

October 2002

2000 CENSUS

Lessons Learned for Planning a More Cost-Effective 2010 Census



Contents

Letter

Results in Brief	1
Background	2
Total Funding for Bureau Planning Was Lower Than Requested	5
Funding and Other Factors Affected Planning Efforts	7
2000 Census Planning Provides Lessons Learned for The 2010 Census	9
Conclusions	14
Recommendation for Executive Action	17
Agency Comments and Our Evaluation	18

Appendixes

Appendix I: Objectives, Scope, and Methodology	20
Appendix II: Analysis of Funding by Fiscal Year for Planning and Development of the 2000 Census	22
Appendix III: Comments From the Department of Commerce	38
GAO Comments	42

Tables

Table 1: 2000 Census Planning and Development Funding Requested and Received for Fiscal Years 1991 Through 1997 (dollars in millions)	8
Table 2: 2000 Census Planning and Development Funding for Fiscal Year 1992 (dollars in millions)	23
Table 3: 2000 Census Planning and Development Funding for Fiscal Year 1993 (dollars in millions)	25
Table 4: 2000 Census Planning and Development Funding for Fiscal Year 1994 (dollars in millions)	28
Table 5: 2000 Census Planning and Development Funding for Fiscal Year 1995 (dollars in millions)	30
Table 6: 2000 Census Planning and Development Funding for Fiscal Year 1996 (dollars in millions)	33
Table 7: 2000 Census Planning and Development Funding for Fiscal Year 1997 (dollars in millions)	35

Contents

Abbreviations

AIR	American Indian Reservation
DADS	Data Access and Dissemination System
DSF	Delivery Sequence File
FTE	full-time equivalent
ICM	Integrated Coverage Measurement
MAF	Master Address File
OMB	Office of Management and Budget
TIGER	Topologically Integrated Geographic Encoding and Referencing



United States General Accounting Office
Washington, D.C. 20548

October 31, 2002

The Honorable William Lacy Clay, Jr.
House of Representatives

The Honorable Carolyn B. Maloney
House of Representatives

This report responds to your request to review the funding of 2000 Census planning and development efforts and the impact it had on census operations. Total funding for the 2000 Census, referred to as the life cycle cost, covers a 13-year period from fiscal year 1991 through fiscal year 2003 and is expected to total about \$6.5 billion adjusted to 2000 year dollars. This amount was almost double the reported life cycle cost of the 1990 Census of \$3.3 billion adjusted to 2000 year dollars. Current life cycle unadjusted cost estimates of the 2010 Census range from \$10 billion to \$12 billion. Considering these escalating costs, the experience of the U.S. Census Bureau in preparing for the 2000 Census offers valuable insights for the planning and development effort now occurring for the 2010 Census. This report is part of a series of GAO studies on lessons to be learned from the 2000 Census that can help bureau efforts to conduct an accurate and cost-effective census in 2010.

We classified 2000 Census efforts into the following three phases.

- The planning and development phase consisted of a variety of activities to prepare for the actual decennial census count on April 1, 2000. Although planning and development efforts continued into subsequent phases of the census, this phase involved 7 fiscal years from 1991 through 1997 with actual funding of about \$238 million adjusted to 2000 year dollars, or about 4 percent of the total decennial life cycle cost.
- The implementation phase included conducting the 1998 dress rehearsal, establishing 511 temporary local census offices in the 50 states, hiring and training over 500,000 temporary personnel, and then conducting the actual census count. This phase involved 3 fiscal years from 1998 through 2000 with actual funding of about \$5.6 billion adjusted to 2000 year dollars, or about 86 percent of the total decennial life cycle cost.
- The postenumeration phase involves compiling and checking the census counts for public release by April 1, 2001, for subsequent use in

congressional redistricting, and for other postcensus studies. This phase covers 3 fiscal years from 2001 through 2003 with estimated funding of about \$686 million adjusted to 2000 year dollars, or about 10 percent of the total decennial life cycle cost.

As agreed with your offices, our review focused on the planning and development phase of the 2000 Census and (1) the funding requested, received, and obligated, with funding received and obligated by major planning category,¹ (2) funding and other factors that affected planning efforts, and (3) lessons learned for the 2010 Census. Our analysis was based on unaudited budget and financial data provided by the U.S. Census Bureau. We performed our work between January 2001 and July 2001 at which time our review was suspended due to an inability to obtain access to certain budget records. After lengthy discussions with senior officials of the bureau, the Department of Commerce, and the Office of Management and Budget (OMB), and consultation with your staffs, this access issue was resolved in May 2002 and we completed our analysis in June 2002. Our work was done in accordance with U.S. generally accepted government auditing standards. Further details on our scope and methodology are presented in appendix I.

The Department of Commerce provided written comments on a draft of this report, including two attachments. We reprinted the comments in appendix III, except for the second attachment, *Potential Life-Cycle Savings for the 2010 Census*, which the bureau stated is currently under revision and is outside the scope of our review.

Results in Brief

Thorough and comprehensive planning and development efforts are crucial to the ultimate efficiency and success of any large, long-term project, particularly one with the scope, magnitude, and deadlines of the U.S. decennial census. For fiscal years 1991 through 1997, about \$269 million was requested in the President's Budgets for 2000 Census planning and development and the program received funding of about \$224 million by the Congress, or about 83 percent of the amount requested. For fiscal years

¹The bureau's use of major categories evolved from 1 activity of general planning in fiscal year 1991, to 8 major study areas in fiscal years 1992 and 1993, to 8 to 15 broad categories called frameworks beginning in 1994. For internal management and reporting, the bureau further identified program efforts by activities and projects that have varied since fiscal year 1991.

1991 and 1992, OMB deemed the Department of Commerce requests to fund early census reform as insufficient and doubled the amounts to \$1.5 million and \$10.1 million, respectively. These amounts were included in the President's Budgets and the Congress concurred by authorizing the full amount requested. However, funding reductions by the Congress occurred every subsequent fiscal year from 1993 through 1997. According to the bureau, these reductions resulted in the elimination, deferral, or scaling back of certain projects in planning for the 2000 Census. The bureau obligated 99 percent of its appropriated 2000 Census funding through fiscal year 1997.

According to U.S. Census Bureau records, the bulk of the \$86 million in funding received through the end of fiscal year 1995 was obligated for program development and evaluation methodologies, testing and dress rehearsals, and planning for the acquisition of automated data processing and telecommunications support. For fiscal years 1996 and 1997, bureau records indicated the bulk of \$138 million of decennial funding received was obligated for planning for the establishment of field data collection and support systems, refining data content and products, evaluating test results, and procuring automated data processing and telecommunications support. For the planning and development phase, personnel costs consumed about 53 percent of total costs; contractual services consumed 16 percent; and space, supplies, travel, and other expenses consumed the remaining 31 percent.

The U.S. Census Bureau was responsible for carrying out its mission within the budget provided and bureau management determined the specific areas in which available resources were invested. We could not determine what effect, if any, that higher funding levels might have had on bureau operations as this is dependent upon actual implementation and the results of management decisions that may or may not have occurred. According to bureau officials, early planning and development efforts for the 2000 Census were adversely affected by lower funding than requested for fiscal years 1993 through 1997. They identified 10 areas where additional funding could have been beneficial. These included difficulties in retaining knowledgeable staff, scaled back plans for testing and evaluating 1990 Census data, delays in implementing a planning database, and limited resources to update address databases. While lower funding may have affected these areas, information from various bureau and GAO reports and testimony, as well as our current review, showed that operational, methodological, and other factors also contributed to weaknesses in the bureau's planning efforts.

The bureau's experience in preparing for the 2000 Census underscores the importance of solid, upfront planning and adequate funding levels to carry out those plans. As we have reported in the past, planning a decennial census that is acceptable to stakeholders² includes analyzing the lessons learned from past practices, identifying initiatives that show promise for producing a better census while controlling costs, testing these initiatives to ensure their feasibility, and convincing stakeholders of the value of proposed plans. A major contributing factor to the funding reductions was the bureau's persistent lack of comprehensive planning and priority setting, coupled with minimal research, testing, and evaluation documentation to promote informed and timely decision making. Over the course of the 1990s, the Congress, GAO, and others criticized the bureau for not fully addressing such areas as (1) capitalizing on its experiences from past decennial censuses to serve as lessons learned in future planning, (2) documenting its planning efforts, particularly early in the process, (3) concentrating its efforts on the few critical projects that significantly affected the census count, such as obtaining a complete and accurate address list, (4) presenting key implementation issues with decision milestones, and (5) identifying key performance measures for success.

In light of the challenges facing the bureau as it prepares for the next decennial census in 2010, we are recommending to the Secretary of Commerce that the bureau's requests for funding of planning and development activity provide comprehensive information supported by sound data. This information would include, but is not limited to, such information as

- specific performance goals for the 2010 Census and how bureau efforts, procedures, and projects would contribute to those goals;
- detailed information on project feasibility, priorities, and potential risks;
- key implementation issues and decision milestones; and,
- performance measures.

²Stakeholders include the Congress, federal agencies, state and local governments, the public, demographers, and others who rely upon census information.

The department agreed with our recommendation and stated that the bureau is expanding documents justifying its budgetary requests.

Background

As a result of controversy and litigation surrounding the 1990 Decennial Census, the U.S. Census Bureau recognized the need for a full-scale review of its decennial census program. The Congress, OMB, and GAO also agreed that this review was needed and that it must occur early in the decade to implement viable actions for the 2000 Census and to prepare for the 2010 Census.³ Early in the 1990s, in reports and testimonies, we stressed the importance of strong planning and the need for fundamental reform to avoid the risk of a very expensive and seriously flawed census in 2000.⁴

To address a redesign effort, in November 1990 the bureau formed the Task Force for Planning the Year 2000 Census and Census-Related Activities for 2000-2009. The task force was to consider lessons learned from the 1990 Census, technical and policy issues, constitutional and statutory mandates, changes in U.S. society since earlier decennial censuses, and the most current knowledge of statistical and social measurement. The bureau also established a Year 2000 Research and Development Staff to assist the task force and conduct numerous research projects designed to develop new approaches and techniques for possible implementation in the 2000 Census. In June 1995, the task force issued its report, *Reinventing the Decennial Census*.

Concerns about the 1990 Census also led the Congress to pass the Decennial Census Improvement Act of 1991 (Public Law 102-135) requiring the National Academy of Sciences to study the means by which the government could achieve the most accurate population count possible and collect other demographic and housing data. The academy established a panel on methods to provide an independent review of the technical and operational feasibility of design alternatives and tests conducted by the

³Global Report of the Task Force for Planning the Year 2000 Census, *Reinventing the Decennial Census* (Washington, D.C.: June 1995).

⁴U.S. General Accounting Office, *Census Reform Needs Attention Now*, [GAO/T-GGD-91-13](#) (Washington, D.C.: Mar. 12, 1991); *Decennial Census: 1990 Results Show Need for Fundamental Reform*, [GAO/GGD-92-94](#) (Washington, D.C.: June 9, 1992); *Decennial Census: Fundamental Reform Jeopardized by Lack of Progress*, [GAO/T-GGD-93-6](#) (Washington, D.C.: Mar. 2, 1993); and *Decennial Census: Focused Action Needed Soon to Achieve Fundamental Breakthroughs*, [GAO/T-GGD-93-32](#) (Washington, D.C.: May 27, 1993).

U.S. Census Bureau. The panel issued its final report in September 1994. A second academy panel on requirements examined the role of the decennial census within the federal statistical system and issued its final report in November 1994.

In March 1995, the bureau conducted the 1995 Census Test which provided a critical source of information to decide by December 1995 the final design of the 2000 Census. These efforts resulted in a planned approach for reengineering the 2000 Census which was presented in a May 19, 1995, U.S. Census Bureau report, *The Reengineered 2000 Census*.

In October 1995, we testified on the bureau's plans for the 2000 Census.⁵ In that testimony, we concluded that the established approach used to conduct the 1990 Census had exhausted its potential for counting the population cost-effectively and that fundamental design changes were needed to reduce census costs and to improve the quality of data collected. We also raised concerns about the bureau proceeding with design plans for the 2000 Census without input from the Congress. In the intervening months, the bureau was unable to come to agreement with the Congress on critical design and funding decisions. In February 1997, we designated the 2000 Decennial Census a new high-risk area because of the possibility that further delays could jeopardize an effective census and increase the likelihood that billions of dollars could be spent and the nation be left with demonstrably inaccurate census results.⁶ In July 1997, we updated our 1995 testimony on bureau design and planning initiatives for the 2000 Census and assessed the feasibility of bureau plans for carrying out the 2000 Census.⁷

⁵U.S. General Accounting Office, *Decennial Census: Fundamental Design Decisions Merit Congressional Attention*, [GAO/T-GGD-96-37](#) (Washington, D.C.: Oct. 25, 1995).

⁶U.S. General Accounting Office, *The High-Risk Series*, [GAO/HR-97-2](#) (Washington, D.C.: Feb. 1997) is a special effort to review and report on the federal program areas we have identified as high risk because of their vulnerability to waste, fraud, abuse, or mismanagement.

⁷U.S. General Accounting Office, *2000 Census: Progress Made on Design, but Risks Remain*, [GAO/GGD-97-142](#) (Washington, D.C.: July 14, 1997).

To respond to Title VIII of Public Law 105-18, which required the Department of Commerce to provide detailed data about the bureau's plans by July 12, 1997, the bureau issued its *Report to Congress, The Plan For Census 2000*. This plan also incorporated the bureau's *Census 2000 Operational Plan* that was updated annually. In November 1997, Public Law 105-119 established the Census Monitoring Board to observe and monitor all aspects of the bureau's preparation and implementation of the 2000 Census.⁸ Section 209 (j) of this legislation also required the bureau to plan for dual tracks of the traditional count methodology and the use of statistical sampling to identify historically undercounted populations of children and minorities.

Census Appropriations

As 1 of 13 bureaus within the Department of Commerce, the U.S. Census Bureau must submit its annual budget for review and inclusion in the department's budget. The department must then make choices in consideration of its overall budget to OMB and will therefore make adjustments to bureau-requested budgets as deemed necessary. OMB will review and further adjust department and bureau budgets to consider the programs and priorities of the entire federal government that become the President's Budget. The Congress may then adjust the President's Budget through the appropriation process that becomes the budget of the departments and the bureaus after signature by the President. The appropriations for decennial census are no-year funds that are available until expended, rescinded, transferred, or until the account is closed.

Total Funding for Bureau Planning Was Lower Than Requested

As shown in table 1, the Department of Commerce requested a total of \$268.7 million for 2000 Census planning and development in the President's Budgets for fiscal years 1991 through 1997. The program received total funding of \$223.7 million from the Congress, or about 83 percent of the amount requested. Although the 2000 Census received all of the funding requested in the President's Budgets for fiscal years 1991 and 1992, it received reduced funding for each fiscal year from 1993 through 1997. According to the bureau, these reductions resulted in the elimination, deferral, or scaling back of certain projects in planning for the 2000 Census. The bureau subsequently obligated 99 percent of its appropriated 2000 Census funding through fiscal year 1997.

⁸Public Law 105-119, § 210, 111 Stat. 2483 (Nov. 26, 1997).

Table 1: 2000 Census Planning and Development Funding Requested and Received for Fiscal Years 1991 Through 1997 (dollars in millions)

Fiscal year	2000 Census requested funding (President's Budget) ^a	2000 Census appropriated funding by Congress ^b	2000 Census requested funding not appropriated	Percent of requested annual funding received
1991	\$1.5	\$1.5	\$0	100
1992	10.1	10.1	0	100
1993	19.4	13.7	5.7	71
1994	23.1	18.7	4.4	81
1995	48.6	42.0	6.6	86
1996	60.1	51.3	8.8	85
1997	105.9	86.4	19.5	82
Total	\$268.7	\$223.7	\$45.0	83

^aAmounts include prior year recoveries of \$1.6 million.

^bAmounts include prior year recoveries and carry-in of \$16.1 million.

Source: U.S. Census Bureau.

Bureau records indicated that the bulk of \$86 million of decennial funding received through the end of fiscal year 1995 was obligated for program development and evaluation methodologies, testing and dress rehearsals, and planning for the acquisition of automated data processing and telecommunications support. For fiscal years 1996 and 1997, bureau records indicated that the bulk of \$138 million of decennial funding received was obligated for planning the establishment of field data collection and support systems, refining data content and products, evaluating test results, and procuring automated data processing and telecommunications support. For the planning and development phase, personnel costs consumed about 53 percent of planning and development funds; contractual services consumed 16 percent; and space, supplies, travel, and other expenses consumed the remaining 31 percent.

Because of different major program categories used by the bureau from fiscal years 1991 through 1997, we could not present a comprehensive table of funding for the period. However, we were able to analyze the funding by fiscal year and a detailed analysis of funding requested, received, and obligated, and funds budgeted by major program category for fiscal years 1991 through 1997 are presented in appendix II.

Funding and Other Factors Affected Planning Efforts

The U.S. Census Bureau was responsible for carrying out its mission within the budget provided and bureau management determined the specific areas in which available resources were invested. We could not determine what effect, if any, that higher funding levels might have had on census operations as this is dependent upon actual implementation and the results of management decisions that may or may not have occurred. However, according to bureau officials, lower than requested funding levels for fiscal years 1993 through 1997 adversely affected the bureau's planning and development efforts for the 2000 Census. As examples, they cited the following 10 areas where reduced funding levels caused the bureau to curtail planning initiatives. Although lower funding levels may have affected these areas, information from previous bureau and GAO reports and testimony indicated that operational, methodological, and other factors also contributed to weaknesses in the bureau's planning efforts.

1. *Difficulties in retaining knowledgeable staff.* Although many key bureau personnel and project managers involved with the 2000 Census had also worked on the 1990 and earlier decennial censuses, bureau officials stated that many experienced people retired or left the bureau after the 1990 Census. According to the bureau, a contributing factor was lower funding levels to pay personnel compensation and benefits, which in turn affected the number of personnel with institutional knowledge of the decennial census to lend support to the 2000 Census planning and development effort.

We noted that soon after a major event such as the decennial census count, it is not unusual for personnel to leave the bureau, as did three senior executives after the 2000 Census. In addition, Office of Personnel Management data indicated that over half of the bureau's full-time, nonseasonal work force of 5,345 employees as of March 2002 is eligible for retirement by 2010. Thus, the human capital issue will remain a key planning area to ensure that the bureau has the skill mix necessary to meet its future requirements.

2. *Scaled-back plans for testing and evaluating 1990 Census data.* A bureau official stated that the amount of qualitative and quantitative data from the 1990 Census was limited and hampered the quality and results of planning and development efforts for the 2000 Census. Additionally, many opportunities were lost in capitalizing on the 1990 Census data that did exist and more funding to evaluate this data could have facilitated 2000 Census research and planning efforts. Bureau

officials stated that as they moved forward with planning for the 2000 Census, they had to scale back plans for testing and evaluating 1990 Census data because of a lack of funding. For example, they cited the inability to update a 1990 Census study of enumerator supervisor ratios.

3. *Delays in implementing a planning database.* Bureau officials stated that they were unable to implement an effective planning database in the early years of the 2000 Census. In one of its first plans, the bureau conceived of a planning database that would capture data down to very small geographic levels and would be continuously updated over the decade for a number of census purposes. This database would have enabled the bureau to target areas where language resources were needed, identify areas where enumeration and recruiting could be difficult, and position data capture centers to support the most cost-efficient and effective infrastructure. However, according to bureau officials, with lower funding through fiscal year 1995, the planning database was put on hold. Later in the decade, the bureau resurrected the planning database but did not develop and use it fully.
4. *Limited resources to update address databases.* According to bureau officials, sufficient resources to update and coordinate large databases of addresses and physical locations provided a continuous challenge to the bureau. At the end of the 1990 Census, the bureau's database contained 102 million addresses, each assigned to the census block area in which it was located. At that point, the U.S. Census Bureau's Geography Division initiated discussions with the U.S. Postal Service to utilize its Delivery Sequence File (DSF) that contained millions of addresses used to deliver the U.S. mail.⁹ The bureau planned to use the DSF in updating its address database which became the Master Address File (MAF).¹⁰ With lower funding through 1995, bureau officials cited limited resources to update the MAF database and to assess the quality of entered information.

⁹The *Census Address List Improvement Act of 1994* (Public Law 103-430), required the U.S. Census Bureau to use the DSF and address lists from local and tribal governments to build the Census 2000 address list.

¹⁰MAF is a computer database of household addresses contained in the database from the 1990 Census, various versions of the U.S. Postal Service's DSF, and update information provided by state, local, and tribal governments. The MAF was to be updated throughout the decade to provide a basis for producing address labels needed to deliver 2000 Census questionnaires, to track questionnaires returned, and to identify addresses for later site visits by enumerators.

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5. *Program to identify duplicate responses was not fully developed.* Bureau officials stated the program to identify duplicate responses was not fully developed for the 2000 Census and more emphasis and funding were needed to develop appropriate software and procedures. It is important to be able to identify duplications in the MAF and multiple responses from a person or household that contribute to a population overcount. This includes operations to identify multiple responses for the same address and computer matching of census responses received against all other people enumerated in the block. Duplications also occurred due to college students counted both at school and at home, people with multiple residences, and military personnel residing outside their home state.
6. *Abandoned plans to use administrative records.* In early planning for the 2000 Census, the bureau funded efforts to use records from nonbureau sources of information (such as driver licenses, voter registrations, and other government programs) to supplement the census count. This administrative records project was the result of extensive research studies conducted by the bureau beginning in 1993 that focused on initial plans for three uses of nonbureau information to
- derive census totals for some nonresponding households,
 - enhance the coverage measurement operations, and
 - help provide missing content from otherwise responding households.

Although bureau officials determined that administrative records had the potential to improve coverage, the bureau abandoned plans to fund and more fully develop an administrative records database in February 1997. While the lack of funding may have been a contributing factor, bureau documents indicated that this action was primarily due to questions about the accuracy and quality of administrative records and issues of privacy protection.

7. *Problems with multiple language questionnaires.* Bureau officials cited several funding and operational problems with census questionnaires in the five languages that were used other than English.¹¹ In 1995, the bureau planned to mail forms in both Spanish

¹¹Questionnaires were available in Spanish, Chinese, Korean, Vietnamese, and Tagalog.

and English to areas with high concentrations of Spanish speakers and produce forms in other languages as needed. In March 1997, in response to requests for forms in other languages, the bureau announced its intent to print questionnaires in multiple languages in an effort to increase the mail response rate. The bureau selected four additional languages as a manageable number based upon a perceived demand. However, the bureau could not determine how to pinpoint the communities that needed the non-English questionnaires. Instead, the bureau indicated in a mailing that the questionnaires were available in five languages and if an individual wanted a questionnaire in a language other than English, the individual had to specifically request the questionnaire in that language. As a result, the bureau did not know the number of questionnaires to print in the five languages until late in the process. Finally, the bureau did not have the time to comprehensively assess the demand for questionnaires in other languages.

8. *Cost-effective use of emerging data capture technology.* Early bureau research assessed current and emerging data capture technologies, such as electronic imaging, optical mark recognition, and hand-held devices, which offered the potential for significant cost reductions in processing large volumes of data. Bureau officials indicated they were unsure of their exact requirements for the emerging data capture technologies, and this resulted in most contracts being cost-reimbursement contracts¹² that required more funding than planned. The bureau estimated that it ultimately spent about \$500 million on contracts to improve the data capturing process.

Bureau officials also stated that they did not have the time to fully develop and test the data capture systems or data capture centers, both of which were contracted for the first time in the 2000 Census. For example, the bureau said it could not adequately prepare for the full development and testing of the imaging contract. As a consequence, the first imaging test did not occur until 1998, and bureau officials stated that it became clear that imaging was not working due to technical and implementation problems. To some extent, this is not unexpected when implementing new technologies. Although the

¹²Cost-reimbursement contracts allow for payment of all allowable incurred costs within a predetermined ceiling set in the contract. Cost-reimbursement contracts place less cost and performance risk on the contractor, as opposed to fixed-price contracts, which place more responsibility on the contractor for performance costs and resulting profit or loss.

contractor and the bureau felt the system was not ready, it was tested anyway due to the short time frame and major problems developed. Even though the system eventually became operational in time for the 2000 Census count, bureau officials indicated that this occurred at a higher than anticipated risk and cost.

9. *More use of the Internet.* In the early 1990s, the full impact of the Internet as a global communications tool was not yet envisioned. Officials indicated that the bureau did not have sufficient time and funding during the planning phase to fully understand and test all the implications of using the Internet as a vehicle for census responses. In addition, the bureau's major concern was that computer security issues had not been adequately addressed, particularly since census information must be protected and significant penalties may be imposed for unauthorized disclosure.¹³ Also, the public perception of using the Internet as a response medium had not been fully explored. Nevertheless, in February 1999, the bureau established a means for respondents to complete the 2000 Census short forms on the Internet protected by a 22-digit identification number. According to bureau officials, they received about 60,000 short forms via the Internet. The rapid evolution of the Internet has the potential to significantly reduce bureau workload and the large volume of paper forms for the 2010 Census.
10. *Preparation for dress rehearsals.* Bureau officials cited many problems during the fiscal year 1998 dress rehearsals for the 2000 Census that were a direct result of funding levels in the early planning and development years. They stated that because of delays in receiving funding in the fall of 1997, they had to delay the dress rehearsal census day from April 4 to April 18, 1998. In addition, because many new items were incomplete or still under development, the bureau said it could not fully test them during the dress rehearsals with any degree of assurance as to how they would affect the 2000 Census.

¹³Title 13 U.S.C. § 9 prohibits (1) use of the information furnished under Title 13 for any purpose other than the statistical purposes for which it is supplied, (2) making any publication whereby the data furnished by any particular establishment or individual under Title 13 can be identified, or (3) permitting anyone other than sworn officers and employees of the Department of Commerce or agency thereof to examine individual reports. Title 13 U.S.C. § 214 and 18 U.S.C. § 3551, et seq., provides for a fine of not more than \$250,000 or imprisonment for not more than 5 years, or both, for disclosure of census information prohibited by 13 U.S.C. § 9.

However, despite these problems, the bureau testified in March 1998 that all preparatory activities for the dress rehearsal—mapping, address listing, local updates of addresses, opening and staffing offices, and printing questionnaires—had been completed.¹⁴ In 1999, the bureau issued an evaluation that concluded that all in all, the Census 2000 dress rehearsal was successful.¹⁵ The evaluation also stated that the bureau produced population numbers on time that compared favorably with independent benchmarks. It also acknowledged some problems, but devised methods to address those problems. Although the bureau conceded that planning efforts could be improved, the lack of funding did not appear to be a significant issue, except as it affected the ability to earlier plan the dress rehearsal.

2000 Census Planning Provides Lessons Learned for The 2010 Census

The bureau's experience in preparing for the 2000 Census underscores the importance of solid, upfront planning and adequate funding levels to carry out those plans. As we have reported in the past,¹⁶ planning a decennial census that is acceptable to stakeholders includes analyzing the lessons learned from past practices, identifying initiatives that show promise for producing a better census while controlling costs, testing these initiatives to ensure their feasibility, and convincing stakeholders of the value of proposed plans.

Contributing factors to the funding reductions for the 2000 Census were the bureau's persistent lack of comprehensive planning and priority setting, coupled with minimal research, testing, and evaluation documentation to promote informed and timely decision making. Over the course of the decade, the Congress, GAO, and others criticized the bureau for not fully addressing such areas as (1) capitalizing on its experiences from past decennial censuses to serve as lessons to be learned in future planning, (2) documenting its planning efforts, particularly early in the process, (3) concentrating its efforts on a few critical projects that significantly affected the census count, such as obtaining a complete and accurate

¹⁴U.S. Census Bureau, *Prepared Statement of James F. Holmes, Acting Director* (Washington, D.C.: Mar. 26, 1998).

¹⁵U.S. Census Bureau, *Census 2000 Dress Rehearsal Evaluation Summary* (Suitland, MD: 1999).

¹⁶ [GAO/GGD-97-142](#).

address list, (4) presenting key implementation issues with decision milestones, and (5) identifying key performance measures for success.

- *Capitalizing on experiences from past censuses.* In a fiscal year 1993 conference report,¹⁷ the Congress stated that the bureau should direct its resources towards a more cost-effective census design that would produce more accurate results than those from the 1990 Census. Further, the Congress expected the bureau to focus on realistic alternative means of collecting data, such as the use of existing surveys, rolling sample surveys, or other vehicles and that cost considerations should be a substantial factor in evaluating the desirability of design alternatives.

In March 1993 we testified¹⁸ that time available for fundamental census reform was slipping away and important decisions were needed by September 1993 to guide planning for 1995 field tests, shape budget and operational planning for the rest of the census cycle, and guide future discussions with interested parties. We noted that the bureau's strategy for identifying promising census designs and features was proving to be cumbersome and time consuming, and the bureau had progressed slowly in reducing the design alternatives for the next census down to a manageable number.

- *Documenting early planning efforts.* It is particularly important early in the planning process to provide a roadmap for further work. We found that the bureau did not document its 2000 Census planning until late in the planning phase. While the U.S. Census Bureau prepared a few pages to justify its annual budget requests for fiscal years 1991 through 1997, it did not provide a substantive document of its 2000 Census planning efforts until May 1995, and this plan was labeled a draft.¹⁹ Finally, the Congress mandated that the bureau issue a comprehensive and detailed plan for the 2000 Census within 30 days from enactment of the law.²⁰ On July 12, 1997, the bureau issued its

¹⁷U.S. House of Representatives, *Making Appropriations for the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies for the Fiscal Year Ending September 30, 1993*, Report 102-918 (Washington, D.C.: Sep. 28, 1992).

¹⁸ [GAO/T-GGD-93-6](#).

¹⁹U.S. Census Bureau, *The Reengineered 2000 Census* (Suitland, MD: May 19, 1995).

²⁰Public Law 105-18, Title VIII (June 12, 1997).

Report to the Congress—The Plan for Census 2000, along with its *Census 2000 Operational Plan*.²¹

- *Concentrating efforts on a few critical projects.* While the bureau required many activities to count a U.S. population of 281 million residing in 117.3 million households, a few critical activities significantly affected the Census 2000 count, such as obtaining a complete and accurate address list. Although the bureau was aware of serious problems with its address list development process, it did not acknowledge the full impact of these problems until the first quarter of 1997. Based upon its work with the postal service database, the 1995 Census Test, and pilot testing at seven sites, the bureau had gained sufficient evidence that its existing process would result in an unacceptably inaccurate address list due to
 - inconsistencies in the quality of the postal service database across the nation;
 - missing addresses for new construction;
 - difficulties in identifying individual units in multiunit structures, such as apartment buildings; and
 - inability of local and tribal governments to provide usable address lists.

In September 1997, the bureau acknowledged these problems and proposed changes.²² However, we believe that this action occurred too late in the planning process and was not given a higher priority to benefit the 2000 Census enumeration.

- *Presenting key implementation issues and decision milestones.* The bureau discussed program areas as part of its annual budget requests for fiscal years 1991 through 1997, but the requests did not identify key implementation issues with decision milestones to target its planning activities. Decision milestones did not appear until July 1997, when the

²¹The bureau distributed a revised and reissued version of this report in August 1997.

²²U.S. Census Bureau, *Census 2000 Address List Reengineering*, (Suitland, MD: Sept. 24, 1997).

bureau issued its Census 2000 Operational Plan. Stakeholders such as the Congress are more likely to approve plans and funding requests when they are thoroughly documented and include key elements such as decision milestones.

- *Identifying key performance measures.* Census planning documents provided to us through fiscal year 1997 did not identify key performance measures. We believe that identifying key performance measures is critical to assessing success in the planning phase of the census and can provide quantitative targets for accomplishments by framework, activity, and individual projects. Such measures could include performance goals such as increasing mail response rates, reducing population overcount and undercount rates, and improving enumerator productivity rates.

Conclusions

The lessons learned from planning the 2000 Census become even more crucial in planning for the next decennial census in 2010, which has current unadjusted life cycle cost estimates ranging from \$10 billion to \$12 billion. Thorough and comprehensive planning and development efforts are crucial to the ultimate efficiency and success of any large, long-term project, particularly one with the scope, magnitude, and deadlines of the U.S. decennial census. Initial investment in planning activities in areas such as technology and administrative infrastructure can yield significant gains in efficiency, effectiveness, and cost reduction in the later implementation phase. The success of the planning and development activities now occurring will be a major factor in determining whether this large investment will result in an accurate and efficient national census in 2010. Critical considerations are

- early planning;
- a comprehensive and prioritized plan of goals, objectives, and projects;
- milestones and performance measures; and
- documentation to support research, testing, and evaluation.

A well-supported plan early in the process that includes these elements will be a major factor in ensuring that stakeholders have the information to make funding decisions.

Recommendation for Executive Action

As the U.S. Census Bureau plans for the 2010 Census, we recommend that the Secretary of Commerce direct that the bureau provide comprehensive information backed by supporting documentation in its future funding requests for planning and development activities, that would include, but is not limited to, such items as

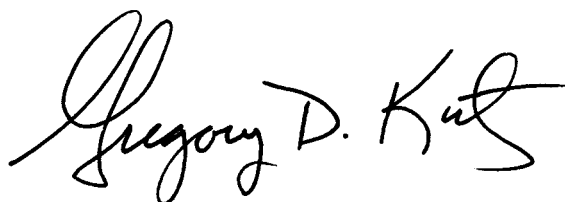
- specific performance goals for the 2010 Census and how bureau efforts, procedures, and projects would contribute to those goals;
- detailed information on project feasibility, priorities, and potential risks;
- key implementation issues and decision milestones; and
- performance measures.

Agency Comments and Our Evaluation

In commenting on our report, the department agreed with our recommendation and stated that the bureau is expanding the documents justifying its budgetary requests. For example, the bureau cited a document which outlines planned information technology development and activities throughout the decennial cycle of the 2010 Census. The bureau also included a two-page document, *Reengineering the 2010 Census*, which presented three integrated components and other plans to improve upon the 2000 Census. In this regard, it is essential that, as we recommended, the bureau follow through with details and documentation to implement these plans, define and quantify performance measures against goals, and provide decision milestones for specific activities and projects.

As agreed with you office, unless you announce its contents earlier, we plan no further distribution of this report until 7 days after its issuance date. At that time, we will send copies of this report to the Chairman and Ranking Minority Member of the Senate Committee on Governmental Affairs, the House Committee on Government Reform, and the House Subcommittee on Civil Service, Census, and Agency Organization. We will also send copies to the Director of the U.S. Census Bureau, the Secretary of Commerce, the Director of the Office of Management and Budget, the Secretary of the Treasury, and other interested parties. This report will also be available on GAO's home page at <http://www.gao.gov>.

If you or your staffs have any questions concerning this report, please contact Gregory D. Kutz at (202) 512-9095 or kutzg@gao.gov, Patricia A. Dalton at (202) 512-6806 or daltonp@gao.gov, or Roger R. Stoltz, Assistant Director, at (202) 512-9408 or stoltzr@gao.gov. Key contributors to this report were Corinne P. Robertson, Robert N. Goldenkoff, and Ty B. Mitchell.



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Objectives, Scope, and Methodology

The objectives of our review focused on the planning and development phase of the 2000 Census that we classified as covering fiscal years 1991 through 1997 and (1) the funding requested, received, and obligated with funding received and obligated by major planning category, (2) funding and other factors that affected planning efforts, and (3) lessons learned for the 2010 Census.

To determine the amount of 2000 Census planning and development funding requested, received, and obligated, we obtained and analyzed annual decennial census budgets included in the President's Budgets for fiscal years 1991 through 1997, budgets subsequently received after appropriation by the Congress, and amounts later obligated for the purchase of goods and services by the bureau against those budgets. We then obtained explanations from senior bureau officials for significant variances in these budgets and the effect on decennial planning and development. However, we did not assess the efficiency of the budgeting process and the validity, accuracy, and completeness of obligations against budgeted amounts received.

To determine the funding received and obligated by major planning category for 2000 Census planning and development, we obtained and analyzed funding requested, received, and obligated by framework, activity, project, and object class and examined annual operational plans. However, our analysis was hampered by the bureau's inconsistent use of categories that evolved from 1 activity of general planning in fiscal year 1991, 8 major study areas in fiscal years 1992 and 1993, and 8 to 15 broad categories called frameworks beginning in 1994. For internal management and reporting, the bureau further identified program efforts by activities and projects that have varied since fiscal year 1991.²³ Additionally, the bureau expanded, contracted, or modified program names and descriptions making comparisons more difficult. We also obtained explanations from bureau officials for significant efforts and variances in its funding received and obligation of planning and development funding for the 2000 Census. However, we did not assess the merits of budgeting by program and the subsequent validity, accuracy, and completeness of obligations.

To identify funding and other factors that affected planning efforts, we analyzed significant changes in funding requested, received, and obligated

²³ For example, in fiscal year 2000, within the 8 decennial census frameworks, the bureau identified 23 activities and 119 projects.

at the framework level; identified initiatives that were reduced, eliminated, or severely curtailed; discussed the effect of these areas with bureau officials; and evaluated bureau responses. We also reviewed various reports, testimony, and supporting documents prepared by the bureau, GAO, and others. However, we could not determine what effect, if any, that higher levels of funding might have had on 2000 Census operations. These factors are dependent upon actual implementation and the results of management decisions that may or may not have occurred.

To provide lessons learned for the 2010 Census, we identified areas for improvement and obtained support from bureau, GAO, and congressional reports, testimony, interviews, and other documents.

Our work was performed in Washington, D.C. and at U.S. Census Bureau headquarters in Suitland, Maryland between January and July 2001 when our review was suspended due to an inability to obtain access to certain budget records. After lengthy discussions with senior officials of the bureau, Department of Commerce, and OMB, and consultation with your staffs, this access issue was resolved in May 2002 and we completed our analysis in June 2002. Our work was done in accordance with U.S. generally accepted government auditing standards, except that we did not audit budget and other financial data provided by the U.S. Census Bureau.

On October 16, 2002, the Department of Commerce provided written comments on a draft of this report, including two attachments. These comments are presented in the “Agency Comments and Our Evaluation” section of the report and are reprinted in appendix III, except for the second attachment, *Potential Life-Cycle Savings for the 2010 Census*, which is currently under revision and is outside the scope of our review.

Analysis of Funding by Fiscal Year for Planning and Development of the 2000 Census

This appendix includes our analysis of 2000 Census funding requested, received, and obligated, and funding received and obligated by major planning category for fiscal years 1991 through 1997. Our analysis was hampered by the bureau's inconsistent use of major planning categories that evolved over the period as follows:

- 1 activity of general planning in fiscal year 1991,
- 8 major study areas in fiscal years 1992 and 1993, and
- 8 to 15 broad categories called frameworks beginning in 1994.

For internal management and reporting, the bureau further identified program efforts by activities and projects that have varied since fiscal year 1991. In addition, the bureau expanded, contracted, or modified program names and descriptions making comparisons more difficult.

Fiscal Year 1991 and 1992 Funding

In March 1991 we testified²⁴ that fundamental census reform was needed because escalating costs and the apparently increased undercount of the 1990 Census suggested that the current census methodology may have reached the limits of its effectiveness. Of three principles we presented, the last was that the Department of Commerce must be willing to invest sufficient funds early in the decade to achieve cost savings and census improvements in 2000. In fact, OMB deemed some of the Department of Commerce requests to fund early census reform as insufficient and doubled the department's requested amounts to \$1.5 million for fiscal year 1991 and \$10.1 million for fiscal year 1992. These amounts were included in the President's Budgets and the Congress concurred by authorizing the full amount requested. Census planning officials said that if OMB had not augmented the department's request, testing of reform options for 2000 would have been constrained.

For the first year of the 7-year 2000 Census planning and development phase, the fiscal year 1991 funding received was \$1.5 million and the bureau obligated the entire amount. The funding contained only one category of general planning for the 2000 Census with funds to be used for:

²⁴ [GAO/T-GGD-91-13](#).

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

- completion of detailed cost-benefit studies of alternatives designs for conducting the decennial census;
- exploration of new technologies to improve the 2000 Census;
- establishment of research and development efforts for administrative methods and modeling and estimation techniques; and
- planning of field tests in fiscal year 1993 to include new census content, methods, technologies, and field structures.

Because total amounts were small and involved only general planning, there were no significant variances. We noted that about 46 percent of the funding was obligated for personnel costs relating to 19 full-time equivalent (FTE) staff, 29 percent for services including consultants; and the remaining 25 percent for space, supplies, travel, and other costs.

Fiscal year 1992 funding received was \$10.1 million and the bureau obligated \$9.4 million against it. The funding now identified eight major study areas for the 2000 Census as indicated in table 2.

Table 2: 2000 Census Planning and Development Funding for Fiscal Year 1992 (dollars in millions)

Major study area	Description	Amount
1	Simplify questionnaire	\$1.0
2	Administrative records, modeling, and estimation	2.8
3	Technology options for questionnaire distribution and collection	3.5
4	Various uses of sampling	.9
5	Techniques for special areas and subpopulations	.3
6	TIGER ^b enhancements	^a
7	Address list maintenance	.8
8	Administration	.8
Total		\$10.1

^aActivity or amounts were less than \$.1 million.

^bTopologically Integrated Geographic Encoding and Referencing system.

Source: U.S. Census Bureau.

For fiscal year 1992, the bureau experienced almost a six-fold increase in its funding received of \$10.1 million over the \$1.5 million for fiscal year 1991. About half of the fiscal year 1992 funding was obligated for personnel costs as a result of almost a five-fold increase in FTE staff from 19 in fiscal year 1991 to 111 in fiscal year 1992 to work on decennial planning and development issues. Services, including consultants, accounted for another quarter of the obligations with the remaining quarter for space, supplies, travel, and other costs. Technology options included a \$1.7 million services contract to develop emerging data capture technology to compile census statistics.

Fiscal Year 1993 Funding

For fiscal year 1993, the Congress reduced the President's Budget request of \$19.4 million for 2000 Census planning and development to \$13.7 million,²⁵ for a reduction of about 29 percent. As a result of this \$5.7 million reduction, the bureau made significant cuts in its funding of techniques for special areas and subpopulations by \$2.2 million, or about 70 percent, and also eliminated activities to:

- establish contacts with state and local government budgeted for \$1.6 million,
- assess customer needs budgeted for \$1.0 million,
- survey public motivation budgeted for \$.8 million, and
- prepare infrastructure for a 1995 Census Test budgeted for \$.5 million.

In a fiscal year 1993 conference report,²⁶ the Congress stated that the bureau should direct its resources towards a more cost-effective census design that will produce more accurate results than those from the 1990 Census. For example, the bureau's research in fiscal year 1992 indicated that reducing the number of questions on the census form is an important way to increase response, thereby increasing accuracy and reducing cost.

²⁵\$13.0 million of funding plus \$.7 million for prior year recoveries and carry-in.

²⁶U.S. House of Representatives, *Making Appropriations for the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies for the Fiscal Year Ending September 30, 1993*, Report 102-918 (Washington, D.C.: Sep. 28, 1992).

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

Therefore, the Congress expected the bureau to focus on realistic alternative means of collecting data, such as the use of existing surveys, rolling sample surveys, or other vehicles and that cost considerations should be a substantial factor in evaluating the desirability of design alternatives.

In March 1993 we testified²⁷ that time available for fundamental census reform was slipping away and important decisions were needed by September 1993 to guide planning for 1995 field tests, shape budget and operational planning for the rest of the census cycle, and guide future discussions with interested parties. The bureau's strategy for identifying promising census designs and features was proving to be cumbersome and time consuming, and the bureau had progressed slowly in reducing the design alternatives for the next census down to a manageable number.

Fiscal year 1993 funding received was \$13.7 million and the bureau obligated \$13.5 million against it. The budget continued to identify eight major study areas for the 2000 Census as indicated in table 3.

Table 3: 2000 Census Planning and Development Funding for Fiscal Year 1993 (dollars in millions)

Major study area	Description	Amount
1	Simplify questionnaire	\$1.2
2	Administrative records, modeling and estimation	4.0
3	Technology options for questionnaire distribution and collection	4.3
4	Various uses of sampling	1.6
5	Techniques for special areas and subpopulations	.9
6	TIGER ^b Support	.4
7	Address list maintenance	^a
8	Administration	1.3
	Total	\$13.7

^aActivity or amounts were less than \$.1 million.

^bTopologically Integrated Geographic Encoding and Referencing system.

Source: U.S. Census Bureau.

²⁷ [GAO/T-GGD-93-6](#).

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

For fiscal year 1993, the bureau experienced a 36 percent increase in its funding received of \$13.7 million over the \$10.1 million for fiscal year 1992. About 53 percent of the fiscal year 1993 funding was obligated for personnel costs as a result of a 48 percent increase in FTE staff from 111 in fiscal year 1992 to 164 in fiscal year 1993 to work on decennial planning and development issues. Services, including consultants, accounted for about 11 percent of the funding with the remaining 36 percent used for space, supplies, travel, and other costs. Fiscal year 1993 was identified by the bureau as the beginning of a 3-year period to identify the most promising changes to be integrated in the 1995 Census Test.

Fiscal Year 1994 Funding

For fiscal year 1994, the Congress reduced the President's Budget request of \$23.1 million for 2000 Census planning and development to \$18.7 million,²⁸ for a reduction of about 19 percent. As a result of this \$4.4 million reduction, the bureau eliminated decennial operational preparation for \$2.5 million, and reduced funding for questionnaire design and cost modeling by \$1.6 million or 70 percent.

In May 1993 we testified²⁹ that the U.S. Census Bureau had altered its decision-making approach and refocused its 2000 Census research and development efforts. Driven by its impending September 1993 deadline for deciding which designs to test in 1995 for the 2000 Census, the bureau recommended rejecting all 14 design alternatives that had formed the framework of its research program that was under study for a year. Instead, the bureau reverted to an earlier approach of concentrating favorable features into the design for application in the 2000 Census.

²⁸ \$8.1 million of funding plus \$10.6 million for prior year recoveries and carry-in.

²⁹ [GAO/T-GGD-93-32](#).

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

A fiscal year 1994 House Appropriations Committee report³⁰ cited our May 1993 testimony and stated that it was unacceptable for the bureau to conduct the 2000 Census under a process that followed the general plan used in the 1990 Census. A fiscal year 1994 conference report³¹ expressed concern that the U.S. Census Bureau had not adequately addressed cost and scope issues for the 2000 Census and expected the Department of Commerce and OMB to take a more active role in planning for the decennial census to ensure that data requirements for federal agencies and state and local government were considered in the planning effort.

In October 1993 we testified³² that the U.S. Census Bureau's research and development efforts had been slowed by its changing planning strategy and that the bureau still faced the difficult task of integrating its Test Design Recommendation proposals into a detailed implementation plan for the 1995 census test. We noted that the bureau's plans to conduct research and evaluations for such promising proposals as the one-number census,³³ sampling for nonresponse, and defining the content of the census were in a state of flux. Other important research and planning activities, such as improving the address list and using new automated techniques to convert respondent answers to machine-readable format, were behind schedule. Funding for research and test census preparation in fiscal years 1994 and 1995 was in doubt as evidenced by the budget cuts proposed by the House Appropriations Committee and the opinions expressed in its report accompanying the fiscal year 1994 appropriations bill.³⁴

³⁰U.S. House of Representatives, *Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Bill, Fiscal Year 1994*, Report 103-157 (Washington, D.C.: June 24, 1993).

³¹U.S. House of Representatives, *Making Appropriations for the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies for the Fiscal Year Ending September 30, 1994*, H.R. Conference Report 103-293 (Washington, D.C.: Oct. 14, 1993).

³²U.S. General Accounting Office, *Decennial Census: Test Design Proposals Are Promising, But Fundamental Reform is Still at Risk*, [GAO/T-GGD-94-12](#) (Washington, D.C.: Oct. 7, 1993).

³³A one-number census combines the features of both the traditional head count and statistical methods to produce a single population count.

³⁴U.S. House of Representatives, *Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Bill, Fiscal Year 1994*, Report 103-157 (Washington, D.C.: June 24, 1993).

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

The bureau obligated the entire amount of its fiscal year 1994 funding received of \$18.7 million. Funding originally contained 6 design areas for 2000 Census research and development, the 1995 Census test, and decennial operational preparation but was later revised to present funds received and obligated in 13 frameworks of effort as indicated in table 4.

Table 4: 2000 Census Planning and Development Funding for Fiscal Year 1994
(dollars in millions)

Framework number	Description	Amount
1	Program development and management information	\$1.1
2	Content requirements and public use forms	.7
3	Test censuses & dress rehearsal	5.5
4	Decennial geographic support	^a
5	Evaluation & development	7.1
6	Address list compilation	.1
7	Precensus day operations & support systems	^a
8	Stakeholder education and consultation	.2
9	Puerto Rico & outlying areas	^a
10	Tabulation, publication, & data user services	^a
11	Automated/telecommunication support	4.0
12	Year 2001 and beyond	^a
13	Cooperation with the U.S Postal Service	^a
Total		\$18.7

^aActivity or amounts were less than \$.1 million.

Source: U.S. Census Bureau.

For fiscal year 1994, the bureau experienced a 36 percent increase in its funding received of \$18.7 million over the \$13.7 million for fiscal year 1993. About 44 percent of the fiscal year 1994 funding was obligated for personnel costs as a result of a 34 percent increase in FTE staff from 164 in fiscal year 1993 to 220 in fiscal year 1994 to work on decennial planning and development issues. Services, including consultants, accounted for another 13 percent of obligations with the remaining 43 percent for space, supplies, travel, and other costs. We noted that six frameworks received little or no funding and three frameworks accounted for 89 percent of the fiscal year 1994 funds received and obligated as follows:

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

Framework 5 - Evaluation and development consumed \$7.1 million or 38 percent of funding received and obligated for research and developmental work to support the 1995 census test. This included

- research on the use of matching keys beyond just a person's residence address to develop matching procedures that would allow the bureau to make use of person-based administrative records files that do not have a current residential address;
- research on various uses of sampling including technical and policy issues on conducting the entire census on a sample basis and conducting only the nonresponse follow-up portion of the census on a sample basis; and
- race and ethnicity studies including extensive consultation with stakeholders, focus group testing, and planning of field tests.

Framework 3 - Test census and dress rehearsal consumed \$5.5 million or 29 percent of funding received and obligated to increase 1995 Census Test activities from preliminary studies and planning to the full-scale preparatory level program. These included such activities as

- completion of questionnaire content determination,
- analysis of a database of population characteristics by geographic area to make selections of test sites,
- determination of evaluation program objectives for the test, and
- determination of objectives for and design stakeholder consultation.

Framework 11 - Automation/telecommunication support consumed \$4.0 million or 21 percent of funding received and obligated for automated systems design and acquisition of data capture technology to upgrade the 1990 Census system (FACT90) to a 2000 Census system (DCS 2000).

Fiscal Year 1995 Funding

For fiscal year 1995, the Congress reduced the President's Budget request of \$48.6 million for 2000 Census planning and development to \$42.0 million for a reduction of about 14 percent. As a result of this \$6.6 million reduction, the bureau eliminated \$9.0 million for decennial operation

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

preparation and \$.8 million for 1996 testing while increasing funding for program development and other areas by \$3.2 million.

In January 1994 we testified³⁵ that while we were encouraged by the U.S. Census Bureau's recent focus on testing specific proposals to modify the census methodology, we believed that the bureau must aggressively plan for and carefully implement its research, testing, and evaluation programs. Further, the results of those efforts must be available to make fully informed and timely decisions and build needed consensus among key stakeholders and customers for changes in the 2000 Census.

A fiscal year 1995 Senate Appropriations Committee report³⁶ strongly recommended that the bureau adopt more cost-effective means of conducting the next census as the budgetary caps and strict employment ceilings adopted by the President and the Congress would not accommodate a repeat of the process used in the 1990 Census.

Fiscal year 1995 funding received was \$42.0 million and the bureau obligated \$40.9 million against it. The number of frameworks increased to 15 as indicated in table 5.

Table 5: 2000 Census Planning and Development Funding for Fiscal Year 1995 (dollars in millions)

Framework number	Description	Amount
1	Program development and management information	\$2.5
2	Content requirements and public use forms	1.7
3	Test censuses & dress rehearsal	30.0
4	Decennial geographic products & services	1.3
5	Evaluation & development	5.1
6	Address list compilation	^a
7	Precensus day operations & support systems	^a

³⁵ U.S. General Accounting Office, *Decennial Census: Promising Proposals, Some Progress, But Challenges Remain*, GAO/T-GGD-94-80 (Washington, D.C.: Jan. 26, 1994).

³⁶ U.S. Senate, *Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriation Bill, 1995*, Report 103-309 (Washington, D.C.: July 14, 1994).

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

(Continued From Previous Page)

Framework number	Description	Amount
8	Postcensus day operations	^a
9	Census marketing, communications, & partnership	.5
10	Puerto Rico & other island territories	^a
11	Tabulation, dissemination, & customer services	^a
12	Automation/telecommunication support	^a
13	Year 2001 & beyond	^a
14	Cooperation with the U.S. Postal Service	^a
15	Follow-on surveys	.9
Total		\$42.0

^aActivity or amounts were less than \$.1 million.

Source: U.S. Census Bureau.

For fiscal year 1995, the bureau experienced a 125 percent increase in its funding received of \$42.0 million over the \$18.7 million for fiscal year 1994. About 51 percent of the fiscal year 1995 funding was obligated for personnel costs as a result of a 211 percent increase in FTE staff from 220 in fiscal year 1994 to 685 in fiscal year 1995 to work on decennial planning and development issues. Services, including consultants, accounted for about 7 percent of the obligations with the remaining 42 percent for space, supplies, travel, and other costs. We noted that eight frameworks received little or no funding and Framework 3 accounted for over 70 percent of fiscal year 1995 funds received and obligated. The main focus of Framework 3 was conducting the 1995 Census Test, in order to select by December 1995 the features to be used for the 2000 Census. According to census plans and our discussions with officials, the bureau focused on the following major areas.

- Complete preparation for the 1995 Census Test, conduct the test, and begin evaluations in order to select the features to be used for the 2000 Census. In addition, the bureau would conduct a full-scale census test in four district office areas that would be the culmination of the research and development program.
- Investigate, develop, test, and evaluate components of a continuous measurement system as a replacement for the 2000 Census sample data questionnaire.

- Develop, test, and evaluate various matching keys for the automated and clerical matching and unduplicating³⁷ systems developed under the direction of the matching research and specifications working group.
- Conduct activities independent of the research and development program; these are preparatory activities required to implement the 2000 Census regardless of the design. This included such activities as planning the address list update activities as necessary to supplement the Master Address File (MAF) for use in the 2000 Census and begin initial planning of the field organization structure for the 2000 Census.
- Recommend the broad scope of content that should be included in the 2000 Census questionnaire based on consulting with both federal and nonfederal data users, and begin planning for small special purpose tests to supplement or follow up on the 1995 Census Test.

Fiscal Year 1996 Funding

For fiscal year 1996, the Congress reduced the President's Budget request of \$60.1 million for 2000 Census planning and development to \$51.3 million,³⁸ for a reduction of about 15 percent. As a result of this \$8.8 million reduction, the bureau reduced funding for field data collection and support systems by \$9.9 million or 43 percent while increasing funding in other areas.

In October 1995 we testified³⁹ that the U.S. Census Bureau had decided to make fundamental changes to the traditional census design such as shortening census questionnaires, developing an accurate address list, and sampling households that fail to respond to questionnaires. However, we noted that successful implementation of these changes would require aggressive management by the bureau and that the window of opportunity for the Congress to provide guidance on these changes and applicable funding was closing.

³⁷The bureau uses unduplication to refer to the process of detecting duplicate census responses that contribute to a population overcount. Causes of duplication include multiple responses for the same address, college students counted both at school and at home, people with multiple residences, and military residing outside their home state.

³⁸\$48.8 million of funding plus \$2.5 million for prior year recoveries and carry-in.

³⁹ [GAO/T-GGD-96-37](#).

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

A fiscal year 1996 conference report⁴⁰ continued to express concern about progress related to the next decennial census. It cautioned the bureau that the cost of the 2000 Census had to be kept in check and only through early planning and decision making could costs be controlled. The report further recognized that fiscal year 1996 was a critical year in planning for the decennial census, and that numerous decisions will be made and preparations taken which will have a significant bearing on the overall cost of conducting the census, as well as the design selected.

The bureau obligated the entire amount of its fiscal year 1996 funding received of \$51.3 million. Beginning with fiscal year 1996, the number of frameworks was reduced to eight as indicated in table 6 below.

Table 6: 2000 Census Planning and Development Funding for Fiscal Year 1996 (dollars in millions)

Framework number	Description	Amount
1	Program development and management	\$8.2
2	Data content and products	9.6
3	Field data collection and support systems	13.3
4	Address list development	2.3
5	Automated data processing and telecommunications support	6.8
6	Testing, evaluation, and dress rehearsal	9.4
7	Puerto Rico, Virgin Islands, and Pacific areas	.3
8	Marketing, communications, and partnerships	1.4
Total		\$51.3

Source: U.S. Census Bureau.

For fiscal year 1996, the bureau experienced a 22 percent increase in its funding received of \$51.3 million over the \$42.0 million for fiscal year 1995. About 44 percent of the fiscal year 1996 funding was obligated for personnel costs as a result of a 5 percent decrease in FTE staff from 685 in

⁴⁰U.S. House of Representatives, *Making Appropriations for the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies for the Fiscal Year Ending September 30, 1996*, H.R. Conference Report 104-378 (Washington, D.C.: Dec. 1, 1995).

fiscal year 1995 to 653 in fiscal year 1996 to work on decennial planning and development issues. Services, including consultants, accounted for about 13 percent of the obligations with the remaining 43 percent for space, supplies, travel, and other costs. Three frameworks incurred over 60 percent of funding received and obligated for the following.

- *Framework 3 - Field data collection and support systems* incurred costs of \$13.3 million including \$4.4 million to develop personnel and administrative systems for field office enumeration; \$3.1 million for precensus day data collection activities; and \$2.0 million for automation acquisition and support for field offices.
- *Framework 2 - Data content and products* incurred costs of \$9.6 million including \$4.4 million to develop and produce questionnaires and public use forms for the census including conduct of a National Content Test; \$2.9 million for race and ethnicity testing of concepts and respondent understanding and wording of the race and ethnicity questions; and \$1.6 million for continued work with federal and nonfederal data users in the content determination process to prepare for the congressional submission by April 1, 1997.
- *Framework 6 - Testing, evaluations, and dress rehearsals* incurred costs of \$9.4 million including \$3.3 million for an Integrated Coverage Measurement (ICM) special test;⁴¹ \$2.6 million for research and development on sampling and sampling methods for the 2000 decennial count; and \$2.1 million for 1995 Census Test coverage and evaluation.

Fiscal Year 1997 Funding

For fiscal year 1997, the Congress reduced the President's Budget request of \$105.9 million for 2000 Census planning and development to \$86.4 million,⁴² for a reduction of about 18 percent. As a result of this \$19.5 million reduction, the bureau reduced funding for marketing, communications, and partnerships by \$14.4 million or 76 percent, and field data collection and support systems by \$23.6 million or 53 percent, while increasing amounts in other areas by \$18.5 million.

⁴¹The ICM Special Test used cognitive questionnaire testing methods to refine the count interview instrument and to gather data from the 1995 Census Test to conduct estimation research.

⁴²\$84.1 million of funding plus \$2.3 million for prior year recoveries and carry-in.

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

A fiscal year 1996 House Appropriation Committee report⁴³ expressed concern that the bureau appeared not to have developed options and alternative plans to address issues of accuracy and cost. In addition, sufficient progress had not been made on issues the committee had highlighted many times—the number of questions on the long-form and reimbursement from other agencies for inclusion of such questions to assure that the question is important.

The bureau obligated the entire amount of its fiscal year 1997 budget of \$86.4 million. Planning continued in eight frameworks as indicated in table 7.

Table 7: 2000 Census Planning and Development Funding for Fiscal Year 1997 (dollars in millions)

Framework number	Description	Amount
1	Program development and management	\$5.4
2	Data, content, and products	12.3
3	Field data collection and support systems	20.9
4	Address list development	2.5
5	Automated data processing and telecommunications support	20.2
6	Testing, evaluation, and dress rehearsal	19.8
7	Puerto Rico, Virgin Islands, and Pacific areas	.8
8	Marketing, communications, and partnerships	4.5
Total		\$86.4

Source: U.S. Census Bureau.

For fiscal year 1997, the bureau experienced a 68 percent increase in its funding received of \$86.4 million over the \$51.3 million for fiscal year 1996. About 63 percent of the fiscal year 1997 funding was obligated for personnel costs as a result of a 36 percent increase in FTE staff from 653 in fiscal year 1996 to 891 in fiscal year 1997 to work on decennial planning and development issues. Services, including consultants, accounted for about

⁴³U.S. House of Representatives, *Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Bill, Fiscal Year 1997*, Report 104-676 (Washington, D.C.: July 16, 1996).

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

25 percent of the obligations with the remaining 12 percent for space, supplies, travel, and other costs.

The bureau viewed fiscal year 1997 as pivotal, since this was the year when research and testing activities culminated into operational activities and marked the end of the planning and development phase of the 2000 Census. For the fiscal year, four frameworks incurred about 85 percent of funding received and obligated as follows.

Framework 3 - Field data collection and support systems incurred \$20.9 million for activities under precensus day operations and support systems, and postcensus day operations. Projects included:

- \$4.1 million for geographic patterns including questionnaire delivery methodologies by area and corresponding automated control systems;
- \$4.0 million for planning of data collection efforts including activities for truncation and/or the use of sampling for nonresponse follow-up and increased efforts to develop procedures for enumerating special populations such as the military, maritime, institutional, migrant, reservation, and those living in other than traditional housing units;
- \$3.8 million for direction and control by 12 regional offices that would provide logistical support and direct enumeration efforts by local census offices; and
- \$3.1 million for planning and developing personnel and administrative systems to support 2000 Census data collection and processing activities, such as types of positions, pay rates, personnel and payroll processes, and systems, space, and security requirements.

Framework 5 - Automation/telecommunication support incurred \$20.2 million for activities to include evaluating proposals for the acquisition of automation equipment and related services, funding the development of prototype systems, and moving toward awarding contracts to implement such systems for the 2000 Census. Projects included setting up data capture systems and support to process census questionnaire responses and telecommunication systems required to provide nationwide toll-free 800 number services to answer respondent questions and to conduct interviews.

Appendix II
Analysis of Funding by Fiscal Year for
Planning and Development of the 2000
Census

Framework 6 - Testing, evaluation, and dress rehearsal incurred \$19.8 million for the following activities:

- \$3.7 million to begin gearing up for the 1998 dress rehearsal in order to prepare personnel to conduct the census testing efficiently and effectively; and
- \$7.0 million to conduct activities for ICM special testing and American Indian Reservation (AIR) test census such as
 - questionnaire delivery and mail return check-in operations,
 - nonresponse followup,
 - data capture operations,
 - ICM computer-assisted personal visit interviews,
 - computer and clerical matching,
 - follow-up and after follow-up matching, and
 - evaluation studies.

Framework 2 - Data content and products incurred \$12.3 million for activities related to the development of computer programs and systems for data tabulation and for the production of paper, machine-readable, and on-line data products. Projects included:

- \$4.5 million to move from research in fiscal year 1996 to implementation in fiscal year 1997 of the Data Access and Dissemination System (DADs), including development of the requirements for Census 2000 tabulations from DADs, and development of computer programs and control systems that will format the processed Census 2000 data for use in DADs; and
- \$2.2 million towards development of a redistricting program for Census 2000.

Comments From the Department of Commerce

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



THE SECRETARY OF COMMERCE
Washington, D.C. 20230

OCT 16 2002

Mr. Gregory D. Kutz
Director
Financial Management and Assurance
General Accounting Office
Washington, DC 20548

Dear Mr. Kutz:

The Department of Commerce appreciates the opportunity to comment on the General Accounting Office draft document entitled *2000 Census: Lessons Learned for Planning a More Cost-Effective 2010 Census*. The Department's comments on this report are enclosed.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Evans".

Donald L. Evans

Enclosures

**Appendix III
Comments From the Department of
Commerce**

**Comments from the U.S. Department of Commerce
U.S. Census Bureau**

U.S. General Accounting Office draft report entitled *2000 Census: Lessons Learned for Planning a More Cost-Effective 2010 Census*

Comments on the Text of the Report

The U.S. Census Bureau has reviewed this report carefully and appreciates this opportunity to respond prior to its publication.

See comment 1.

We agree with the General Accounting Office (GAO) that Census 2000 was very successful. However, this was not attributable to a sound planning and development effort. Rather, it was due to a tremendous effort at the time of execution, which resulted in a very costly census conducted at an unacceptably high level of risk. Accordingly, we also agree with the fundamental conclusion of the report, that “thorough and comprehensive planning and development efforts are crucial to the ultimate efficiency and success of any large, long-term project, particularly one with the scope, magnitude, and deadlines of the U.S. decennial census.”

We believe that our plan for reengineering the decennial census design for 2010 directly addresses these issues (see Appendix 1, “Reengineering the 2010 Census”). However, as GAO stresses, the success of this effort hinges on our ability to conduct early planning, development, and testing of all components of the census design. The GAO points out that the Census Bureau only directed 4 percent of the life-cycle costs for Census 2000 to early planning and development. For the 2010 census, this has been increased to 8 percent of the life-cycle costs of conducting a short-form-only census. This figure increases to 17 percent when the cost of implementing the American Community Survey and the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) enhancements program is taken into consideration. (These costs are summarized in Appendix 2, “Life-Cycle Savings of the 2010 Census,” which is currently under revision.)

See comment 2.

The GAO recommends that the Census Bureau “provide comprehensive information backed by supporting documentation in its future funding requests for planning and development activities.” The Census Bureau wholeheartedly agrees with this recommendation. Consistent with Department of Commerce and Office of Management and Budget guidelines, the Census Bureau is expanding the documents justifying budgetary requests. A primary example of this is the “Capital Asset Plan and Business Case” (Exhibit 300), which outlines the Census Bureau’s planned information technology development and activities throughout the decennial census cycle.

Reengineering the 2010 Census U.S. Census Bureau September 2002

The reengineered 2010 census consists of three highly integrated activities designed to dramatically improve upon an already very good Census 2000. We will accomplish this by taking advantage of opportunities for innovations made possible through the expanded use of technology and targeting of coverage improvement procedures that will enable the U.S. Census Bureau to:

1. Improve the relevance and timeliness of census long form data.
2. Reduce operational risk.
3. Improve the accuracy of census coverage.
4. Contain costs.

The three integrated components are:

1. Collect and tabulate long-form data every year throughout the decade through a large household survey (the American Community Survey [ACS]).
2. Enhance and improve our existing address lists and geographic information system (GIS) data base (Topologically Integrated Geographic Encoding and Referencing [TIGER]) by bringing them into alignment with true global positioning system (GPS) coordinates and converting our TIGER to a commercial off-the-shelf (COTS) database environment.
3. A program of early planning, development, and testing designed to completely restructure the management and conduct of a short-form-only census in 2010. That will further reduce the differential undercount measured since the 1940s without resorting to statistical adjustment and will provide the savings needed to support this initiative.

Adopting the ACS as the planned replacement for the census long form will allow the short-form-only census to focus more directly on meeting the legally mandated collection and issuance of the apportionment and redistricting data. This will transfer to the ACS the responsibility to provide estimates of detailed demographic and housing data throughout the decade. This more timely and therefore more relevant data will greatly enhance the information currently provided by the once-in-a-decade long form.

An updated master address file (MAF) and an accompanying improved TIGER data base with GPS positional accuracy will allow the Census Bureau to maintain the inventory and location of addresses and features. In addition, we will greatly expand our ability to improve the accuracy and completeness of our census GIS systems that process these data. These MAF/TIGER enhancements are key to allowing the Census Bureau to adopt the technology necessary to fully utilize GPS-equipped, hand-held mobile computing devices to find, interview, and update data on persons and housing units for the short-form-only census in 2010, thereby, achieving the

Census Bureau's constitutionally mandated objectives at a greatly reduced cost.

These two components (the ACS and the MAF/TIGER enhancements) are truly exciting and innovative in their own right. But unless they can be translated into an improved 2010 census and done so without expanding the cost of census taking, the goals of the reengineered census will not be met.

The third component (early 2010 planning, development and testing) is essential to complete the picture. The new short-form-only census, which is the end goal of this component, is, in fact, the key component to the success of this reengineering effort. Without it, we are left with a census that improves relevance but at a greatly expanded cost and with no serious improvements in operational risk or coverage accuracy.

By taking advantage of no long-form requirements for the 2010 census coupled with access to current data from the ACS for targeting areas requiring special attention to improve coverage, the potential cost and accuracy of the 2010 short-form-only census can be greatly improved. Add to this the availability of a fully GPS-aligned MAF/TIGER system allowing for a dramatic reduction in field infrastructure costs resulting mostly from a near elimination of paper and the huge staff and space required to handle that paper, we have the potential to completely restructure the data collection, data capture, and data processing of the 2010 census. This will result in a census that is more focused on coverage issues, less operationally risky and less costly.

This, however, will not happen automatically. A decennial census is a very complex task involving hundreds of thousands of temporary staff over a very short period of time and costing several billions of taxpayer dollars.

To do this successfully, procedures must be fully tested under real life conditions and refined well in advance of Census Day. You only get one chance to get it right.

The early years of this component involve extensive planning, development, testing, revising, and retesting of literally thousands of procedures needed to complete a successful census. We are planning to restructure many of these procedures to reduce costs and improve accuracy while keeping operational risk to a minimum. To do this, we plan a major field test in 2004, focusing primarily on improved methodologies for data collection and coverage. In 2006, we plan a second major field test. This time the test will be focused primarily on the systems integration needed to carry out this new census design. In 2008, we plan for a full dress rehearsal of the new census, setting the stage for a 2010 census that delivers on all the goals of 2010 census reengineering.

In addition to improved accuracy and reduced operational risk, we expect cost reductions in this component to be sufficient to pay for all three components of the reengineered census. That is, all three components will be carried out at a cost that is no greater and probably somewhat less than repeating the process of Census 2000.

**Appendix III
Comments From the Department of
Commerce**

The following are GAO's comments on the letter dated October 16, 2002, from the Department of Commerce.

GAO Comments

1. The objectives of our report did not include assessing the degree of success of the 2000 Census.
2. See "Agency Comments and Our Evaluation" section of this report.

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