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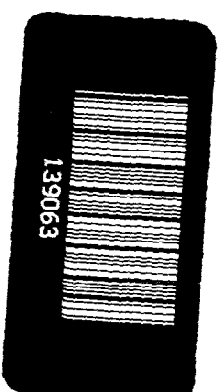
United States General Accounting Office

Report to the Chairman, Committee on  
Post Office and Civil Service, House of  
Representatives

July 1989

## 1990 CENSUS

# Delays in Completing the Address List for Suburban and Rural Areas



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

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General Government Division

B-234048

July 10, 1989

The Honorable William D. Ford  
Chairman, Committee on Post Office  
and Civil Service  
House of Representatives

Dear Mr. Chairman:

Your December 17, 1987, letter forwarded a request by the former Chairman and Ranking Minority Member, Subcommittee on Census and Population, House Committee on Post Office and Civil Service, that we monitor and evaluate the Bureau of the Census' development of address lists for suburban and rural areas, known as prelisting. Prelisting is the first major field activity for the 1990 decennial census.

The Bureau will use an address list to mail census questionnaires to about 88 million of the estimated 106 million households and request that questionnaires be completed as of April 1, 1990. Complete and accurate address lists not only ensure that the questionnaires are delivered to all households but also provide an effective control list for identifying and locating households that do not return questionnaires.

The Bureau uses two methods for developing its address list. For urban areas, the Bureau purchases commercial address lists. For suburban and rural areas, commercial address lists cannot be used primarily because the Bureau does not have the capability to identify the geographic location of these housing units. Identifying a housing unit's specific geographic location is important to the correct tabulation of census data by geographic areas. As a result, the Bureau develops an address list for suburban and rural areas by having enumerators (temporary census workers) travel streets and roads, listing the mailing address of every housing unit and marking its location on a census map.

To ensure the accuracy of the address lists, the Bureau contracts with the Postal Service to check both the urban and suburban and rural address lists. The Bureau planned to have the Postal Service check both address lists twice—an early check in February 1989 and a final check in March 1990.

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**Results in Brief**

The Bureau completed the address list development for suburban and rural areas for the 1990 census about 6 months later than initially

planned. This was caused primarily by delays in developing an automated system needed for producing census maps. As a result of mapping delays, the Bureau determined that all the prelist addresses would not be ready in time for an early Postal Service review of the accuracy of the Bureau's address list, scheduled for February 1989. As a result, the Bureau asked the Postal Service to schedule another review in April/May 1989 for those addresses that were not ready in February. However, despite this delay, the Bureau is well ahead of the 1980 pace for address list development for suburban and rural areas.

Although the automated system did not produce maps on schedule, its development was one of the Bureau's major accomplishments for the 1990 census. The new system, however, will not achieve some of the original objectives. For example, the system will not be updated with the map changes that are identified during census activities until after 1990 census data are tabulated. Although the Bureau believes this will not affect the completeness of population counts, updated maps will not be available for some 1990 census activities, such as the review of census information by local governments. As a result, this may create the perception among local officials that census counts are incomplete.

## Objectives, Scope and Methodology

Your letter asked us to (1) determine whether the prelist was on schedule and, if not, identify the causes for any delays; and (2) review the status of the Bureau's new automated geographic support system, which produces maps used in the prelist activity. To determine whether the prelist was on schedule, we reviewed the Bureau's prelist procedures, the schedules and progress reports for doing field activities, and field observation reports. We also interviewed officials who were responsible for overseeing field operations.

We visited 3 of the 12 regional census centers that were responsible for managing the prelist—Kansas City, Philadelphia, and Atlanta. At these centers we reviewed management information reports on the progress of field activities and talked to regional census center management and recruiters to determine the reasons for any delays in completing field work. These centers were selected because of their relatively high volume of work in the early phases of the prelist.

To determine the status of the Bureau's new automated geographic support system, we reviewed progress reports for completing map production and the census maps used in the 1980 and 1990 censuses. We also

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interviewed officials responsible for developing the new automated geographic support system.

We also reviewed the Bureau's evaluation of the results of the 1980 census and the 1986 test census<sup>1</sup> and the Bureau's cost estimates for some 1990 census activities associated with address list development and questionnaire delivery.

Our work was done between February 1988 and January 1989. We did not assess the reliability of the Bureau's management information system nor did we verify the accuracy of the Bureau's estimated costs for some 1990 census operations. Our work was completed in accordance with generally accepted government auditing standards.

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## Bureau Was Behind Schedule Primarily Due to Delays in Automated Mapping Process

The Bureau planned to (1) begin the prelist for the 1990 census a year earlier than it had in 1980 to allow sufficient time for an early, important Post Office address check in February 1989; and (2) automate processes for map production. The Bureau made these plans to prevent problems that occurred during the prelist for the 1980 census. In 1980, because of mapping and canvassing delays, the Bureau cancelled the early Postal Service check of the Bureau's prelist address list.

Although the Bureau planned to begin the prelist for the 1990 census in February 1988, it postponed the start of prelist until June 1988 because of delays in developing automated files needed to produce prelist maps. In addition to the delayed start, the Bureau extended the prelist completion date another month to provide more time for producing prelist maps. These events, along with about a month delay in completing the prelist, extended the completion date from the original date of July 1988 to January 1989.

Due to the schedule slippage, the Bureau determined that all prelist addresses would not be ready for an early Postal Service address check, known as the Advance Post Office Check (APOC), scheduled for February 1989. As a result, the Bureau requested that the Postal Service do an APOC in April/May 1989 for the remaining prelist addresses. (About 55 percent of the prelist addresses that were sent for an early Postal Service check were reviewed in April/May 1989.)

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<sup>1</sup>In preparation for the 1990 census, the Bureau did a series of pretests from 1984 and 1988 to test new procedures that would be used in the 1990 census.

During this address check, the Postal Service corrects incorrect mailing addresses and adds addresses not already included in the Bureau's list. By postponing the APOC for these addresses, the Bureau has reduced the time available for activities that are needed for producing address labels for census questionnaires. These activities include resolving differences between the Bureau's and Postal Service's addresses and keying the final addresses into the Bureau's automated address file. These addresses are scheduled to be sent to printers by December 1, 1989, so that address labels can be made.

The Bureau also experienced about a month delay in completing prelist field work. Difficulties in obtaining and retaining adequate staff contributed to the schedule slippage. The Bureau's 1990 prelist recruiting reports show that 19 of the 68 prelist areas had difficulties in meeting their recruiting goals after prelist field work had begun. In addition, the Bureau estimates that its overall staff turnover rate for prelist was 60 percent, or about twice what it had expected.

To meet staffing needs, the Bureau increased its hourly pay from \$5.50 to \$8.00 in six east coast areas—New Jersey, Connecticut, metropolitan areas of Maryland and Virginia, and parts of Pennsylvania and New York. According to a Bureau official, in these areas, the Bureau had exhausted all other recruiting strategies, such as hiring part-time employees and using extensive paid advertising, and could not obtain a sufficient number of enumerators.

The Bureau has not yet completed a formal evaluation of the effects of the pay increase on attracting and retaining enumerators in these areas, but officials believe the higher pay rate increased the number of applicants. For example, in Northern Virginia, 200 persons had been recruited before the pay increase. However, in the 2-week period after the pay increase was implemented, 500 applicants were recruited.

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## Automated Geographic Support System: A Major Accomplishment for the 1990 Census but Some Objectives Not Achieved

One of the Bureau's major accomplishments for the 1990 census was automating its geographic support system to obtain consistent map, address, and census geographic information. Bureau studies concluded that in the 1980 census, inconsistencies in census maps and other geographic information resulted in delays in collecting, tabulating, and publishing census data. To help remedy some of these problems, the new system combines map, address, and census geographic information into one automated data base. The system is also producing maps that are more legible and are somewhat larger than those used in 1980, providing more space for enumerators to accurately locate housing units. The Bureau estimates it will spend about \$330 million through fiscal year 1993 for this new system.

While the system is a major accomplishment, it also has had problems that somewhat reduced its overall effectiveness. For example, as discussed earlier, delays in the timely completion of automated files needed for preparing prelist maps contributed to delays in completing the prelist. Also, geographic updates, such as new streets that are identified during the precensus field activities, will not be added to the new automated system before the start of other census activities, such as local governments' review of census data and publication of 1990 census results.

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## Delays in Developing Automated Files

In May 1987, we reported that the Census Bureau was behind schedule for completing the automated geographic support system.<sup>2</sup> Delays were the result of start-up problems with procuring work stations used to build automated files and underestimates of the amount of time and resources needed to complete file development.

Delays in developing the automated files continued in 1988 due to the underestimates of both the complexity of software requirements and computer processing time. Such delays ultimately reduced the time available to prepare computer tapes needed to generate prelist maps. To compensate for this, the Bureau leased time on two mainframe computers at an additional cost of several million dollars.

Delays in preparation of maps also contributed to the Bureau's decision to postpone prelisting 11 million housing units until June 1989. Appendix I provides further information on the postponement and the Bureau's revised questionnaire delivery method for these housing units.

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<sup>2</sup>Decennial Census: Automation of the Geographic Support System (GAO/GGD-87-75BR, May 1987).

## Updates Will Not Be Added to the System During the 1990 Census Cycle

In addition to problems with the timely completion of the system, the system's updating component will not be used for the 1990 census as was envisioned originally. For example, in prelist, census enumerators update census maps if they are not accurate or current. The Bureau initially planned to update its automated geographic files with these changes between May and December 1988. Because of funding constraints, however, the Bureau decided that prelist updates, as well as changes identified during other 1990 field activities, will not be added until after 1990 census counts are tabulated. The Bureau intends to add these geographic changes to the automated system but has not yet decided when it will be done.

According to the Bureau, its decision not to add these changes should not affect the completeness of population counts. However, without these changes, maps used by local governments to review 1990 census data and publication maps<sup>3</sup> will not contain the most current map information. During pre- and post-census review activities, local officials are provided with census maps and given the opportunity to review the accuracy of housing and population counts. Because maps will not contain up-to-date information, this may create the perception among local officials that census counts are incomplete.

## Several Million Prelist Addresses Excluded From the Early Postal Check

Completing an APOC for all addresses was one of the original objectives for address list development. Initially, the Bureau planned to have the Postal Service do an APOC for the prelist and urban address lists at the same time. However, the Bureau decided to do two APOCs, one for the urban address list in October 1988 and one for the prelist address list in February 1989. The Bureau did an APOC for the urban address list earlier to allow additional time for making changes and updates.

Under APOC procedures, the Bureau submits addresses to the Postal Service by zip code. Because some zip codes include both urban and prelist addresses, the Bureau planned to submit these zip codes to the Postal Service twice, once with the urban address list in October 1988 and again in February 1989 with the prelist address list.

To avoid having the Postal Service review certain urban addresses again in February 1989, the Bureau planned to complete a computer matching

<sup>3</sup>The Bureau produces three types of maps—internal maps, publication maps, and special request maps. Internal maps are used for field collection activities such as prelist and precensus and postcensus local review. Publication maps, produced in large quantities, are produced to appear in or accompany reports on decennial census results.



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operation to identify which addresses within these zip codes were urban or prelist. This would have permitted the Bureau to submit only the prelist addresses for these zip codes in February 1989. However, the Bureau determined that it did not have sufficient time to complete the matching operation and decided not to include these zip codes in the prelist address list that was provided to the Postal Service in February 1989.

When the Bureau made this decision, it did not know the total number of addresses that would be affected. After completing the prelist, the Bureau found that 6 million prelist addresses were contained in these zip codes. As a result, the Bureau has lost an important and early quality check for these addresses, increasing the number of address changes that must be processed in the final Postal Service quality check in March 1990.

During the final Postal Service address check, the Postal Service matches its addresses to the Bureau's and identifies addresses that are not included in the Bureau's list. These additions are sent to local census offices for verification and processing. All address changes are scheduled to be processed within 1 to 4 weeks so that questionnaires can be delivered by March 23, 1990. Questionnaires for any new addresses that are identified during this final check will be delivered up until April 13, 1990.

Under these time frames, and considering the magnitude of the potential number of addresses that were not previously checked, some address changes may not be processed in time for questionnaire delivery. Thus, late address additions will have to be included in a costly, postcensus field activity during which the Bureau contacts households that do not return census questionnaires.

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## Agency Comments

We did not obtain official agency comments on this report. However, we obtained the views of responsible officials and incorporated their comments where appropriate. Their comments were mainly technical clarifications.

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We are also sending copies of this report to the Chairman and Ranking Minority Member, Subcommittee on Census and Population, House Committee on Post Office and Civil Service; other appropriate congressional committees; the Secretary of Commerce; the Director of the Bureau of

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the Census; and the Director, Office of Management and Budget. Copies also will be made available to other interested parties upon request.

The major contributors to this report are listed in appendix II. If you have questions concerning this report, please contact me on 275-8387.

Sincerely yours,



Gene L. Dodaro  
Director  
General Management Issues



# Prelist Postponed and Questionnaire Delivery Method Changed for 11 Million Housing Units

In July 1987, the Bureau reduced the prelist workload for fiscal year 1988 by 13 million housing units—from an estimated 45 million housing units to 32 million housing units. Development of an address list for 11 million of the 13 million housing units was postponed until June 1989.<sup>1</sup> The Bureau made this change for several reasons.

First, it anticipated that maps would not be completed for all areas scheduled to be prelisted starting in February 1988. Second, the Bureau had to reduce its costs for fiscal year 1988 because of budget reductions. By reducing its fiscal year 1988 prelist workload, costs would be deferred until fiscal years 1989 and 1990. Finally, the Bureau concluded that on the basis of its past experience, it would have difficulty in some rural areas developing mailing addresses that the Postal Service would recognize as deliverable.

For the 11 million units scheduled for prelist in June 1989, census enumerators, rather than postal carriers, will deliver questionnaires in March 1990. This form of questionnaire delivery is referred to as update/leave. The Bureau will not have the Postal Service do any address checks for these addresses.

According to Bureau officials, the update/leave method is being used in those geographic areas where the Bureau experienced questionnaire deliverability problems in the 1980 census, the 1986 test census, and the 1988 dress rehearsal.<sup>2</sup> The Bureau believes that the update/leave method will ensure better questionnaire delivery because enumerators will have physical location descriptions of the housing units and census maps that will assist them in locating the housing unit. Some Bureau officials also believe this method will have an added benefit in that if enumerators find someone at home, this contact may prompt the household to return the questionnaire.<sup>3</sup>

By using update/leave in these areas, the Bureau expects mail response rates to be higher than if the Postal Service had delivered the questionnaires. In addition, some Bureau officials said that more questionnaires

<sup>1</sup>For the remaining 2 million housing units the Bureau will not develop a precensus address list. For these units mail carriers deliver unaddressed questionnaires, and census enumerators collect the completed questionnaires.

<sup>2</sup>The 1988 dress rehearsal was the Bureau's final opportunity to test the procedures that will be used for the 1990 census.

<sup>3</sup>If no one is at home, enumerators are not authorized to put the questionnaire in a mail receptacle. In such cases, enumerators will leave the questionnaire at the housing unit, for example, in a mail slot in the door, under the door, or hanging on the door knob.

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**Appendix I  
Prelist Postponed and Questionnaire Delivery  
Method Changed for 11 Million Housing Units**

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will be delivered to the correct households. These two conditions will reduce the costs of field activities that attempt to locate households that have not returned questionnaires, according to Bureau officials.

However, the Bureau's earlier evaluations of the update/leave procedure's effect on mail response rates showed mixed results. A 1983 evaluation of selected use of update/leave in the 1980 census concluded it had a positive effect on mail response rates. However, the Bureau's evaluation of using update/leave in the 1986 test census for rural areas showed that there were no statistically significant differences between mail response rates in areas where questionnaires were mailed out and update/leave areas. Neither of these evaluations discussed whether enumerators were more effective than Postal Service carriers in delivering questionnaires to the correct household.

Although the evaluation of update/leave in the 1986 test census showed that update/leave is operationally feasible, the evaluation also concluded that update/leave costs more than Postal Service delivery. The Bureau estimates that the per unit costs for Postal Service delivery and update/leave are about \$1.13 and \$1.46, respectively. However, the Bureau believes reductions in follow-up costs should help to offset the higher costs for update/leave.

If the Bureau had not been confronted with the budget and mapping problems, it could have prelisted these 11 million housing units in fiscal year 1988 as originally planned and waited for the results of an APOC to define areas for update/leave on the basis of Postal Service deliverability problems. To the extent that the Bureau has identified areas for update/leave that are more suitable for Postal Service delivery, it may experience higher costs than necessary.

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