5 directors, two of them acting. Census leadership usually changes when new

administrations take office, and the transition frequently entails a long nomination and confirmation process. Leadership voids may well occur when critical decisions (such as those involving budget, operational design, and questionnaire content) affecting the next decennial census must take place.

Figure 5. **Tenure of Census Bureau Directors, 1989–Present**



Source: U.S. Census Bureau

A solution considered in 2010 by the 111th Congress was to implement a fixed term for the Census Bureau director, staggered to begin and end in such a way as to minimize disruption to decennial planning, testing, and implementation. A leadership structure that promotes tenure can advance needed change and help the bureau recognize when to retire outdated methods, implement new methods with greater success—and reap the potential benefits of innovation.

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In conclusion, Mr. Chairman, the Census Bureau must make fundamental changes to its decennial census design and substantially strengthen the planning, implementation, and management of this enormous operation—the escalating cost over the decades has become unsustainable. In the decade's early years, the bureau will make key decisions that will set the course for how effectively and efficiently the 2020 count is performed and how much it will ultimately cost.

The bureau has embarked on this effort with an acknowledgment of the key deficiencies in 2010 decennial planning, a preliminary definition of approaches aimed at overcoming these weaknesses, and an unprecedented level of transparency. We encourage the bureau to continue along this path. But we have seen ambitious plans for other decennials give way in the face of management, technical, and fiscal difficulties. Continued focus and engagement will be needed throughout the decade by the Department of Commerce, Census Bureau, OMB, and Congress to help ensure that the promise of better technology, methods, and operations are realized in the 2020 Census.

This concludes my prepared statement, and I will be pleased to respond to any questions you or other subcommittee members may have.