



U.S. CENSUS BUREAU

2020 Census Planning: Research Delays and Program Management Challenges Threaten Design Innovation

FINAL REPORT NO. OIG-I4-003-A
DECEMBER 3, 2013

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December 3, 2013

MEMORANDUM FOR: John H. Thompson
Director, U.S. Census Bureau

FROM: Ann C. Eilers *Ann C Eilers*
Principle Assistant Inspector General for Audit and Evaluation

SUBJECT: *2020 Census Planning: Research Delays and Program Management
Challenges Threaten Design Innovation*
Final Report No. OIG-14-003-A

We are providing the final report on our review of the Census Bureau's efforts to design the 2020 Census. This audit sought to (1) assess the implementation status of each individual project in the 2020 Census design effort, including time frames for completion, milestones, deliverables, and impact on the overall design program, (2) assess the bureau's plans to evaluate each research project, including whether accurate and reliable data will be available to determine each project's impact on design efforts, and (3) determine if governance and internal controls are adequate to manage the design effort.

We found that, nearly 2 years into the research phase, many research projects are experiencing delays and the research schedule is still unstable and incomplete. This is due to insufficient planning and best practices for schedule management not being followed. Further, the bureau has delayed and restructured its field tests, which poses a risk for implementing design changes. The Bureau cites the major impacts of the Congressional budget cut and sequestration as a cause for the changes in content and timing of its research and testing efforts. Yet budget reductions, continuing resolutions, and the sequestration (signed into law in August 2011) should have been accounted for in their planning. We also found weaknesses in the bureau's strategy for quality assurance and uneven implementation of program management practices. Our report offers eight recommendations for how to resolve these issues and improve the bureau's efforts to design the 2020 Census.

We have received your response to our draft report. Where appropriate, we have modified this final report based on this response. The final report will be posted on the OIG's website pursuant to section 8L of the Inspector General Act of 1978, as amended.

In accordance with the Department Administrative Order 213-5, please provide us with an action plan responding to all report recommendations within 60 days of the date of this memorandum.

We thank you and your staff for the courtesies extended to us during this review. Please direct any inquiries regarding the report to Carol Rice at (202) 482-6020.

Attachment

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Frank Vitrano, Associate Director for Decennial Census
Timothy Trainor, Chief, Geography Division, Census
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Report In Brief

DECEMBER 3, 2013

Background

The Census Bureau is directed by law to carry out the decennial census, which is mandated by the Constitution. Decennial census data are used to apportion seats in Congress, redraw congressional districts, and allocate hundreds of billions of dollars in federal funds for state and local governments, as well as other public- and private-sector purposes.

The 2020 Census, though years away, is a massive undertaking that requires extensive planning and testing. For 2020, the Census Bureau plans to design and conduct a high-quality decennial operation that will cost less per household on an inflation-adjusted basis than the 2010 Census. To achieve this goal, the bureau is focusing on three primary design features: (1) offering the Internet as a response option, (2) targeted address canvassing, and (3) using administrative records to follow up on cases of non-response. Implementing these changes could save the government hundreds of millions of dollars.

Why We Did This Review

Preparations for the 2020 Census must be completed early in the decade if congressionally-mandated deadlines are to be met, and because of the sheer size of the task: counting millions of people and housing units.

Our audit objectives for reviewing the 2020 Census research program were to (1) assess the implementation status of each individual project in the 2020 Census design effort, including the extent of implementation, time frames for completion, milestones, deliverables, and impact on the overall design program, (2) assess the bureau's plans to evaluate each research project, including whether accurate and reliable data will be available to determine each project's impact on design efforts, and (3) determine if governance and internal controls are adequate to manage the design effort.

CENSUS BUREAU

2020 Census Planning: Research Delays and Program Management Challenges Threaten Design Innovation

OIG-14-003-A

WHAT WE FOUND

The current Census schedule shows research delays and lacks budget integration. Research activities for the 2020 Census are delayed, with the schedule undergoing major revisions almost 2 years into the R&T phase. The bureau's ability to manage the research program in a challenging budget environment is hampered by not integrating budget information with the research schedule.

Research quality assurance strategy is undeveloped. Most research teams are not incorporating the results of Census Program Evaluation and Experiments (CPEX) into 2020 Census research. In addition, quality control measures are not evenly applied at the project level and the quality assurance practices for many projects are unclear or incomplete.

Program management plans incorporate best practices, but implementation is inconsistent. Implementation of decisions and program management processes has been uneven, with the bureau abandoning its efforts to develop a complex automated tool for comparing relative costs and quality of alternative designs. A new governance structure clearly defines functions of various parties and who is responsible for key decisions, but the structure does not establish a policy or mechanism for documenting those decisions.

WHAT WE RECOMMEND

We recommend that the director of the Census Bureau:

1. Determine when 2020 Census design decisions must be made; adhere to an activity schedule that aligns with those decision points; and develop a critical path for the 2020 Census R&T schedule.
2. Determine whether efforts to resolve internal data-sharing problems are progressing adequately.
3. Incorporate earned value management (EVM) and budgets at the project level to prioritize projects as well as assess and quantify 2020 Census research program results.
4. Define and adhere to a final testing schedule. Determine how iterative testing and the American Community Survey can be used for the operational testing phase.
5. Require R&T teams to update the Knowledge Management Database with the status of current CPEX recommendations and develop a bureau-wide solution for knowledge management.
6. Create a more structured process for R&T review by drafting guidelines that specify responsibilities of the Scientific and Methodological review panels and the research teams.
7. Ensure research outputs are usable and on time to drive the trade-off analysis process and develop a vehicle for communicating key decisions and events.
8. Establish a formal process to review, approve, and monitor R&T project teams' risk registers to ensure timely identification of risks and development of mitigation and contingency plans as appropriate.

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*COVER: Detail of fisheries pediment,
U.S. Department of Commerce headquarters,
by sculptor James Earle Fraser, 1934*

Introduction

The 2020 Census, though years away, is a massive undertaking that requires extensive planning and testing. The process has already begun, building on lessons learned in 2010. Issues then were late-stage design changes and higher-than-expected contractor expenses. Both contributed to pushing the final cost of the 2010 Census to more than \$12 billion—nearly twice that of the 2000 Census (in nominal dollars). For 2020, the Census Bureau plans to design and conduct a high-quality decennial operation that costs less per household on an inflation-adjusted basis than Census 2010. To achieve this goal, the bureau is focusing on three primary design features: (1) offering the Internet as a response option, (2) targeted address canvassing, and (3) using administrative records to follow up on cases of non-response.¹ Implementing these changes could save the government hundreds of millions of dollars. For example, Census spent \$441.7 million on canvassing addresses for the 2010 decennial census, an operation for which Census enumerators went to the door of every housing unit in the United States. If Census researchers can determine which areas require updates to their maps from 2010, canvassing for 2020 could target just those areas, at a greatly reduced cost.

Key Statutory Deadlines

March 31, 2017: Deliver Census question topics to Congress

March 31, 2018: Deliver final Census questions to Congress

April 1, 2020: Census Day

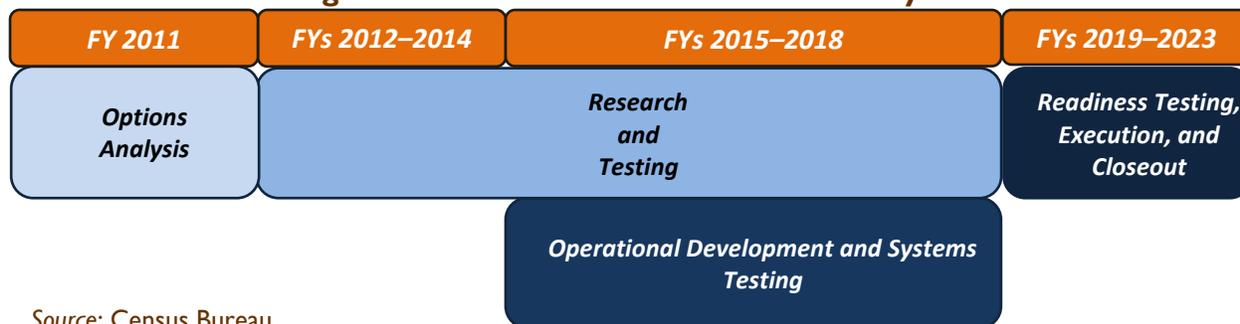
December 31, 2020: Deliver state population counts for House apportionment to the President

March 31, 2021: Deliver redistricting data to the states

Source: 13 U.S.C. § 141

Preparations for the census must be completed early in the decade if congressionally mandated deadlines (see box) are to be met, and because of the sheer size of the task: counting millions of people and housing units. More than 300 million people and more than 130 million housing units were counted in 2010. Population statistics must be delivered to the states and Congress by set dates for determining the apportionment of seats in the U.S. House of Representatives and whether election districts need to be realigned. From start to finish, the 2020 Census program encompasses a 12-year lifecycle (FYs 2011–23). The bureau segregates the cycle into four distinct phases and is currently focused on research and testing (R&T)—as shown in figure 1.

Figure 1. Phases of the 2020 Census Lifecycle



Source: Census Bureau

¹ The bureau is also exploring cost savings through a re-engineered field infrastructure and re-engineered IT infrastructure.

Delays in the R&T phase will likely impact the next one—operational development—and eventually jeopardize innovation because critical design decisions may be made too late to implement successfully. Late-decade design changes may be deemed too risky, requiring the bureau to fall back to the last decennial's design and therefore make few cost-saving improvements. If the 2010 Census design is used for the 2020 Census, costs are estimated to reach \$18 billion, or \$120 to count each housing unit compared with \$97 for counting each unit in 2010. Timely research is therefore critical to implementing a design that costs less.

Our audit of the status of 2020 Census planning focused on two research efforts: (1) the R&T projects led by the 2020 Research and Planning Office (20RPO) and (2) the Geographic Support System (GSS) projects related to a targeted approach to canvassing addresses, led by the Geography Division. As of May 2013, the bureau spent more than \$128 million on the R&T projects, toward an estimated total expenditure of \$405 million. GSS is a \$674 million multiyear initiative to improve address coverage and continuously update map features in support of all Census programs and operations. In addition to the research projects associated with testing targeted address canvassing, GSS projects include updating the integrated MAF/TIGER database (MTdb). That database contains the inventory of all the nation's addresses (the Master Address File [MAF]) and the national inventory of streets and map features (the Topologically Integrated Geographic Encoding and Referencing [TIGER]). The R&T and GSS projects are listed in appendix C.

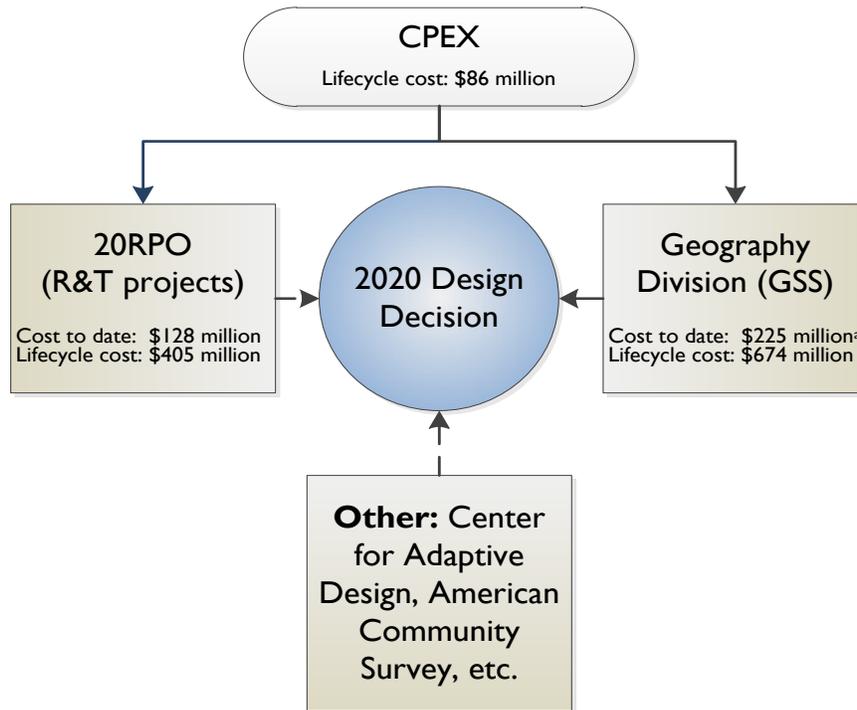
Decisions about the 2020 Census design will be based on the results of the bureau's R&T projects, the GSS, and 2010 evaluations (referred to as the Census Program Evaluation and Experiments [CPEX]), as well as on other bureau-wide efforts (see figure 2).

Our audit objectives for reviewing the 2020 Census research program were to (1) assess the implementation status of each individual project in the Census 2020 design effort, including the extent of implementation, time frames for completion, milestones, deliverables, and impact on the overall design program, (2) assess the bureau's plans to evaluate each research project, including whether accurate and reliable data will be available to determine each project's impact on design efforts, and (3) determine if governance and internal controls are adequate to manage the design effort.

For this review, we interviewed senior managers, 2020 Census research project managers, and project members at the bureau's headquarters in Suitland, Maryland; and, we reviewed relevant financial and management documentation (see appendix A for our methodology). In addition, we sent an online survey to all 2020 Census project managers and members with questions related to our objectives, and received a 75 percent response (see appendix B for the survey methodology).

We noted a number of improvements over previous decennial census planning efforts. For example, the bureau is developing a schedule early in the decade, conducting quarterly reviews of program management to keep internal and external stakeholders informed of progress, implementing a risk assessment program, deploying a database to track 2010 Census recommendations, and identifying staff skill-set gaps. Census is also using a bureau-wide IT management approach as recommended by OIG and other oversight offices.

Figure 2. 2020 Census Research Program Feeds the 2020 Census Design Decision



Source: OIG analysis of Census Bureau data

^a GSS cost to date includes actual costs through May 2013 and planned costs through September 2013.

However, we also identified significant weaknesses in the bureau’s \$1.1 billion research efforts. We found that, due to planning and project management deficiencies, many research projects are experiencing delays and, after nearly two years, the research schedule is still unstable and incomplete. Further, the bureau has delayed and restructured its field tests, which poses a risk for implementing design changes. We also found weaknesses in the bureau’s strategy for quality assurance and uneven implementation of program management practices.

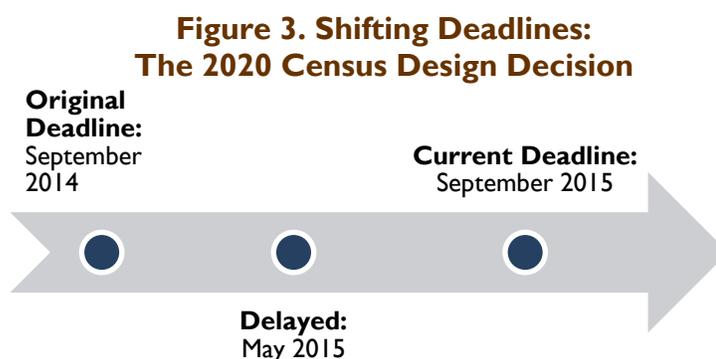
Findings and Recommendations

I. Current Census Schedule Shows Research Delays and Lacks Budget Integration

We found that 2020 Census research activities are delayed, with the schedule undergoing major revisions almost two years into the R&T phase.² Further, the bureau's ability to manage the research program in a challenging budget environment is hampered by not integrating budget information with the research schedule. Field-testing is vital to the research process; it is used to generate cost-and-quality metrics for assessing design options. However, constant changes to the scope and schedule of the 2020 Census field tests put evidence-based decision-making at risk.

A. 2020 Census Research Program Schedule Slippage Could Adversely Impact Decennial Design Effort

Unstable schedule. As of March 2013, the bureau had not developed a stable and complete schedule for its 2020 Census research program. Between October 2012 and March 2013, the bureau produced four different R&T activity schedules, and delays increased with each iteration. Although a final census design will be the result of several smaller decisions (e.g., to conduct a targeted address canvassing operation, implement an Internet response option, and use administrative records), the design decision has been delayed by a year—from September 2014 to September 2015 (see figure 3).



Source: OIG analysis of Census Bureau documents

This schedule instability exists throughout the 2020 Census research program. The baseline start and finish dates for over 40 percent of the approximately 2,000 research activities were pushed back in the March 2013 schedule from when they were originally scheduled in January 2013.³ These changes are significant; the average baseline shift was more than five months. Additionally, the bureau has already re-scoped four teams—adding and removing project members, changing the nature of the research, and creating

² Research activities for each R&T project are managed in one Master Activity Schedule. GSS activities are managed separately by the Geography Division through a Master Information System.

³ The project baseline is the value or condition of scheduled start and finish dates and budgeted cost against which all future measurements of those values or conditions are compared.

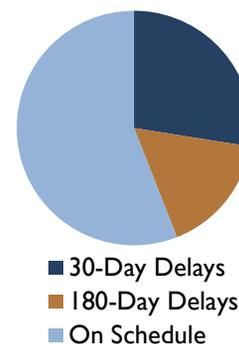
new teams. The bureau had to adjust its schedule in response to each change, and additional changes could further undermine the bureau's effort to develop a complete and stable research schedule.

These practices of moving project baselines and postponing deadlines are products of insufficient planning. Before initiating the research phase, the bureau's management did not determine when stakeholders would need the research findings in order to make significant changes in time for the 2020 Census. In other words, the bureau started research without identifying when the research needed to be complete to make a decision. For example, researching the impact that Internet self-response would have on the need for paper questionnaires must be completed prior to ordering those paper questionnaires and determining the number of facilities required to process them. The bureau is currently trying to establish the dates of these and other key decision points, as well as associated deliverables and milestones, but not identifying them in advance has led to an unstable schedule. Missing and shifting project and key decision deadlines make it impossible to assess how much schedule slippage is occurring, potentially undermining the next decennial effort. Last decade, OIG recommended that the Census Bureau develop its 2020 Census schedule earlier in the decade than it did in the 2010 decennial lifecycle.⁴ The bureau is taking a positive step by developing the schedule early in the decade; however, its efforts to date pose a risk to achieving significant 2020 Census cost-savings.

Re-baselining masks delays. We found that the bureau's practice of altering baselines in schedules—called re-baselining—obfuscates delays to project activities. In the January 2013 R&T schedule, 28 percent of research activities were delayed at least 30 days, and 9 percent were delayed at least 180 days. The March schedule showed improvement at first glance: less than 10 percent of activities were delayed by 30 days. But because baselines of the project were shifted, that was not the true picture. Using the baselines from January's schedule, more than 40 percent of March's activities were delayed at least 30 days, and 17 percent were delayed at least 180 days (see figure 4). The R&T program started in the first quarter of FY 2012; it is a major concern to see extensive delays just over one year later. As with the R&T schedule, the current phase of the GSS schedule also has delays: just one month into the program, 13 percent of GSS activities show delays of at least 30 days. For details on the project delays, see appendix C.

As we recommended in 2009, critical path management—a process to monitor the progress of critical project activities and to guide decision-making for the reallocation of resources when activities

Figure 4. Research and Testing Activity Delays



Source: OIG from Census data

⁴ U.S. Department of Commerce, Office of Inspector General, August 2009. *2010 Census: First Quarterly Report to Congress*, report no. OIG-1791-I; idem, June 27, 2011. *Census 2010: Final Report to Congress*, report no. OIG-11-030-I.

inevitably vary from the planned schedule—could help mitigate delays by ensuring that the essential components of each project remain on schedule.⁵ However, the bureau has not fully implemented a critical path for its R&T project schedule. According to one bureau official, some project managers have identified critical paths within their research programs, but most are not taking advantage of critical paths as a management tool. A bureau official stated that there are plans to revisit critical path management over the next several months. Timely implementation could reduce the risks associated with the widespread schedule delays.

Our survey of GSS and R&T project staff confirms these scheduling concerns: 23 percent of R&T staff and 48 percent of GSS staff reported that their projects were behind schedule as of March 2013. Furthermore, while insufficient planning and scheduling are the principal drivers of the delays, R&T and GSS staff members face other challenges. Our survey indicates that the bureau may not have allocated staff sufficient time for projects: more than 45 percent of GSS staff and 31 percent of R&T staff reported that they have less time than is appropriate for them to complete their project activities. The bureau's practice of shifting baselines and not implementing critical path management are risks for 2020 research.

Data access issues. Another impediment to projects' completion is the staff's difficulty obtaining data that is necessary for their research. Half of R&T and GSS staff surveyed reported that it is a challenge to get access to other census-related data. Of these 115 respondents, 26 added comments explaining how data access issues delay their work. Some of the reasons cited include: the process for accessing internal data requires too many steps and extensive paperwork, signatures for approval can take a long time to identify and acquire, and once access is granted, it can be unexpectedly revoked. Officials in the Deputy Director's and Policy offices agreed that multiple, lengthy processes have delayed bureau employees from accessing data and that a new process is still under development and has yet to reach a stable solution.

Lack of integrated schedule and budget. Last decade, OIG recommended that the Census Bureau should integrate cost and schedule activities to allow managers to better track the status of available funds, and forecast impending under-runs and overruns so that funds can be reallocated promptly.⁶ In response, the bureau planned to incorporate earned value management (EVM), a process that combines measures of a project's schedule and cost to forecast performance problems.⁷ As of March 2013 Census had not incorporated EVM into its activity schedules, limiting its ability to make decisions based on objective data. In addition, GSS has a program-level budget but not individual budgets for its research projects. GSS projects have plans and schedules, but this information is not integrated with the budget. As a result, GSS is unable to identify the

⁵ OIG, *2010 Census: First Quarterly Report to Congress*.

⁶ *Ibid.*

⁷ Earned value management (EVM) allows project managers to forecast cost or schedule overruns at an early stage in a project, and to monitor the project plan, actual work, and work-completed values to determine if a project is on track. EVM shows how much of the budget and time should have been spent, with regard to the amount of work done so far.

actual costs of individual research projects. This is a concern for performance management; GSS management will be unable to detect if a particular project has significant cost overruns. Because of the bureau's budget and time constraints, management must be able to recognize at-risk projects by adopting EVM, which would provide valid, timely, accurate, and auditable performance information on which to base project management decisions.

“A small number of large tests create intolerable risks for the Census Bureau. ... We are committing to a faster cycling of ideas and testing, relying on a lot of small tests versus a small number of large expensive tests.”

*Robert Groves, Census Bureau director
(July 18, 2012, testimony)*

B. Unstable 2020 Census Field-Testing Strategy Risks Repeating Problems of 2010 Census

One-half of originally scheduled field tests canceled. The Office of Management and Budget (OMB) states that agencies can use field tests when improving survey procedures and questionnaires to provide quantifiable data for decision makers. The bureau has chosen to use field tests to inform its research because it is important to test potentially improved processes in the field under conditions representative of decennial operations (for example, verifying a new address in near real-time and associating the address with a Census map location—such as latitude and longitude coordinates). We found

that plans for these field tests are in flux. The bureau canceled 13 of its 25 initially scheduled field tests of varying sizes. Nine small cancelled tests were incorporated into the development of the automated field data collection device. Then the Bureau added two tests. Next, the Bureau brought back two cancelled tests as ongoing surveys instead of field tests. Finally, another cancelled test was re-scoped to be a focus group. Bureau officials defend the changes and cancellations, citing improved designs through test restructuring based on input from the Research and Methodology (R&M) Directorate, 20RPO, the Executive Steering Committee, and the National Academy of Sciences. The Bureau also cites the fact that the original testing schedule was developed three years ago in the midst of the 2010 Census. However, canceling so many tests removes opportunities to inform research and other field tests, and the instability of the testing strategy makes adequate planning difficult.

Field tests delayed. Frequent changes to schedules and delays to testing threaten the teams' ability to incorporate test results into subsequent research and FY 2014 design decisions. During our audit, the field test schedule was pushed back three times; in total, testing has been delayed by a year and a half and is now scheduled to conclude in FY 2016. The bureau originally planned early and iterative testing to allow more time to follow up on and retest refined designs. For example, the R&T project charged with improving and reducing doorstep visits to non-responding households had planned iterative tests. But delaying the 2013 test to January 2014 diminishes its ability to conduct a second test in time to revise designs by the September 2015 deadline. If the

tests yield surprising results or inconclusive data, the bureau may not have time for follow-up tests or a sufficient response.

No specific plans to use the American Community Survey in 2020 testing. To increase opportunities for testing, both the National Academy of Sciences and OIG have recommended using the American Community Survey (ACS) as a testing mechanism⁸. OIG recommended that the bureau increase the sample size of the ACS (or other surveys) to use as a test environment for smaller tests of new processes, procedures, and systems. Although it employs a more complex questionnaire than the short-form census, the ACS is an important tool for census-testing because of its national scale, use of multiple data-collection modes, and overlap in questionnaire content.

Specific 2020 Census tests are currently not planned for ACS, although some ACS activities will help inform the 2020 Census, such as the recently implemented Internet-response option. Bureau officials have given conflicting explanations for why the ACS is not being used for specific 2020 testing. One stated reason is that teams are not cooperating with the bureau's "new" approach of using more, smaller-scale field tests and the ACS as a testing platform. The official leading ACS operations, however, said that limitations to the ACS test environment have pushed off 2020 testing until January 2015, which leaves only 8 months for any such testing to inform the September 2015 design decision. After the completion of our fieldwork, the Bureau designed and scheduled one test that uses existing ACS systems and whose results will inform the 2014 site test. Also, according to the bureau, the IT directorate is implementing systems in ACS first before expanding them for the 2020 census. Management should use the operational testing phase to ensure the technical solution is sufficiently scoped for the much larger decennial census.

Testing strategy falls short. Many research project members are concerned about adequately developing and testing key procedures and products because the testing strategy lacks clarity and stability. In our survey of 2020 staff, only 28 percent of project personnel agreed that the tests were clearly defined, and only 35 percent of R&T survey respondents agreed that the field tests were appropriate to answer their research questions. At Census Integration and Information Group meetings of division- and program-level bureau management, officials have repeatedly stated a pressing need to redefine the tests. If more effective testing strategy is not devised and stabilized, and the testing is not adequately integrated into operations, the bureau will have to make decisions without clear evidence of cost-saving solutions that would maintain or improve accuracy.

⁸ National Research Council Panel to Review the 2010 Census, 2011. *Change and the 2020 Census: Not Whether but How*. Washington, D.C.: National Academies Press; OIG, *Census 2010: Final Report to Congress*.

Recommendations

We recommend that the Director of the Census Bureau:

1. Determine when 2020 Census design decisions must be made; adhere to an activity schedule that aligns with those decision points; and develop a critical path for the 2020 Census R&T schedule.
2. Determine whether efforts to resolve internal data-sharing problems are progressing adequately, with a view toward improving the timeliness of data exchanges among bureau units.
3. Incorporate earned value management (EVM) and budgets at the project level to prioritize projects as well as assess and quantify 2020 Census research program successes and failures.
4. Define and adhere to a final testing schedule. Determine how iterative testing and the ACS can be used for the operational testing phase and ensure that the technologies and sample designs support adequate testing of the procedures, data, and other approaches being used.

II. Research Quality Assurance Strategy Is Undeveloped

Prior to the 2020 R&T phase, 100 CPEX studies were devised to evaluate the 2010 Census and inform planning and testing for the 2020 Census. These CPEX studies cost nearly \$86 million during FYs 2009–12. We found that most of the research teams are not incorporating CPEX results into 2020 Census research. In addition, quality control measures are not evenly applied at the project level and the quality assurance practices for many projects are unclear or incomplete. The review panel process continues to evolve but needs protocols to ensure that panels provide informed recommendations and stakeholders are aware when the panel approves or does not approve of teams' work.

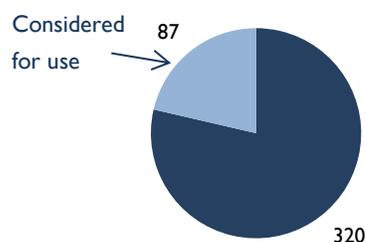
A. 2020 Census R&T Projects Are Not Taking Advantage of 2010 Census Research Results

The Census Bureau developed the Knowledge Management Database, a tool that catalogues CPEX recommendations, to incorporate prior research into the 2020 Census planning efforts, which in turn could inform and improve other surveys and activities throughout the bureau. CPEX recommendations in the Knowledge Management Database are assigned to relevant research teams for subsequent investigation. Once a recommendation is assigned to a team, the team decides whether to consider, dismiss, or place the recommendation on hold.⁹ However, as of March 2013, only 21 percent of the 407 currently applicable CPEX

recommendations were being considered for use by R&T teams (see figure 5). The remaining recommendations were dismissed or the teams failed to provide feedback on them. Our survey also found that only 41 percent of R&T project staff members thought the CPEX studies were informative to their projects, and only 7 percent considered the results critical. If the bureau fails to take advantage of previous studies, research teams could waste time and money on replicating earlier efforts and miss the opportunity to learn from past mistakes.

The bureau has not used CPEX research for several reasons. First, 93 percent of the final CPEX recommendations were issued after most R&T projects started in November and December of 2011. OIG previously noted that CPEX reports were significantly delayed and cautioned that these delays “could adversely impact the bureau’s efforts to improve the decennial census design.”¹⁰ Now that the lifecycle is in the R&T phase, the effect of the delays is clear: teams did not receive CPEX results early enough to take

Figure 5. Leveraging the \$86 Million CPEX Results



Source: OIG analysis of Census Bureau data

⁹ Recommendations “on hold” are applicable to a later phase of the lifecycle; thus, they are not assigned to current research teams. For this reason, “on-hold” recommendations are not included in OIG’s analysis.

¹⁰ U.S. Department of Commerce, Office of Inspector General, April 5, 2012. *2020 Census Planning: Delays with 2010 Census Research Studies May Adversely Impact the 2020 Decennial Census*, report no. OIG-12-023-1.

advantage of their findings in designing their projects. Second, the Knowledge Management Database is a new tool for the bureau and took considerable effort to plan and populate. In October 2012, a full year after the start of the R&T phase, less than 50 percent of the available CPEX recommendations had been assigned to project teams (all were assigned by March 2013). In order to incorporate the findings from the CPEX studies into their projects, teams need to have the results before designing their own studies and research plans.

B. Scientific and Methodological Review Process Lacks Key Elements for Assessment

To ensure more rigorous quality assurance for 2020 Census research, the bureau instituted Scientific and Methodological review panels, under the Research and Methodology directorate, to evaluate scientific validity and provide guidance to research teams.¹¹ The review panels evaluate the soundness of a project's methodology in a process modeled roughly on committees that oversee Ph.D. dissertations. Panel members serve as mentors to research teams and provide direction and expertise. The panelists are tasked with evaluating research designs; providing critical feedback and guidance to the research teams; and assessing the validity of any findings, conclusions, and recommendations. However, limited guidance on the review panel process has left R&T teams struggling in areas the panels are designed to assist.

In addition, while 12 of the 13 project teams with topics that warranted scientific evaluation have prepared study plans, all of the study plans remain in draft form and are incomplete.¹² Of the 12 study plans, 7 plans did not establish milestones or deliverables, 2 did not specify database requirements, and 6 did not adequately describe risks/limitations. Further, only 2 provided sufficient information on the analysis variables and, as a result, all study plans' evaluated elements were incomplete.

Our survey results also indicate that research teams are struggling to ensure the quality of their research. Over half of R&T project staff members we surveyed believe that the research methods or approach pose a challenge to their project. While project managers and members agree that this is a challenge, they disagree on many other obstacles—such as quality assurance procedures for their research projects (see table I).

¹¹ The Scientific and Methodological review panels are led by a senior scientist from R&M, who can be the associate director (chief scientist) or assistant director of R&M, an incumbent of a senior technical position within the R&M directorate, the chief demographer, the chief economist, or anyone designated by the chief scientist.

¹² The 2020 R&T study plans document elements required by Census research standards, such as: study assumptions, methodology, data requirements, division and staff responsibilities, milestones, and study risks and limitations.

Table 1. Responses of R&T Project Managers and Members on Research Quality Assurance

Issue	Project Managers (% of total)	Project Members (% of total)	Difference (in percentage points)
Agree their project has clearly defined objectives	84	59	25
Agree there are clear processes to ensure valid and reliable research results	62	39	23
Agree their project follows specified quality control processes	66	43	23
Able to identify any quality control measure to ensure valid and reliable research results	74	51	23

Source: OIG survey of R&T and GSS research project staff

The review panel process is evolving, and R&M management is encouraging panel members to work more proactively with R&T teams. The R&M directorate reports internally that panel leads meet biweekly to discuss the progress and problems facing the teams. However, we found no guidance for the panels beyond a brief description of their structure and primary tasks. This single-page document specifies panel size, qualifications for panel leads and members, and a high-level overview of the panels' roles, but does not specify panel and team responsibilities. The process also lacks a standard protocol for how to record interactions between panels and teams, and to document panel concerns, recommendations, and approval of the research.

Recommendations

We recommend that the Director of the Census Bureau:

5. Require R&T teams to update the Knowledge Management Database with the status of current CPEX recommendations and move toward developing a bureau-wide solution for knowledge management (that is, one that can serve 2020 Census research as well as other surveys and activities throughout the bureau).
6. Create a more structured process for R&T review by drafting guidelines that specify responsibilities of the Scientific and Methodological review panels and the research teams; requirements for documenting interaction between research teams and panels; and an approval process that includes documentation of the panel's findings, recommendations, and endorsements of the team's work at key stages of the research.

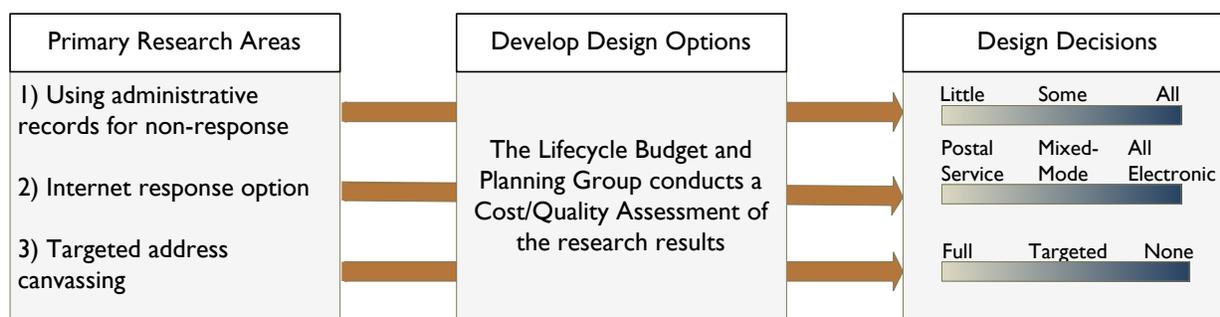
III. Program Management Plans Incorporate Best Practices, but Implementation Is Inconsistent

We found that implementation of decisions and program management processes has been uneven, with the bureau abandoning its efforts to develop a complex automated tool for comparing relative costs and quality of alternative designs. A new governance structure clearly defines functions of various parties and who is responsible for key decisions, but the structure does not establish a policy or mechanism for documenting those decisions.

A. Weaknesses in the Decision-Making Process Could Undermine Stakeholder Acceptance of Decennial Design

Automated trade-off analysis tool abandoned. The Lifecycle and Budget Planning group is tasked with conducting a cost/quality assessment to select the preliminary design alternative to meet the goal of implementing a 2020 Census at a lower cost per housing unit than 2010, while still maintaining high-quality enumeration. Figure 6 illustrates how research results are used to make design decisions. The bureau commissioned a contractor to develop an automated trade-off analysis tool that would enable decision makers to compare the cost and quality associated with different design options. However, the complex automated model was consistently behind schedule, and the contractor delivered an unfinished product. The tool incorporates fewer steps of the actual census process than originally planned and has fewer and more simplified capabilities. For example, the cost per contact is specified as the same throughout the country, regardless of location or type of contact (in-person, phone call, etc.). The automated tool has limited functionality; it cannot do much beyond assessing the effects of different design decisions on self-response rates.

Figure 6. How Research Feeds into 2020 Census Design



Source: OIG analysis of Census information

When it became evident that the contractor would not finish the complex automated tool before the task order ended, the team worked with the contractor to develop an alternative trade-off analysis tool called a fish-bone diagram. Unlike the complex automated model, the fishbone does not provide a numeric output given a set combination of design decisions. Instead, the manual diagram illustrates cause-and-effect

relationships between the various components that drive cost and quality of the 2020 Census and then assigns weights to these factors to define their relative impact. With much of the diagram incomplete and with questions about finishing the model unanswered, there are concerns about the fishbone diagram's utility as a decision-making tool. As of late March 2013, the team developing the diagram had not yet determined how the model will incorporate the weights, costs, and interactions of different design options to deliver a clear trade-off analysis to decision makers. Decision makers will be handicapped in their attempt to make design changes without clear assessments of the risks associated with each design option, and of how each option affects the cost and quality of the 2020 Census.

Governance groups not meeting. The Census Integration and Information Group (CIIG) is an advisory group scheduled to meet biweekly to exchange 2020 Census planning information about project status and metrics, identify and vet issues, develop solutions, and provide recommendations to the 20RPO Chief. It was formerly called the Census Integration Group (CIG) and chaired by the Decennial Management Division Chief, and was the primary governance group for the 2010 Census. It initially performed that function for the 2020 Census as well, but now the CIIG's primary purpose is to serve as an information exchange for programs and projects for the planning phase (and throughout the lifecycle) across divisions working on the program. Since June 11, 2012, however, the bureau has canceled 19 of 32 scheduled CIIG meetings, thereby forfeiting valuable opportunities to address issues related to the progress of the R&T phase.

Under the February 2013 Governance Management plan, the 20RPO chief and associate director for the 2020 Census are responsible for program governance decisions for the R&T phase, and are advised by the decennial leadership group (DLG). The DLG's purpose is to advise the associate director on critical 2020 program decisions, ensure high-level program integration across divisions and functional teams, and resolve issues escalated from the 2020 program managers through the 20RPO chief. Although scheduled to meet biweekly, the DLG held its first meeting on March 25, 2013, over one year after the start of the R&T phase. As of May 22, 2013, the DLG has met five times.

Decision documentation remains undefined. For the 2010 Census, the bureau produced the "Decision Memorandum Series," which was supposed to communicate issues and decisions pertaining to decennial operations. However, a similar decision-documenting mechanism for the 2020 Census has yet to be identified. We found the 2010 Census memoranda series lacking, with no documented policies on what decisions or events required a memorandum or what the content should be.¹³ As we stated in our August 2009 report, the absence of a systematically documented set of decisions reduces the transparency of decision-making and prevents stakeholders from being informed of potentially significant trade-offs and changes in the bureau's approach. A mechanism to document 2020 Census decisions is needed.

¹³ OIG, *2010 Census: First Quarterly Report to Congress*.

B. Risk Management for Projects Is Incomplete and Behind Schedule

As part of their program management effort, the 2020 Census directorate developed a risk management plan to ensure that projects are delivered on time, within budget, and with the promised functionality. In previous work, OIG has recommended that risk management begin at the outset of the decennial census lifecycle, rather than just before field operations (which defined risk management for the 2010 effort), including finalizing contingency plans prior to the start of decennial operations. The bureau's 2020 Census risk management plan establishes processes to identify and analyze risks, populate a risk register, develop mitigation and contingency plans, assess mitigation activities, and periodically reassess the risks as needed.

R&T risk activities incomplete. In November 2012, GAO found that while the 2020 directorate had drafted mitigation and contingency plans for the risks identified at program-level, not all R&T project teams had developed mitigation and contingency plans for risks identified under the criteria established in 20RPO's risk management plan.¹⁴ As of February 12, 2013, no project teams had completed their risk registers, mitigation, and/or contingency plans. Of the 120 risks identified by project teams as requiring plans, only 53 risks had completed mitigation and/or contingency plans. Sixty-seven risks had one or both plans missing (see figure 7).

Figure 7. Incomplete Risk Activities



Source: OIG analysis of Census Bureau data

In addition, 84 risks with mitigation plans did not always meet the criteria for risk management. For example, some lacked discrete mitigation steps. And 40 risks requiring mitigation, contingency-planning, or both, did not identify a “handling” option.¹⁵ Those risks without handling options had been identified for an average of 264 days. Finally, 15 risks transferred to other projects or stakeholders better situated to mitigate the risk were not accepted by the new risk owners.

A lackluster risk program reduces the bureau's ability to plan for and respond to negative events. One reason for the problems implementing the risk program is the resistance of R&T project staff. Program managers told us that Census employees consider the increased documentation required to be produced to program management to be burdensome and time-consuming. Our survey of R&T and GSS

¹⁴ U.S. Government Accountability Office, November 7, 2012. *2020 Census: Initial Research Milestones Generally Met but Plans Needed to Mitigate Highest Risks*, report no. 13-53.

¹⁵ The handling option describes the technique to manage the risk: assumption, control, transfer, avoidance, or monitoring.

project teams supports this assessment; several respondents complained that program management processes, including risk management, were tedious and had not been adequately explained to project members.

Census managers are aware of the issues and delays in implementing its risk management process. An internal review identified a number of issues, including the lack of deliverable due dates and other key milestones, defined roles and responsibilities, identification of initial risks, initial risk rating, mitigation-handling options, contingency plans, regular risk reviews, and production of metrics. The internal review recommended that directors of the 2020 Census add resources to the 20RPO risk management team in order to increase support to the project teams, and to improve communication and effectiveness. Finally, it recommended selecting and implementing a risk management tool that integrates with the 2020 Census schedule to improve the efficiency of risk management, and to comply with best practices. Similar to the internal review, we recommend that management actively monitor progress of risk activities, such as the completion of the required plans, and ensure that all project managers and members complete training.

Recommendations

We recommend that the Director of the Census Bureau:

7. Ensure research outputs are usable and on time to drive the trade-off analysis process and develop a vehicle for communicating key decisions and events, as well as a policy for determining which decisions and events should be communicated and what the content should be.
8. Establish a formal process to review, approve, and monitor R&T project teams' risk registers to ensure timely identification of risks and development of mitigation and contingency plans as appropriate. The program should provide for periodic reviews to ensure registers are updated on a comprehensive and timely basis.

Summary of Agency Response and OIG Comments

In response to our draft report, the Census Bureau director agreed with all of our recommendations, and reports that the bureau has already taken initial steps to ensure timely implementation to address them. The bureau also stated that its plans and schedules were created relative to its budget request and that once its level of funding was reduced, it had to make changes to the content and timing of its research and testing efforts. We have included the Census Bureau's formal response as appendix D. The Census bureau also provided technical comments to the draft report and we made changes to the final report, where appropriate.

We look forward to receiving the Census Bureau's action plan within 60 calendar days of the date of this report.

Appendix A: Objectives, Scope, and Methodology

To conduct this audit, we sought to (1) assess the implementation status of each project in the Census 2020 redesign effort, including the extent of implementation, time frames for completion, milestones, deliverables, and impact on the overall redesign program, (2) assess the Census Bureau's plans to evaluate each project, including whether accurate and reliable data will be available to determine each project's impact on redesign efforts, and (3) determine if 2020 Census governance and internal controls are adequate to manage the redesign effort.

Our methodology included interviewing senior bureau managers and 2020 research project managers and members. In addition, we reviewed documentation related to our objectives for the period FYs 2011–13 (unless otherwise noted). Specifically, we interviewed 2020 Census senior managers and research project managers to discuss issues related to research implementation, including schedule, budget, and the incorporation of prior research; the evaluation of 2020 research; and governance and internal controls, including risk management.

We also reviewed the research program documents, including:

- budget data for 2020 Census projects to assess research costs;
- the Knowledge Management Database to assess whether 2020 project teams incorporated Census Program Evaluation and Experiments (CPEX) recommendations into their research;
- policies, procedures, and guidelines related to research evaluation and peer review;
- policies and documentation related to project risk registers;
- project and study plans; and
- plans and documentation related to field testing.

We obtained an understanding of internal controls and practices by

- reviewing applicable laws and regulations, including Title 13 of the U.S. Code;
- interviewing 2020 Census management representatives to gain an understanding of program management and risk management processes; and
- reviewing relevant policies, procedures and guidelines.

We tested the reliability of the data that the Census Bureau provided by analyzing the data for irregularities and logical inconsistencies. We (1) looked for obvious errors in accuracy and completeness, (2) interviewed bureau officials who were knowledgeable about the data, and (3) directly tested against supporting documentation. We did not directly test the IT systems. No discrepancies were noted; thus, we consider the data sufficiently reliable for use in our audit.

Finally, we conducted an online survey of all 2020 Census project managers and members to solicit their feedback on 2020 Census research operations (see appendix B for a full description of the survey methodology).

We conducted this audit from August 2012 through May 2013. The audit was conducted under the authority of the Inspector General Act of 1978, as amended, and Department Organization Order 10-13, dated August 31, 2006, at the Department's offices in the Washington, DC, metropolitan area. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

Appendix B: Survey Methodology

To complete our review, we conducted an online survey of all research and testing (R&T) and Geographic Support Systems (GSS) project managers and members. We asked questions related to our three objectives: governance and internal controls, implementation status of each project, and research evaluation. Overall, we received surveys from 262 respondents, yielding a response rate of 75 percent.

The response rates by project (GSS/R&T) were very similar, reducing the risk of nonresponse bias caused by departmental differences.

Table B-1: OIG Survey Response Rates by Project

Project	Number of Responses	Population Size	Response Rate (%)
GSS	67	90	74
R&T	195	261	75

Source: OIG

Answering all questions was mandatory; submitting additional comments was optional. We used survey logic to route respondents to a different question path based on role (project member or project manager) and answer response (follow-up questions were asked only when relevant).

Our population was based on the bureau's rosters from January 2013, but those rosters changed as teams were restructured. To adjust, respondents found to be in-scope but not part of the original rosters were added to the universe and included in the list of respondents, and respondents and roster members found to be out-of-scope were removed from the universe and list of respondents.

Respondents could complete the survey multiple times—one survey per project. Nine respondents did so. They completed a combined total of 20 surveys, producing 11 “legitimate” duplicates. (Seven of the nine respondents completed 2 surveys each, and two of the nine respondents completed 3 surveys each.) The legitimate multiple responses were excluded for the purpose of calculating response rates but were included for the purpose of analyzing survey results. The 262 unique respondents produced 273 total survey responses. Illegitimate duplicate surveys from the same respondent about the same project were removed.

To refine the survey instrument, we interviewed bureau staff across ranks and teams and then pretested the questionnaire. Based on our pretesting, we modified the questionnaire to reduce the burden on respondents, target the most relevant information, and reduce question bias. We provided a copy of the questionnaire to Census Bureau management on January 28, 2013, to ensure that our questions were not misleading or off-topic. We e-mailed a SurveyMonkey link to Census 2020 design staff on January 29, 2013, and closed the survey to respondents on February 22, 2013, allowing 3 weeks to complete the questionnaire.

Our survey has several limitations. The constantly changing nature of the teams and the associated difficulties in defining the universe and identifying team role could introduce bias to our results. Also, many survey questions offered response options of “Not applicable” and “Don’t know.” We always excluded “Not applicable” responses for analysis. When the “Don’t know” response option was relevant, we included it. When this response option would have skewed results and we wanted to report a breakdown of respondents who were familiar enough with a topic to answer the question, we excluded those answering “Don’t know.”

Survey questions are reprinted below.

Survey Questions

1. Name
2. E-mail address
3. How many R&T and GSS projects do you work on as a team lead or member?
4. How many non-R&T/GSS projects do you work on as a team lead or member?
5. Please select your primary Research & Testing (R&T) or Geographic Support System (GSS) project.
6. Please indicate your level of agreement or disagreement with the following statements about your project role:
 - a. I have sufficient time to complete my personal project responsibilities on schedule.
 - b. My skills are appropriate for my work on this project.
7. Are you a team lead, project manager, or team member for this project?
8. How will the results of your project feed into the 2020 Census design, and which key decisions will they inform?
9. Who decides whether to incorporate your project results into the 2020 Census design and what criteria do they use (e.g., Trade-Off Analysis Tool)?
10. Please list the most critical activity (milestone/deliverable) for your project and explain how it contributes to project success.
11. Please assess the current progress of this activity (milestone/deliverable).
12. Please identify the primary stakeholders who will use your project results.
13. Please indicate your level of agreement or disagreement with the following statements:
 - a. My stakeholders helped define the objectives of my project.
 - b. My stakeholders helped set my project’s priorities.
 - c. Our work will meet the needs of our stakeholders.
 - d. There is a protocol for handling requirement conflicts.
 - e. Responsibility for key project decisions is clearly defined.

14. Please assess the impact of the following issues on your project:
 - a. Coordination within project team
 - b. Methodological difficulties
 - c. IT problems
 - d. Obtaining timely access to data
 - e. Data quality
 - f. Management review process
15. Please assess the impact of other Census projects on your project:
 - a. Coordination with other R&T and GSS teams
 - b. Coordination with non-R&T and GSS Census Bureau teams (e.g. Center for Adaptive Design “CAD”)
 - c. Balancing responsibilities for other projects
16. To what extent are the following resources appropriately allocated for your project?
 - a. Staffing levels
 - b. Budget
 - c. Time to complete activities
 - d. Contract support
17. Please indicate your level of agreement or disagreement with the following statements:
 - a. Team members understand their responsibilities.
 - b. Responsibilities are fairly allocated across team members.
 - c. My project has clearly defined objectives.
18. Does your project team lack any required skill-sets?
19. Please list and explain which skill-sets are lacking.
20. Please indicate your level of agreement or disagreement with the following statements about quality control for your project:
 - a. There are clear processes to ensure valid and reliable research results.
 - b. My project follows these specified quality control processes.
21. Please describe the quality control measures that are in place during your project work to ensure valid and reliable research results.
22. Please indicate your level of agreement or disagreement with the following statements about the Research & Methodology peer review process and R&T field tests for your project:
 - a. My team can meet the Research & Methodology peer review requirements.
 - b. The Research & Methodology peer review process is a positive influence on my team.
 - c. The Research & Methodology peer review process improves product quality.
 - d. 2020 R&T field tests are clearly defined.
 - e. 2020 R&T field tests are appropriate to answer my project’s research questions.

23. What statement best describes the way your project uses results from the Census Program for Evaluations and Experiments (CPEX)?
 - a. CPEX results are critical to my project's success.
 - b. CPEX results are informative to my project.
 - c. My project does not use CPEX results because they are not relevant.
 - d. My project does not use CPEX results because of quality concerns.
 - e. Don't know.
24. Is your project's success dependent on any other projects (R&T, GSS, CAD, etc.)?
25. Please list the projects on which your project's success depends.
26. Are there any other projects that potentially duplicate your research efforts?
27. Please list which other projects potentially duplicate your research efforts.
28. Please provide any additional comments about your project or the R&T/GSS program.

Appendix C: Detailed Project Information

**Table C-1. Status of R&T Projects for FYs 2012 and 2013, as of March 2013:
% of Activities Delayed Relative to January 2013 Baselines**

Project and Objective	Status and Activity Delays (% of Total)	
	30 Days	180 Days
Master Address File (MAF) Error Model Independent MAF Quality Assessment: Develop a statistical model of errors in the MAF. Use the MAF error model to assess the quality of the MAF and determine if and where targeted address canvassing would be effective.	48	14
Local Update of Census Addresses (LUCA) Program Improvement: Examine what modifications to the bureau's existing LUCA program will be required to support targeted address canvassing. Explore the use of administrative records to validate new addresses.	69	0
Automating Field Activities: Investigate how the bureau can effectively automate and streamline field operations to take advantage of design changes and non-response follow-up data collection modes.	48	44
Reducing and Improving In-Person, Follow-Up Operations: Research and test ways of reducing the cost of in-person follow-up on cases sent to the field by finding ways to streamline operations to promote efficiencies, while maintaining quality.	39	30
Optimizing Self-Response: Develop requirements of the Internet response option and coordinate the relationship between different response modes (that is, Internet, paper, telephone). Determine Internet response option languages.	71	39
Workload Management Systems: Develop infrastructure to support the Internet response option.	39	33
Multiple Mode Interface Study: No project plan.	Awaiting Initiation	
Non-ID Processing: Evaluate methods to geocode non-ID cases in near real-time and ensure appropriate security measures are in place.	29	20
Coding, Editing, and Imputation Study: Examine administrative records and previous Census data as sources to obtain missing household and address information.	17	3
Enhancing Demographic Analysis: Use administrative records to increase the utility of demographic analysis.	Suspended	
Improving Quality Control: Examine administrative records as a supplement and/or replacement to field work in quality control operations.	80	58
Administrative Records for Fitness of Use: Acquire, process, and analyze administrative records from federal, state, and private data sources to assess their utility for the 2020 Census.	79	15
Privacy and Confidentiality Study: Identify public perception and concerns about responding to the Census via the Internet and the use of administrative records for enumeration purposes.	2	2
Matching Process Improvement: Examine methods to improve matching for the 2020 Census.	35	0
Contact Frame: Acquire and process administrative records for the purpose of using them for alternate contact information. Provide alternative contact methods, such as e-mail addresses.	41	2
Administrative Records Modeling: Research and test methods to replace or supplement NRFU data collected in person with administrative data.	46	33
Field Staff Training: Develop and recommend new, innovative and cost-effective field staff training to improve the quality of training methods; and improve training efficiency through advanced training methods to obtain quality data at lower costs.	No scheduled activities as of March 2013	
Logistics and Field Infrastructure Study: Develop field structure design alternatives to support field operations and logistics systems to reduce field structure cost and improve logistics management to ensure timely, cost-effective delivery of materials.	No scheduled activities as of March 2013	
Virtual Office Computing Environment (VOCE) and Field Office Test Bed: Develop VOCE and supporting activities for local and remote users.	No scheduled activities as of March 2013	

Source: Census Bureau information

**Table C-2. Status of Geographic Support System Projects for FYs 2012 & 2013:
% of Activities Delayed as of March 5, 2013**

Project and Objective	Status and Activity Delays (% of Total)	
	30 Days	180 Days
Confidence, Analysis and Tracking Tool and Quality Indicators (CATT/QI): Identify geographic areas that require address and spatial feature update prioritization and geographic areas that are stable and have accurate and complete address and feature coverage. Provide transparency to customers, and bureau management. Report the quality of any census tract so that each QI can be run as an independent algorithm within a larger system.	40	1
MAF/TIGER Address Geocoding System (MTAG): Resolve address range and cluster issues, and assign address ranges to linear features so the MAF records without geocodes match TIGER.	3	0
Address and Point Evaluation: Develop a methodology to evaluate the quality of acquired geospatial files to determine the usability of un-geocoded residential records for spatial enhancement of address location in the MTdb.	0	0
Feature Source and Architecture Evaluation: Evaluate the quality of feature source files received from GEO partners. Update the MTdb. Improve the quality of source data used to update the MTdb. Improve the accuracy of the MTdb road network base to improve address geocoding and ultimately support the implementation of targeted address canvassing for the 2020 Census.	0	0
Problem Capture, Prioritization Tracking and Reporting Tool: Enhance capabilities to recognize quality deficiencies in the MTdb's address and geographic feature data.	30	7
GSS-I Workflow Control System: Control the flow of partner files for use in updates to the MTdb, and provide partner feedback. Interface with the CATT to determine which files should be acquired based on QI scores and which should proceed toward MTdb updating. Update the MTdb and create an ongoing partnership effort with local and tribal governments.	3	0
^a iSimple: Help GEO staff detect problematic linear features that resulted from spatial feature updates applied to the MTdb in preparation for the 2010 Census. Help GEO staff make critical decisions regarding targeted analysis and linear feature processing.	78	44

Source: Census Bureau information

^a Completed in phase I.

Appendix D: Agency Comments



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

NOV 15 2013

MEMORANDUM FOR Ron Prevost
Assistant Inspector General for Economic and Statistical Program
Assessment

From: John H. Thompson
Director

Through: Mark E. Doms
Under Secretary for Economic Affairs

Subject: Draft Report: *2020 Census Planning: Research Delays and
Program Management Challenges Threaten Design Innovation*

The attached comments are in response to your draft audit report, *2020 Census Planning: Research Delays and Program Management Challenges Threaten Design Innovation*. The U.S. Census Bureau appreciates the comments and recommendations developed by the Office of the Principal Assistant Inspector General in producing this audit report.

Attachment

cc: US/EA

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OIG Draft Report
2020 Census Planning: Research Delays and Program Management
Challenges Threaten Design Innovation
U.S. Census Bureau Response

The U.S. Census Bureau has reviewed this Office of Inspector General (OIG) Draft Report, and has the following comments:

General Comment – The statements in the cover memo and throughout this draft report about delays and incomplete schedules are made without reference to the major impacts of the Congressional budget cut and sequestration compared to the President’s request. We believe that such a reference is important to establishing the appropriate context for the Census Bureau’s decision-making process. The Census Bureau’s plans and schedules were created relative to its budget request—once that level of funding was reduced, we had to make changes to the content and timing of our research and testing efforts.

Responses and Planned Actions for Each of the Eight Recommendations in this Draft Report:

Page 9, Recommendation 1 – The Census Bureau concurs with this finding and recommendation. However, as mentioned above, we faced significant budget cuts in FY13 and FY14, forcing us to delay critical testing activities. We conducted a reassessment activity designed specifically to reassess the program in light of the budget cuts to ensure that we could conduct the necessary testing to support the September 2015 design decision date. We worked directly from the design decisions and identified cost drivers to focus the Research and Testing (R&T) efforts on those key research initiatives that will contribute to our design decisions and help us to meet our cost-reduction objectives.

Page 9, Recommendation 2 – The Census Bureau concurs with this finding and recommendation. The implementation of the Data Management System in 2014 will enable the Census Bureau to more effectively track and acquire approval for research projects. The Data Management System will replace the antiquated system for requesting and tracking projects using administrative records, and new procedures will enable project leads to document projects and request data from information owners in a more consistent manner. The system will enhance transparency through established work flows, which ensures that all stakeholders, including project leads, division chiefs, and information owners, are accountable and can track projects more effectively.

Page 9, Recommendation 3 – The Census Bureau concurs with this finding and recommendation. We are working with the Census Bureau’s newly formed Office of Cost Estimation and Analysis, which is tasked with developing Earned Value Management guidelines for the agency. We will follow their guidance as it becomes available. The expectation is that 2020 will be integrated into that process with testing in FY14 and full implementation in FY15.

Page 9, Recommendation 4 – The Census Bureau concurs with this finding and recommendation. An agile organization needs to be able to be flexible based on available resources and the continuous learning coming from the research. We have been working from this perspective with our testing plans. The cancellation of tests has not yet jeopardized the research objectives, although that could change if sufficient funding is not provided in FY 2014. We remain on target to meet our design decision deadline of September 2015. The 2020 Census R&T program is using data from the American Community Survey (ACS) to inform 2020 research including data from the ACS Internet and telephone solutions for self-response. In addition, existing ACS systems and applications will be used to conduct a 2020 Test in October of 2013 that will provide data for the Adaptive Design models for field enumeration that will be used in the 2014 Site Test. ACS and Decennial have been collaborating since the 2010 Census Quality Survey to develop and test the internet instruments, and to test various contact scenarios for the Internet Push strategy. Both areas also have been working together closely, and with the IT directorate, to develop corporate technology solutions to common needs. These will be implemented within the ACS and then expanded to support the 2020 Census. In addition, regarding the need to establish and adhere to a testing strategy and schedule, the R&T teams have provided their capability and solution requirements, and are currently developing their specifications for the 2014 Site Test. In addition, they are currently providing their needs for paradata from the operations and systems. Our expectation is that the 2014 Site Test will provide the data needed by the Research Teams.

Page 12, Recommendation 5 – The Census Bureau concurs with this finding and recommendation. Regarding the first portion of this recommendation, we already are updating the Knowledge Management Database with the status of current CPEX recommendations. All but 24 (3 percent) of 699 CPEX recommendations have been assigned a status by the R&T teams or their program managers. Also, recommendations/statuses will be reported during the weekly 2020 project portfolio management governance meetings that will begin in October 2013. Regarding the second portion of this recommendation, the Decennial directorate will work with the IT Directorate to determine what would be involved and how to move forward in developing a corporate solution.

Page 12, Recommendation 6 – The Census Bureau concurs with this finding and recommendation. The Chief of the 2020 Research and Planning Office has established a strengthened Test Coordinator to implement the sorts of things described in this recommendation.

Page 16, Recommendation 7 – The Census Bureau largely concurs with this finding and recommendation. However, while the automated tool being developed was set aside, the Research and Methodology directorate, in collaboration with the Decennial directorate, initiated a new modeling effort. Working with MITRE, this new work was initiated in February 2013. It builds on the concepts developed in 2012 and early 2013 with the tools, data, and interfaces required to support enterprise-level analysis. The project team has representation from all relevant units within the Census Bureau.

Key questions being addressed include:

- What are the potential cost and quality impacts for the key design features such as use of the internet, reducing the number of household visits or phone contacts, and “business rules” more generally that are tuned to the household level?
- How can a better understanding of uncertainty be used to reduce cost or risk?
- How can investment in research reduce cost or increase quality?

To these and other ends, the micro-simulator implements Monte-Carlo at the household level, generating quality measures for each set of business rules evaluated. Business rules include user-adjustable thresholds, for example “move to administrative records if their suitability for use exceeds threshold T.” Costs are computed externally using the Census ROM. Repeated simulator runs produce a “point cloud” in cost/quality space. These uncertainties help to identify designs that meet success criteria with greatest confidence, identify potential changes in business rules to increase the probability of success, identify research necessary to reduce uncertainty, or move the point cloud to a more acceptable region. Quantitative summaries include distributions of costs and quality at chosen levels of geography/demography and will include measures of variation in outcome across these levels.

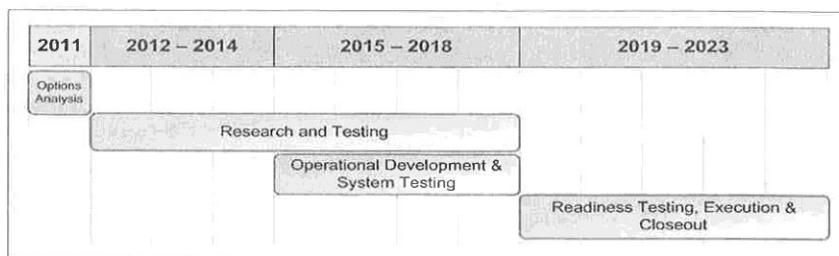
The software is now running in the Census environment, simulating the impact of multiple strategies for the use of Administrative Records and study of related adaptive designs. The next steps are to include the information from additional research projects and business rules, allowing users to see the full impact of current knowledge and to identify the highest leverage research.

Page 16, Recommendation 8 – The Census Bureau concurs with this finding and recommendation. However, much of the risk assessment work was delayed or otherwise affected by the budget cuts and the reallocation of key staff to conduct the reassessment effort. We now have met with each of the 18 active research and testing projects to provide written instructions and guidance on project risk registers. Beginning October 17, all risk registers are being reviewed on a regular basis. We also re-started the “Risk and Issues User Forum” that was on hiatus during the reassessment effort.

Other Comments

Page 1, Paragraph 1 – The automation of field activities is another potential source of major cost savings; as a result, we believe that the reference to this undertaking merits more than a footnote.

Page 1, Figure 1 – The diagram reprinted in this report is outdated. The diagram below, which we have used for some time, reflects that some research and testing always was planned for the period of 2015-2018:



Page 2, Paragraph 1 – We would like to dissuade the OIG as well as other stakeholders and interested parties, from using the old projection with a high estimate of \$25b (\$151 per HU). Instead, all parties should use the results from the more recent (and, we believe, more accurate) projection with a high estimate of \$18b (\$120 per HU).

Page 3, Paragraph 4 – This paragraph fails to mention unstable and inadequate funding as a primary factor in changing schedules.

Page 4, Paragraph 1 – The Census Bureau has developed planning around enterprise solutions for systems and processes that include 2020 Census. Some projects have changed based on modifications to the scope of work that has moved to the enterprise level. 2020 is a participating program business area that will provide its 2020 Census business requirements, and validate that the enterprise solutions can meet the 2020 Census needs. In addition, the FY12 and FY13 budget cuts affected significantly the amount of planned work around optimizing processes.

Page 4, Figure 3/Paragraph 2 – The last sentence of this paragraph and the figure assert that the design decision date has been moved to December 2016. The target date for that decision is September 2015. This same comment applies to the December 2016 references in the second paragraph on page 8. Figure 3 also incorrectly states that our current deadline is December 16. When we rebaselined the schedule in March of 2013, it was our first attempt at a logic driven schedule that enables projected completion dates to be calculated based on that logic. We shared a version of that schedule with OIG as a work in progress; perhaps, that version was calculating projected completion dates in December 2016 for design decisions. We have since resolved a number of logic issues in the schedule, and currently have a change request in progress to update the schedule. Once updated, the schedule will accurately reflect the management deadline of September 30, 2015, for “Determine 2020 Census Preliminary Operational Design of Key Components.”

Page 4, Last Paragraph (which continues on to Page 5) – Again, we are disappointed that this discussion does not acknowledge that we had to conduct an extensive program reassessment due to budget reductions. We made these changes to strengthen what we could do within our reduced resources by focusing efforts on the work most likely to support the overall goal of reducing costs for the 2020 Census.

Page 5, Paragraph 3 – We had to rebaseline schedules because of the reassessment of the program necessitated by budget cuts. The planned testing in FY13 was either cancelled or delayed until FY14; therefore, schedules had to be rebaselined/adjusted. Also, the kickoff meetings for teams were not pushed back to February 2013; all these kickoffs took place in November 2012.

Page 7, Last paragraph – This paragraph accurately states that the 2020 Census program cancelled 13 of 25 scheduled tests for the R&T Phase (which did not begin until FY12, not FY11, as stated in this draft report); however, many of these tests (specifically Tests 1-9) were subsumed into the agile development methodology being used to develop the automated enumeration instrument that will be implemented on the handheld device. The other tests were delayed due to budget cuts in our appropriation for both years.

Page 7, Paragraph 2 – We would like to see some additional context here regarding the fact that the original testing schedule with 25 field tests was developed three years ago in the midst of the 2010 Census. As a result, the original testing schedule was developed with minimal input from subject matter experts, who were focused on the 2010 Census activities. As the R&T program has matured, much of the originally planned testing was determined to be unnecessary, was consolidated, or absorbed within the agile scrum methodology now in place for the development of key systems and instruments. And, as mentioned in other comments, the reassessment activity necessitated by budget cuts also resulted in some changes/delays in our testing plans.

Page 7, Figure 5 – In addition to the immediate comment above, this chart does not accurately reflect the logic of the testing strategy. As mentioned above, nine of the tests that we cancelled were subsumed by agile development methodology. All 9 were originally planned to be small. Then we added two tests that are not mentioned: a 2012 Internet test (2012 National Census Test) and a 2013 Adaptive Design test (2013 Site Test). Next, two of the cancelled tests were changes in methodology from field tests to an ongoing survey that is more iterative (monthly) than the original thinking (Privacy and Confidentiality Tests 21 and 27). Finally, one test that we cancelled was re-scoped to be a focus group (LUCA Test 19).

Page 10, Paragraph 2 – This paragraph appears to assume that putting a CPEX recommendation “on hold” is equivalent to inaction. The “on hold” designation does not mean that we will not pursue the recommendation. The designation means only that the recommendation will be pursued at a later date, such as when the appropriate R&T team actually exists. Much of the R&T work does not arise until FY14 and FY15; as a result, many recommendations must be put on hold until a team exists to address them. Any conclusion that CPEX recommendations are being ignored should be tempered by the understanding that the R&T teams working on the 2020 research are staffed mostly with the people who conducted the 2010 CPEX research. Therefore, they bring the knowledge of the CPEX findings and recommendations to the R&T teams. Additionally, all major CPEX recommendations are being pursued (e.g., targeted Address Canvassing, automating field activities, using Administrative Records for NRFU, improved content design, improved self-response options and strategies, etc.).

Page 14, Paragraph 2 – We suspended the biweekly CIIG meetings during the reassessment effort that commenced in April 2013 and ended in June 2013. We have not reconvened because we have established a weekly forum—the Decennial Leadership Group—that includes representatives from most divisions; we currently are evaluating whether these would be largely duplicative forums. In addition, the quarterly Program Management Review meetings provide information to ALL of the Census Bureau, and we have continued to produce the Monthly Status Report for both internal and external stakeholders.

Page 16, Paragraph 3 – We disagree with the statement about the completion of project plans. All FY 12 and FY 13 project plans were baselined on time.

Page 16, Paragraph 3 – In regard to the ability of project teams to meet internal deadlines, we are beginning weekly 2020 project portfolio governance meetings in October 2013. Teams will report at least quarterly on their work, including cost, schedule, and scope to the 2020 Program Manager and the Chief of the 20RPO. In addition, IT-related projects also will be monitored by the IT directorate and its portfolio management board to give insight to the CIO.