

GAO

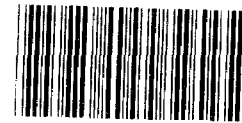
Testimony

For Release
on Delivery
Expected at
9:30 a.m. EDT
Tuesday,
Sept. 27, 1988

Status of the 1990 Decennial Census

Statement of
Gene L. Dodaro, Associate Director
General Government Division

Before the
Subcommittee on Census and Population
Committee on Post Office and Civil Service
House of Representatives



136874

043328 / 136874

STATUS OF THE 1990 DECENNIAL CENSUS

SUMMARY OF STATEMENT BY GENE L. DODARO ASSOCIATE DIRECTOR GENERAL GOVERNMENT DIVISION

A decennial census is a massive undertaking with unique management requirements. For the 1990 Decennial about 460 offices nationwide will collect and process population and housing data from over 100 million households. Over 300,000 temporary workers will have to be recruited, trained, and managed.

To overcome problems experienced in the 1980 census, the Bureau is introducing new methods for 1990, including greater use of automation. For example, automated systems will be used to check in questionnaires and generate census maps, replacing error-prone manual procedures used in 1980. Also, to improve the timeliness and quality of data, census information will be processed as it is being collected, rather than waiting until field offices complete all data collection, as was done in 1980. Such improvements are positive strides but also represent significant management challenges for the Bureau.

GAO has been monitoring the 1988 dress rehearsal, the Bureau's final opportunity to refine 1990 procedures, and the development of the address list for suburban and rural areas, the first major field activity for the 1990 census. Both are achieving some key objectives. However, three critical areas warrant special attention to achieve a well-managed, cost-effective census.

- Some automated systems in the dress rehearsal did not function as intended because late decisionmaking and delays in procuring computer equipment reduced the time to develop and test software and correct design errors. GAO has recommended that the Bureau develop a contingency plan in the event that new systems do not operate as intended. Such efforts are now underway.
- Staffing difficulties experienced during the initial phase of the address list development could foreshadow problems for subsequent operations. The Bureau may have to develop geographic and market wage scales and alternative strategies for increasing the supply of temporary workers.
- The Bureau's cost estimates are escalating. The 1990 census could cost about \$3 billion. In 1980, the Bureau ran out of money and needed \$50 million in supplemental appropriations. This also prompted actions which reduced data quality and slowed data dissemination. To avoid a recurrence in 1990, the Bureau needs to prepare a plan for handling potential budget shortfalls and make decisions as early as possible.

Mr. Chairman and Members of the Subcommittee:

I am pleased to appear today to discuss our observations on the Bureau's preparations for the 1990 census. My comments today reflect the preliminary results of our reviews of the 1988 dress rehearsal and the development of address lists for suburban and rural areas, known as prelisting, as well as certain concerns we have about potential staffing problems and escalating census costs. My comments also are based on our previous reviews of the 1980 census and the Bureau's automation efforts for the 1990 census.

The dress rehearsal represents the Bureau's final opportunity to refine 1990 procedures. It began in February 1987 and is being done at three locations: St. Louis, Missouri; East Central Missouri; and Eastern Washington. The data collection activities for the dress rehearsal have been completed, but final tabulations and evaluations are ongoing. Our field work was done at Bureau headquarters, the Kansas City processing office, and at the three dress rehearsal sites.

The prelist activity represents the first major field activity for the 1990 census. It started in June 1988 and will continue for approximately 1 year. Our field work is being done at Bureau headquarters, the Baltimore and Kansas City processing

offices, and in 3 of 12 regional census areas with high workloads in the early phases of prelist.

DRESS REHEARSAL ON SCHEDULE
BUT NOT A COMPLETE TEST

First, let me discuss the dress rehearsal, which was designed to provide a full-scale test of the systems and procedures to be used in the 1990 census, particularly new automated systems to replace error-prone manual systems used in 1980. Such systems and procedures include: processing census data as it is collected (concurrent processing) rather than waiting until field offices complete all data collection activities; and the use of a new minicomputer system for producing and updating maps, checking in questionnaires, keying address information, and generating management information reports. Such improvements are positive strides but also represent significant management challenges for the Bureau.

Thus far, the Bureau is completing the dress rehearsal activities generally on schedule and within budget. Key procedural changes, such as concurrent processing, worked well for the most part. However, because of delays in procuring the minicomputers due to late decisionmaking, they were not available at the start of the dress rehearsal for keying addresses and updating maps.

The minicomputers were used in later phases of the dress rehearsal for checking in questionnaires and generating management information system reports. The automated questionnaire check-in procedure appeared to have worked well, but the Bureau had problems with some of the management information system reports. The Bureau did not have sufficient time to adequately develop and test software for these applications because of the delays in acquiring the minicomputers. As a result, certain management information system reports were inaccurate and were not used. For example, reports intended to assist regional census managers in centralized hiring and monitoring employee production were not accurate or timely. As a result, managers did not use them, reverting to manual records instead. This could have broad implications nationwide if the software problems are not fully resolved before the start of the labor intensive enumeration phase of 1990 census operations.

In our June 1988 report, entitled Minicomputer Procurement Delays and Bid Protests: Effects on the 1990 Census (GAO/GGD-88-70), we discussed our concerns about adequate software development and the risks associated with using software before it is fully tested. We recommended that the Bureau develop a formal contingency plan in the event the minicomputers do not operate properly. The Bureau agreed and is currently preparing a contingency plan and doing system tests.

SOME PROBLEMS IN PRELIST

Let me now turn to the prelist, the first major field activity for the 1990 census. Accurate and complete address lists are important to the quality of the census because they help ensure that questionnaires are delivered to all households. They also serve as a control list for identifying and locating households that do not return questionnaires.

The Bureau generally has relied on two methods of developing its initial address lists. For urban areas, commercial vendor mailing lists are purchased. For rural and suburban areas, commercial lists cannot be used because mailing addresses frequently do not identify a housing unit's specific geographic location. As a result, in these areas an estimated 40,000 census enumerators will travel or canvass all streets and roads, list the mailing address of every living quarter, and spot the location of the housing unit on a census map. The map spotting allows the Bureau to physically locate the units for possible follow-up work and to accurately tabulate population counts at the local levels.

For the 1980 census, delays in map production, difficulties in using census maps, and problems in retaining staff contributed to delays in completing the prelist. As a result, the Bureau cancelled a planned independent Postal Service mailing address

check. To help compensate for the missed procedure, at the last minute, the Bureau recanvassed some of the rural portions of the country, which included approximately 15 million households. The Bureau estimated that about 105,000 housing units were added to the address list from this procedure at a cost of \$10.3 million. The housing unit cost for each addition was about \$98, making it one of the least cost-effective procedures in the 1980 census.

To prevent problems from recurring in 1990, the Bureau (1) automated map production to improve the quality of census maps and (2) planned to begin the prelist a year earlier than it had in 1980. Our review to date of initial prelist activities has found that these initiatives have met with mixed results.

The new automated geographic support system appears to be generating higher quality maps than those used in 1980. However, Bureau officials acknowledge, and our field observations show, that some road information is outdated. While this has caused problems for some enumerators, overall they were able to use the maps.

Although maps were usable, their late production contributed to the Bureau's decision to delay the start of the 1990 prelist by 4 months--from February 1988 to June 1988. The Bureau originally had planned to prelist approximately 45 million housing units for the 1990 census. However, late map production,

coupled with the Bureau's concern about the ability to develop good mailing addresses for some rural areas, caused the Bureau to defer the prelist of 11 million housing units to the fall of 1989. For these units, the Bureau, rather than the Postal Service, will deliver the questionnaires. In addition, the Bureau decided not to prelist 2 million housing units, opting instead to enumerate them using its traditional door-to-door canvass enumeration procedure. However, despite the delay and changes in its original plans for prelisting, the Bureau is still generally ahead of its 1980 pace because of its decision to begin the prelist activity 1 year earlier.

Another change the Bureau made to improve prelist operations was to provide more training. It increased 1990 prelist enumerator training from the 1 day given in 1980 to 3 days. The 1990 prelist training includes practice exercises to simulate field conditions and provides field training. Effective training is especially important in managing the temporary workforce used for prelisting.

Of the 25 prelist enumerators we observed, 19 believed that the training had prepared them for their assignments. However, our field observations of the 25 enumerators and review of quality assurance documents disclosed that some did not always follow procedures that could affect the quality of the census. This is seen in the following examples.

- Seven of the 25 enumerators we observed did not ask every household whether there were other living quarters located on the property. Failure to ask this question could result in less than adequate census coverage because housing units that are hidden from view would not be prelisted and might ultimately be excluded from the census counts. The Bureau's evaluation of the coverage of housing units in the 1980 census found that almost 2 percent of occupied housing units in prelist areas were not counted.

- Of the 25 enumerators, 8 did not follow procedures for accurately map spotting housing units. Six enumerators waited to map spot several units at a time and two spotted units in the wrong block. Inaccurate map spotting could affect the Bureau's delivery of questionnaires and ability to locate units that do not mail back questionnaires. Additionally, while not affecting total population counts, inaccurate map spotting may distort counts at lower geographic levels.

- The Bureau's quality assurance procedures require reconciliation of differences between sample address listings developed by temporary employees, called advance listers, and those listings developed by prelist enumerators. This reconciliation is used to evaluate the performance of the enumerators' work. Of the 68 quality assurance documents we

reviewed, 14 indicated that supervisors did not complete the reconciliation as required. For those documents in which the reconciliation appeared to be correctly done, 149 differences were identified, 140 of which, or almost 94 percent, were attributable to advance listers. On the basis of our analysis, we are concerned about using the advance listing procedure as a standard to measure the accuracy of enumerators' work. This analysis raises concerns about whether the Bureau is underestimating the total number of listing errors and whether this procedure is cost effective.

We recognize that the Bureau cannot make significant changes in its training programs for the 1990 prelist at this time. However, regional census managers should stress to field managers who train and supervise enumerators the importance of emphasizing such procedures as asking the question on additional living quarters, accurately map spotting housing units, and thoroughly reconciling differences identified during quality assurance checks. Also, in the long run, the Bureau should evaluate the effectiveness of using the advance listing technique as a quality assurance measure for evaluating the completeness and accuracy of the enumerators' address listings.

RECRUITING AND STAFFING PROBLEMS

One of the Bureau's major management challenges in taking a decennial census is acquiring and retaining a sufficient number of competent temporary employees. At the height of the 1980 census operations, the Bureau had only 70 percent of the required number of enumerators. This was particularly a problem in the New York, Dallas, Philadelphia, and Denver regions. High turnover rates traditionally have affected the Bureau's ability to maintain full staffing. For example, Bureau officials stated that personnel turnover rates for the 1970 census were between 20 to 25 percent. For the 1980 census, the Bureau reported that turnover was a major problem, particularly in inner-city district offices where the turnover rate ranged from 37 to 74 percent. In the prelist operation for 1980, the turnover rate was about 34 percent.

There are early indications that the Bureau is having recruiting and staffing problems in the 1990 prelist. Our review of July 1988 recruiting reports for the 10 regional census offices having activity for the first phase of prelist, involving 18 states, indicated difficulties in obtaining and holding a sufficient number of enumerators in areas of 11 states. This can be seen in the following examples.

- Shortfalls in the required number of full-time enumerators occurred in some areas of the Philadelphia region, such as Maryland and Delaware. In these two states, the Bureau was able to hire only 245 of the 314 enumerators needed for the first phase of prelist. To help compensate for the shortfall and meet production goals, the Bureau hired part-time employees and paid overtime to high performing enumerators.

- Parts of Hawaii had less than half the required staff and other parts had just enough enumerators, allowing no margin for turnover.

- In the Charlotte region, the turnover rate in South Carolina and Kentucky approached 50 percent during the first phase of the prelist, which was significantly higher than expected.

- For Maine and Vermont, states in the Boston region, the Bureau only met 79 and 78 percent, respectively, of its recruiting goals.

Because complete information is not yet available, we are unable to determine the specific causes of the Bureau's recruitment and staffing problems. However, discussions with headquarters and regional staff responsible for recruitment and staffing and a review of initial recruiting reports suggest that low unemployment rates in some areas and the Bureau's relatively low

hourly wage scale (\$5.50) may be adversely affecting its ability to attract and compete for needed temporary employees.

Problems in recruiting and retaining a sufficient number of workers for prelist may foreshadow problems for subsequent 1990 census operations. The Bureau will require over 300,000 temporary employees to staff the planned 469 temporary offices, for collecting and processing population and housing data from over 100 million households. Increases in the minimum wage scale, if enacted, could increase the attractiveness and competitiveness of other employment opportunities in some areas, relative to the Bureau's employment. This could further compound recruitment problems. We understand that the Bureau recognizes this problem and is considering options for possible wage scale adjustments.

In addition, the Bureau's hourly wage scale does not reflect geographic differences in the cost of living and market wage rates, which may hamper recruiting efforts in some areas. While geographic wage scales pose administrative complexities, the Bureau may need to reevaluate this option so that it may be more competitive in some areas of the country.

Recognizing that it faces problems in obtaining sufficient numbers of temporary employees, the Bureau considered a legislative initiative to remove some of the disincentives for

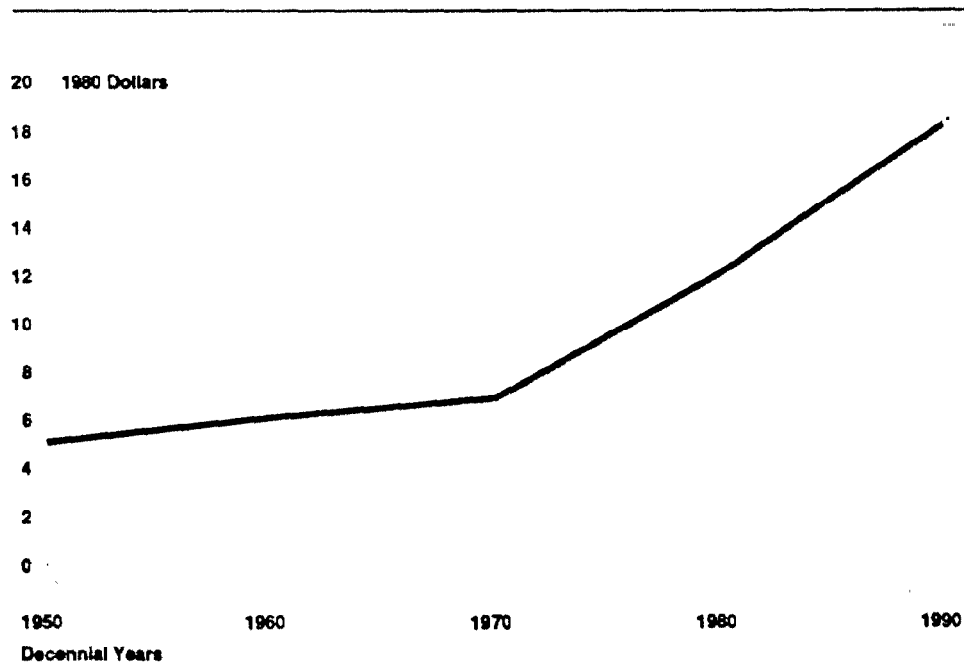
temporary employment for those who are currently receiving federal retirement benefits. In June 1987, the Bureau submitted a legislative proposal to the Department of Commerce to enable federal civilian and military retirees to work as census employees without a reduction in retirement benefits. While the Bureau mentioned that a number of federal retirees inquired about temporary employment in 1980, it did not provide statistics on how its proposal would increase the labor supply.

In responding to the Bureau's initiative, Commerce said that the Bureau had not adequately justified its position. It suggested that the Bureau either define the unique job skills needed for decennial jobs that federal retirees are likely to possess, and/or provide estimates of the proposed legislation's effect on the pool of potential applicants as compared to the number of positions. In April 1988, the Bureau decided that it did not have additional justification and withdrew its request. We believe that in light of the difficulties encountered in the prelist and past census experience, the Bureau should more aggressively explore this or other viable options as a means to increase the available labor supply for 1990. However, decisions on this initiative should be reevaluated soon so that Congress will have time to enact any legislation it deems appropriate.

ESCALATING CENSUS COSTS

Controlling costs without adversely affecting the quality of census operations is another management challenge that will require timely decisionmaking. Decennial census costs have increased dramatically over the past few decades. As shown below, the per housing unit cost of the census (in 1980 dollars) has increased from \$5.04 for the 1950 census, to \$12.10 for the 1980 census, to a current estimate of \$18.28 for the 1990 census.

Per Housing Unit Cost Has Increased Dramatically Since 1970



Per housing unit costs are in constant 1980 dollars

For the 1980 census, cost estimates rose significantly during the 5 years preceding actual operations. For example, in 1975 the Bureau estimated the 1980 census would cost \$450 million, in 1977 the estimate was \$565 million, and in 1980 the estimate was \$1 billion. The 1980 census eventually cost about \$1.1 billion.

Similarly, cost estimates for the 1990 decennial have escalated in recent years. The Bureau initially planned to take the 1990 census without increasing the inflation-adjusted per housing unit cost of the 1980 census. Using this objective, the Bureau estimated in 1985 that the 1990 census would cost \$1.8 billion. In 1986, however, the Bureau revised its estimate to \$2.6 billion--a 44 percent increase over the 1985 estimate. The 1986 estimate incorporated additional costs for some automated equipment, an expected lower mail response rate than in 1980, changes in procedures designed to maintain the quality of census data, and revised inflation data. Adjusting for expected inflation through the 1990 census cycle and considering the 1980 census experience, we believe the census as currently planned will cost about \$3 billion.

Obtaining additional money to meet escalating census costs may be more difficult given the current budget deficit. Therefore, the Bureau needs to be prepared in the event it does not receive sufficient money to take the census as currently designed. In 1980, the Bureau ran out of money and needed \$50 million in

supplemental appropriations. This also prompted actions which reduced data quality and slowed data dissemination. For example, the Bureau reduced the coding staff by approximately 50 percent for about 3 months, contributing to about a 1-year delay in the publication of data on population characteristics.

To better position itself for 1990, the Bureau planned to develop a contingency plan identifying actions needed in the event of budget shortfalls, but it has not yet completed that plan. The Bureau should make this a priority at this time, while some flexibility remains. Once the plan is completed, the Bureau needs to closely monitor its budget situation and make decisions as early as possible to prevent or minimize the need for last minute cutbacks as occurred in 1980.

Mr. Chairman, this concludes my statement. I would be pleased to respond to questions.