

BY THE COMPTROLLER GENERAL

13395

Report To The Subcommittee
On Census And Population
Committee On Post Office And Civil Service
House Of Representatives
OF THE UNITED STATES

RELEASED

Problems In Developing The 1980 Census Mail List

The results of the 1980 Decennial Census will have national importance over the next decade: they will affect the distribution of seats in Congress and billions of Federal dollars to State and local governments.

Bureau of the Census' operational difficulties in developing an accurate and complete mail list (used for counting over 90 percent of the population) have caused problems, including

- delayed completion of the lists for rural and small urban areas, which caused the cancellation of a key Postal Service review;
- limitations in address lists purchased for major urban areas from commercial mail list vendors; and
- lack of controls over Postal Service reviews to insure the quality of the Bureau's mail lists.

In December 1979, GAO proposed to the Bureau and the Postal Service the need for quality controls for the remaining postal reviews in developing the list. The Postal Service adopted this proposal to help identify missing addresses.



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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The Honorable Robert Garcia
Chairman, Subcommittee on
Census and Population
Committee on Post Office
and Civil Service
House of Representatives

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AGC00204

Dear Mr. Chairman:

This report in response to your February 27, 1979, request addresses the Bureau of the Census' ability to develop an accurate and complete mail list for the 1980 census. A second report will address the other subjects of the request concerning the mail response rate to questionnaires in the census test in Lower Manhattan, and the Census Bureau's experience in test censuses with temporary personnel.

The findings in this report were provided to your staff at several briefings in 1979. At your request, we did not obtain written agency comments on the report. However, our findings and suggested actions were provided to officials of the Census Bureau and Postal Service in December 1979 and discussed with them in January 1980. Their comments as well as their actions are discussed in the report.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report. At that time we will send copies to interested parties and make copies available to others upon request.

We are available to discuss our findings and to provide further assistance you might need on the matters discussed in the report.

Sincerely yours,

Thomas P. Staack

Comptroller General
of the United States



COMPTROLLER GENERAL'S
REPORT TO THE SUBCOMMITTEE
ON CENSUS AND POPULATION
COMMITTEE ON POST OFFICE AND
CIVIL SERVICE
HOUSE OF REPRESENTATIVES

PROBLEMS IN DEVELOPING THE
1980 CENSUS MAIL LIST

D I G E S T

✓ In developing a complete and accurate national mail list for the 1980 census, the Bureau of the Census experienced many operational problems. ✓ Census results have lasting importance over the next decade, affecting the apportionment of seats in the House of Representatives and the equitable distribution of billions of Federal dollars annually.

The completion of the mail list for rural and small urban areas through canvassing was significantly delayed, preventing a critical quality control review by the Postal Service. Canvassing was also plagued with other operational problems. In addition, the use of commercial mailing lists for identifying households in major urban areas was not ideally suited for the Bureau's requirements. Some actions were taken or are planned to overcome the problems, but their effectiveness is largely unknown.

The Bureau of the Census and the Postal Service should therefore emphasize quality controls for the remaining postal reviews in developing the list. Also for future list development, the Census Bureau should work with the Postal Service to update the mail list for large urban areas rather than redevelop it as done for 1980. (See pp. 22 and 29.)

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AN ACCURATE AND COMPLETE
MAIL LIST IS NEEDED

A mail list serves as the basis for mailing out questionnaires and as the control list of the nonrespondents for followup activities.

In the 1970 census the Bureau estimated that about 2.5 percent of the population was not

counted. A key contributor to this problem was households not counted because of an incomplete address list. To help remedy this the Bureau planned to develop a high quality mail list for the 1980 census.

In the 1970 census the Bureau used the mail-out/mail-back procedure for 60 percent of the households. In that procedure a mail list of addresses was crucial.

The Bureau determined that the mail-out/mail-back procedure, rather than one that requires a door to door enumerator, improved the quality and control over responses. In the 1980 census the Bureau extended its use of mail-out/mail-back to about 90 percent of the households.

PROBLEMS EXPERIENCED IN DEVELOPING THE MAIL LIST

The Bureau's two basic operations for developing the national mail list are (1) physically canvassing rural and small urban areas and listing the addresses (prelisting) and (2) purchasing commercial mail lists for major urban areas. The commercial lists are refined through physical canvassing (precanvassing). The quality of the mail lists developed in these two operations is checked by the Postal Service, which planned reviews of the entire list for completeness and accuracy at three separate times. (See p. 24.)

Canvassing for rural and small urban areas

The quality of the Bureau's prelist operation was limited, ~~however~~, by inadequate training and supervision of employees and by a lack of monitoring to insure the performance of quality control checks.

Prelisting, which was severely delayed because of operational problems, caused the first of the three Postal Service reviews to be cancelled. This cancellation put a great work burden on the

Postal Service and the Bureau during the last few weeks prior to census day.

Problems which delayed the prelist included:

- Late receipt and poor quality of maps needed to guide canvassers and to locate addresses geographically. (See p. 5.)
- A greater number of addresses than anticipated. (See p. 6.)
- Low production and high personnel turnover. (See p. 7.)

The Bureau took or planned measures to compensate for these problems, but the results of its efforts are unknown. (See p. 9.)

Commercial lists for major urban areas

The Bureau also experienced limitations with the commercial mail lists, which provided fewer and more inaccurate addresses than expected for major urban areas. Few mail list vendors could satisfy the address requirements needed for a census. In areas where there was little demand for commercial mail lists, they had not been updated. However, the Bureau did increase the number of addresses by merging mail list files. (See pp. 14 to 20.)

The Bureau physically canvassed the major urban areas to improve the mail list. Results of the canvass were not available as of the early part of March 1980. Canvassing was performed under severe time constraints and some quality controls that could help were deleted. (See p. 20.)

X GAO recommends that the Bureau of the Census periodically update, rather than redevelop, the mail list for the major urban areas to meet future Bureau needs, such as the planned mid-decade census. (See p. 22.)

Postal Service quality
control reviews

Postal Service reviews of the mail list materially improve its completeness and accuracy. However, some addresses are missed. This miss rate is not significant when the Postal Service makes successive reviews of the Bureau's lists and when it is initially provided with a good quality list. However, the Bureau experienced many operational problems in developing the list and cancelled one of the postal reviews of the small urban and rural portions of the list. To help reduce the miss rate, there is need for quality controls over the Postal Service's reviews. (See p. 25.)

AGENCY COMMENTS AND ACTIONS

With the exception of the GAO views on the mail list development for rural and small urban areas, the Bureau and the Postal Service were receptive to GAO's recommendation and positions. The Postal Service, in response to GAO's proposal, adopted a quality control for the last two postal reviews. In regard to the mail list for rural and small urban areas, the Bureau believes that the quality will be better than GAO implies in its discussion in chapter 2. (See pp. 13, 23, and 29.)

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CHAPTER 1
INTRODUCTION

On April 1, 1980, the Bureau of the Census will conduct the 20th Decennial Census of Population and Housing--an activity of lasting importance over the next decade for determining seats in Congress and affecting the distribution of billions of Federal dollars annually.

Because of concerns over the accuracy and completeness of the census, the Chairman, House Subcommittee on Census and Population, Committee on Post Office and Civil Service, in a February 27, 1979, letter asked us to review the Bureau's ability to compile an accurate and complete national address register for the census. The register is the keystone of the 1980 census because it is the basis for mailing questionnaires to most of the population and controlling receipt of the responses. The Chairman also asked that we determine what might be done to improve the mail response rate experienced in the most recent test census in Lower Manhattan and that we examine the Bureau's experience with temporary personnel in the test censuses and plans for the actual census.

This report in response to the request concerns the procedures used by the Bureau to develop the national address register. A second report will address the other subjects of the request. Related GAO reports on planning for the 1980 census include "Programs to Reduce the Decennial Census Undercount" (GGD-76-72, May 5, 1976); and letter reports on census pretests (GGD-78-2, Oct. 11, 1977) and Bureau of the Census' planning, budgeting, and accounting for the 1980 census (GGD-79-7, November 9, 1978).

Census data is important to apportionment and districting in Congress and in State governments. Article 1, section II, of the U.S. Constitution established the census and required that censuses be conducted at 10-year intervals. The first census was taken in 1790. The census was authorized to determine the number of representatives each State could have in Congress. By law, 13 U.S.C. 141, the decennial census date is April 1; the tabulation of total population by States for apportioning congressional representatives must be provided to the President within 9 months; and within 1 year of census day, the Bureau must present to the State legislatures population totals for all counties, cities, and certain recognized political and statistical subdivisions for potential redistricting of the legislatures.

The decennial data has also become increasingly important to State and local governments since billions in Federal funds, including revenue sharing and grants for public works, job training, and education, are distributed annually using the data. Census data is further used as a benchmark for subsequent collection of many kinds of data and is the best source of small area data.

The Bureau estimates that the overall census costs will be about \$1 billion, and during the peak period about 275,000 temporary employees will be working on the census. For the census the Bureau will operate 409 temporary district offices throughout the country.

MAIL-OUT/MAIL-BACK CENSUS

In the 1970 census the Bureau estimated that the number of persons not counted totaled about 5.3 million persons, for an undercount rate of 2.5 percent of the population. A key contributor to the undercount was missing addresses in the mail list. The Bureau estimated that 1.4 percent of the population was not counted as a result of missed occupied household units, and 1.1 percent was missed because of omitted persons in enumerated household units. The Bureau has planned improvements in the mail list operations and other procedures to decrease the undercount for the 1980 census.

In the 1970 census, the Bureau used the mail-out/mail-back census for about 60 percent of the population. For the remainder of the population, the Bureau used the conventional procedure. In the conventional procedure, mail carriers deliver unaddressed questionnaires to all households on their routes. Each household is instructed to complete the questionnaire and hold it for pick up by a census enumerator.

In the 1980 census, the Bureau will use a mail-out/mail-back procedure for about 90 percent of the estimated 86 million households and 222 million persons. Each household is mailed a questionnaire and is requested to mail it back. Census enumerators contact only those households that do not return questionnaires or that give incomplete answers.

For the 1980 census, as in the 1970 census, the conventional procedure will be used for those households not covered by the mail-out/mail-back procedure. In 1980 the conventional procedures will cover areas primarily in sparsely settled areas.

The quality of the 1980 census will depend largely on the accuracy and completeness of the mail list. Each address must be sufficient for delivering the questionnaire by the Postal Service and for locating the household by an enumerator if a visit is necessary. The mail list in the form of an address register will be the control to insure receipt of mailed back questionnaires.

DEVELOPING MAIL LISTS

To initially compile the mailing list, the Bureau purchased addresses from commercial mailing list firms for major urban areas and physically canvassed the other areas. The Bureau developed computerized geographic files for the major urban areas that provided street address ranges needed to code addresses to various levels of census geography. Data identification is needed so that tabulations can be associated with the proper geographic area. The development of computerized geocoding files made possible the more widespread use of commercial mailing lists. However, for areas not covered by these files, the Bureau must identify addresses and manually code them to lower level census geography, such as blocks and enumeration districts. Maps are produced for these areas and enumerators canvass the areas to identify addresses. The Census Bureau refers to this operation as prelisting.

The Bureau uses two procedures to update and refine the mail list developed from the purchase of addresses and the prelist operation. The Bureau physically canvasses (precanvassing) the areas covered by the commercial mailing list and for all areas the Bureau contracts with the U.S. Postal Service to review the list for accuracy and completeness. The Bureau planned that the Postal Service would make three reviews of the list: an advance post office check, about 10 months prior to census day; a casing check, a match of census addresses to addresses on carrier route cases, on March 5, 1980; and a time of delivery check on March 28, 1980.

The Bureau has also planned some post-census-day operations to identify missed addresses. For example, the rural portion of the prelist area will be recanvassed. Also, the Bureau will check for differences in the number of housing units in a building as shown in the address registers and the number reported by respondents to the census questionnaire. In addition, the Bureau will provide address and population counts to local communities. The communities are asked to report any large discrepancies between Bureau counts and their estimates. As time and resources permit, the Bureau will recanvass areas when unaccounted significant differences occur.

CHAPTER 2

PROBLEMS IN DEVELOPING MAIL LISTS

FOR RURAL AND SMALL URBAN AREAS

The effectiveness of the decennial census--which strives to determine how many people are in the Nation and where these people reside--depends on a complete and accurate mail list. Since commercial lists, even if available, were not appropriate for rural and small urban areas, the Bureau had to resort to a complex, labor-intensive effort (physical canvassing) to identify households in these areas.

In developing this list for rural and small urban areas, the Bureau encountered operational problems which delayed completing the canvassing operation. This delay resulted in cancelling the important advance post office check of the mail list, one of several Postal Service reviews which enhance the completeness and accuracy of the list.

In addition, canvassing and address listing was limited by (1) inadequate training of canvassers in important aspects of their jobs, (2) inadequate supervisory review of canvassers' work, and (3) a lack of consistent quality control checks over canvassing operations.

Bureau measures to compensate for unanticipated shortcomings in developing the rural and small urban area mail list were late and their effectiveness is unknown.

Because of problems with the canvassing operation and the elimination of the advance post office check, the remaining Postal Service reviews of the mail list will be all the more critical for developing a complete and accurate mail list. The Bureau estimated that the reviews could add about 3 million addresses shortly before census day which would have to be manually made to questionnaires and address listings. This is over a million more than originally planned for in that time period.

HOW MAIL LISTS ARE DEVELOPED FOR RURAL AND SMALL URBAN AREAS

The Bureau performs an operation called "prelisting" to develop mail lists for rural and small urban areas. For these areas, commercial mail lists were either not available or addresses could not be geographically coded using the Bureau's computerized files. As a result, the Bureau developed a ques-

tionnaire mailing list for these areas by physically canvassing all locations, such as area streets and roads, to locate every place where people lived or could live.

Through prelisting, the Bureau expected to obtain addresses for approximately 32 million, or 41 percent, of the households in mail-out/mail-back census areas. Prelist activities were conducted in 48 States covering about 2,488 of the Nation's 3,042 counties. To carry on these activities, the Census Bureau established 38 offices and hired approximately 35,000 temporary employees to perform the prelist.

PRELISTING SEVERELY DELAYED

No prelist activity began on schedule and listing averaged 12 weeks late in starting. The canvassing and listing scheduled for 4 weeks at each office took between 16 and 24 weeks in most cases. Overall, listing operations originally scheduled for 3-1/2 months took 8 months.

Several problems contributed to the late start and extended operations:

- The delayed preparation of prelist area maps created a ripple effect on subsequent prelist activities.
- The poor quality of the maps hindered canvassing. Many prelist maps were missing features, too small in scale for marking address locations, and difficult to read.
- Listing workloads for many prelist geographic areas were greater than planned, causing redefinition of enumeration districts, alteration of work assignments, and hiring of more personnel.
- High enumerator turnover and low production, coupled with heavy workloads, made full staffing difficult to achieve.

Maps not ready

Maps needed for canvassing were not prepared and sent to prelist offices on schedule. Prelist area map preparation was about 9 months late in starting. According to Bureau officials in the Geography Division, the late start was largely beyond the Bureau's control. Late external decisionmaking on the voter registration survey mandated a much larger effort than previously anticipated and preempted Bureau resources planned for preparing prelist maps.

This delay created staffing problems. Because the late receipt of maps delayed the start of prelisting, many people originally recruited were no longer available when listing materials were ready. Thus prelist offices had to re-recruit staff.

Poor quality maps

Prelisting maps were of such poor quality that they hampered the work of the enumerators, therefore delaying canvassing and processing of information. Some prelist maps were out-of-date and missing essential features, such as block numbers, enumeration district boundaries, roads, and streams. Many maps were difficult to read because printing was too light or overly thick, and dark boundary lines often obscured features. Map scales were often too small for marking address locations (map spotting).

Because of these inadequacies, enumerators and Bureau personnel were involved in time-consuming activities which delayed canvassing. Many enumerators had to purchase commercial maps to clarify omissions on census maps. In instances where maps were too small or missed features, enumerators were required to draw inserts. In addition, prelist office personnel had to consult with the Bureau's map preparation division to determine missing block numbers and enumeration district boundaries needed for listing addresses by geographic location.

Map inadequacies not only delayed canvassing but also the keying of addresses onto computerized files. Addresses could not be keyed when needed blocks numbers and enumeration district numbers were missing from maps.

Greater workload than anticipated

In many prelist areas, more housing units were found than originally estimated, causing "splitting" (redefining) of many enumeration districts. This process interrupted work and caused delays, as boundaries had to be redrawn, new maps prepared, new enumeration districts and block numbers assigned, work assignments altered, and additional personnel hired to keep work on schedule.

Estimated numbers of area housing units are used to delineate prelist enumeration districts and distribute enumerator work. Enumeration districts were drawn with tabulation and geographic considerations in mind. The optimum number of housing units per enumeration district ranged from 70 to 550 depending on the area. The Bureau planned to assign two enumeration districts to each prelist enumerator.

The major portion of prelist enumeration districts are structured at 550 housing units; should they exceed 650 housing units, the enumeration district must be split. When enumerators, in the course of canvassing, have listed 400 addresses, they must estimate the number of housing units remaining in their district. If it appears that the enumeration district will exceed 650 housing units, the enumerator must stop listing and arrange for return of listing books and maps to prelist offices for the split to be made. Listing work is interrupted until the enumerator's original assignment area is redrawn and/or the enumerator is assigned to canvass a different area.

In January 1979, shortly before the start of prelisting, the Bureau estimated that about 108,000 enumeration districts were in prelist areas. As of November 24, 1979, an additional 22,719, or a total of 130,719, enumeration districts had been delineated. The Bureau originally estimated that 32 million housing units would require prelisting, but over 35 million housing units were listed.

Low production/high turnover

Low production and unexpected enumerator turnover contributed to delays in prelist completion. Additional staff had to be recruited and trained and assignments had to be extended for existing staff. Average prelist enumerator production was about 50 percent of Bureau estimates, and turnover among enumerators was about 34 percent.

We spoke to 21 supervisory employees in 9 prelist offices to determine the possible causes of the high turnover and low production. Enumerators complained that maps were difficult to work with, commercial maps had to be purchased at personal expense, time spent drawing map inserts was not paid for, gasoline was difficult to obtain, some households exhibited hostility, and pay was low for work required.

QUALITY OF LISTING AND COMPLETENESS OF CANVASSING IS QUESTIONABLE

The quality of address listing and completeness of canvassing performed during prelist is questionable. As for the performance of the prelist operation, deficiencies existed in the completed address registers, enumerator training was inadequate, and supervisory reviews were lacking. As for evaluation of the prelist operation, no steps were taken to assure that all checks on the completeness of canvassing were performed correctly.

Deficient address register preparation

Many completed address registers submitted to prelist offices, and keying centers were not prepared according to specifications. Address registers lacked adequate mailing addresses, accurate map spotting (locating of addresses), map inserts when necessary, adequate spacing or delineation between listings from different census blocks, and clear or legible entries.

In some cases enumerators missed or failed to canvass entire blocks indicated on their enumeration district maps. In some instances (1) spots on maps had no corresponding addresses listed in registers, (2) address listings were not spotted on maps, and (3) addresses were coded to blocks different from those on the map. The deficiencies in address registers apparently stemmed from inadequate training and lack of supervisory reviews.

Insufficient training

Enumerators received insufficient training. They were given 1 day of classroom training on job techniques, such as canvassing, listing, and map spotting. The training sessions did not include field training, practice listing, or canvassing and map reading in actual neighborhoods and were not conducted by professional instructors.

Many supervisors complained that, as instructors, they were unable to complete the planned classroom training in the 1 day allotted. In addition, because there was too much material to comprehend in the time allowed, enumerators had to use the first enumeration district canvassed and listed as a "learning experience." In many cases initial work performed by enumerators was so inadequate that some supervisors had to instruct enumerators individually. If supervisors did not have time to give individual instruction, they accepted inadequate work, correcting it themselves only if time permitted.

Inadequate supervisory reviews

The receipt of deficient address registers both at keying centers and prelist offices indicated that required supervisory reviews had not been done or done well. Many of the deficiencies in address registers previously mentioned should have been discovered and corrected during supervisory review before the registers were submitted to prelist offices and keying centers.

Prelist office procedures provide for three supervisory reviews of address registers. Field supervisors were required

to review each register shortly after enumerators began canvassing and again when enumerators completed listing in each enumeration district. Supervisors were to perform reviews in the presence of enumerators, informing them of deficiencies in their work and arranging for work to be redone if necessary. Prelist office staff were to review and correct address registers before shipping them to keying centers. They were to return to supervisors any registers needing corrections which could not be made in the prelist office.

Performance of canvassing and listing checks not monitored

Bureau headquarters and regional staff did not systematically monitor the prelist operation to assure that all listing checks were properly performed.

A quality control enumerator is supposed to conduct an advance listing of 24 addresses in the first enumeration district assigned to each enumerator to determine completeness of the work. In the case of two or more missed addresses, the entire enumeration district must be recanvassed. Additional advance listing checks are usually required when enumerator work assignments change. In many prelist offices an increased number of advance listing checks were required due to changes in enumerator work assignments resulting from high turnover and the redrawing or splitting of numerous enumeration districts. Prelist offices have been faced with competing demands of finishing prelist without delay while performing these additional checks.

Bureau headquarters and regional staff had not planned any trips to review prelist offices' operations until deficient address registers began arriving at keying centers and until we visited prelist offices. After poorly prepared address registers were discovered, regional office staff began visiting prelist offices to review address registers but not to review the performance of advance listing checks. A key Bureau field division official told us that, except for assigning an additional person in each prelist office to monitor, there was no way to completely assure on an ongoing basis that all advance checks were being done.

ACTIONS TO COMPENSATE FOR UNANTICIPATED PROBLEMS

The Bureau took or planned measures to increase the production rate of the prelisting and insure its completion, improve the quality of listing, and insure complete coverage of households in prelist areas. At the completion of our field work, the Bureau was uncertain of the effectiveness of these actions.

To increase the rate of prelisting and insure its completion, the Bureau authorized prelist offices to

- hire and assign additional enumerators to each listing supervisor,
- pay bonuses to enumerators who met or exceeded expected weekly production rates,
- use experienced Bureau regional staff to assist in hiring and listing,
- hire additional supervisors to assist in recruiting and training enumerators, and
- pay overtime and per diem to supervisors and highly efficient enumerators assigned to prelist areas in which recruiting was difficult.

Bureau officials were aware of map delays, recruiting shortfalls, high turnover, and low production among enumerators in the early stages of prelist. However, corrective actions were not taken at that time. The Bureau authorized the hiring of additional enumerators in June 1979, 3 months after canvassing started. The other measures to accelerate and complete prelisting were authorized in September 1979.

The production rate of prelisting did not increase after these measures were introduced. The average enumerator production actually dropped slightly in the first 5 weeks after bonuses were introduced.

The Bureau also took measures to improve the quality of prelist work, including

- authorizing an additional paid half day of on-the-job training for enumerators on correct listing techniques and use of census maps;
- notifying supervisors to emphasize to the enumerators that they use correct procedures for listing and map spotting and obtain adequate mailing addresses; and
- directing regional census staff to visit prelist offices to review address registers for adequacy and to emphasize to prelist staff the importance of supervisory reviews.

Bureau headquarters officials responsible for monitoring prelisting did not know whether the quality of address register preparation had improved after the introduction of these meas-

ures. At the time of our review (2 months after the institution of additional measures), Bureau officials had not received feedback from the keying centers.

As a further attempt to enumerate all households in prelist areas, the Bureau is planning to recanvass the rural portion of prelist areas after census day to look for missed households. This portion comprises about 15 million addresses.

The Bureau is contemplating this action in hopes of reducing the percentage of prelist households not enumerated in 1980 compared with such percentages in prior censuses and test censuses. In the 1970 census, 3.6 percent of all households in rural areas were not enumerated. In the 1976 Travis County, Texas, census pretest, approximately 3.5 percent of the housing units in rural and suburban areas were missed. In the 1977 rural listing test, 4 or 5 percent of the households in rural areas were missed. In addition, the Bureau is concerned that the difficulties in conducting prelist operations, particularly cancellation of the advanced post office check and poorly prepared address registers, might cause the mailing list for prelist areas to be less complete than anticipated.

The potential success for the recanvass, estimated to cost about \$7.9 million, is uncertain because recanvassing has not been done before and because it will require assigning dual tasks. Although Bureau officials estimate for budgeting purposes that a recanvass will increase by 2 percent the number of households enumerated in prelist areas, a recanvass procedure has never been performed or evaluated in prior censuses or test censuses. In addition, the recanvass will not be performed as a separate operation, but rather in conjunction with other followup operations. According to the Director of the Bureau's Statistical Methods Division, the vacancy check and recanvass which involve canvassing, are combined to reduce the costs incurred in performing the two operations separately.

PRELIST DELAYS CAUSE CANCELLATION OF FIRST
POSTAL REVIEW AND HAND ADDRESSING OF
MILLIONS OF QUESTIONNAIRES

Because the completion of prelist was delayed, the advance post office check of prelist addresses was cancelled. Now only two postal reviews will be performed on the completeness and accuracy of addresses obtained for prelist areas--the casing and time of delivery checks. This will place a greater workload on the Postal Service in the remaining checks to identify changes needed and on the Bureau to update its address registers shortly before census day.

The advance post office check for prelist areas was cancelled when it became apparent the listing would not finish until late October or November 1979. At first Bureau officials considered rescheduling the check for late January 1980 but decided against it, because they doubted that preparations could be made or results processed in time for the casing check. The casing check took place on March 5, 1980, for most areas. However, for some areas the casing did not occur until mid-March.

Because the advance check was cancelled, the Bureau believes that a much larger number of additional prelist addresses will be identified by the casing check than was originally expected. When the advance check was planned, the Bureau had estimated that 1.67 million and .35 million additional addresses would be identified during the casing and time of delivery checks respectively. In the absence of the advance check, however, the Bureau estimates that 2.6 million and .6 million prelist addresses may be identified respectively during the casing and time of delivery checks.

This increase in prelist addresses will require large scale manual processing. Most results of the casing check, were received by March 13, 1980, and must be manually processed prior to the time of delivery check on March 28, 1980. Results of the time of delivery checks must be processed by census day. Additional addresses must be manually added to address registers and marked on prelist maps to permit followup on questionnaire nonresponse and insure that data is properly tabulated. A mailing label must also be hand written and affixed to a questionnaire for each additional address. Accordingly, over 3 million addresses must be hand written twice.

Hand addressing operations conducted under tight time pressure could result in undelivered questionnaires and inadequate records for followup on nonresponse because of transcription errors, illegible penmanship, and address omissions. If addresses are incorrectly or illegibly written on questionnaire mailing labels, the Postal Service may not be able to deliver questionnaires.

Moreover, although census employees must obtain, through personal visits, data about households which do not receive questionnaires, deficiencies in the entries to followup work registers could occur. Addresses provided by the Postal Service which should be added to followup registers could be omitted or incorrectly or illegibly entered. Since address corrections identified during the casing and time of delivery checks will be made by postal carriers directly to the questionnaires, the Bureau will not know about these changes unless respondents return their questionnaires.

These problems will be compounded by the poor quality of census maps. Therefore, it may be difficult, if not impossible, to properly identify and locate some households which do not return questionnaires.

CONCLUSIONS

There were numerous shortcomings in operations for developing the mail list for rural and small urban communities. Although the Bureau took some actions to compensate for these shortcomings, the actions were generally late and their effectiveness is unknown.

Postal Service reviews are the major measures remaining prior to census day for improving the accuracy and completeness of the mail list for rural and small urban communities. The cancellation of the first postal review will place a greater workload on the Postal Service in conducting the remaining reviews shortly before census day. The Bureau now estimates that these reviews will identify over 3 million addresses which, to reflect the changes, will require hand processing of address labels and registers by the Bureau. Unlike its actions in the prelist operations, the Bureau needs to do a better job of anticipating potential problems and preparing for needed corrective actions by monitoring controls to help assure accurate, timely, and complete processing of postal review results.

AGENCY COMMENTS

The Bureau believes that the mail list for rural and small urban areas will not be as poor as our discussion implies. Also, the Bureau foresees no problems in processing the postal changes from the two remaining reviews. It has advised the Postal Service of the expected workload and has moved the first of the two remaining checks up 1 week to provide more time to process the changes.

CHAPTER 3

COMMERCIAL MAIL LISTS ARE NOT IDEALLY SUITED FOR

IDENTIFYING HOUSEHOLDS IN MAJOR URBAN AREAS

Another aspect of developing the important mail list for the 1980 census--that is, obtaining addresses for major urban areas--also fell short of Bureau expectations. Using commercial mail lists provided by vendors, the Bureau initially obtained only 43 million of the estimated 52 million addresses for major urban areas. The commercial lists lacked the completeness and accuracy required for the census, and the Bureau had difficulty evaluating vendors' addresses.

However, the Bureau did increase the number of addresses by matching mail list files in an attempt to improve coverage. A massive canvassing of major urban areas before census day by temporary personnel could also help increase the number of addresses. However, the Bureau needs to closely monitor the canvassing to minimize operation problems.

The Bureau is now required to perform mid-decade censuses, the first scheduled for 1985. Considering the difficulties in developing a mail list for major urban areas for the 1980 census, the list should be updated periodically for use in future censuses.

RATIONALE FOR PURCHASING COMMERCIAL LISTS FOR THE 1980 CENSUS

For the 1980 census, the Bureau expanded its use of commercial mail lists. For the 1970 census the Bureau purchased 34 million addresses covering 148 major urban areas. For the 1980 census the Bureau planned to purchase about 52 million addresses covering 276 major urban areas. This expanded use of commercial mail lists was a direct result of the Bureau's increased capability to code addresses to census geographic areas using its computerized files.

Before 1970 the Bureau had not performed a mail-out/mail-back census. Test results for the 1970 census showed that the mail-out/mail-back procedure improved the quality of responses received and the control exercised. Experience in the 1970 census also showed that using a commercial mail list where possible, rather than developing a mail list through prelisting, reduces the number of missed housing units. Also, the identification of addresses using commercial mail lists costs less than prelisting.

The Bureau decided against using the mail lists developed from the 1970 census for the 1980 census because of the costs and processing time that would be required to update the 1970 list. The Bureau said that it might decide differently in the next decade when the mid-decade census may require a mail list. In that case the updating span would only be 5 years instead of the longer period between decennial censuses. The first mid-decade census is scheduled for 1985.

COMMERCIAL MAIL LISTS LACKED COMPLETENESS
AND ACCURACY NEEDED FOR 1980 CENSUS USE

Because of incompleteness, inaccuracy, and the limited number of vendors, commercial mail lists do not always meet Bureau requirements. Addresses on some lists are not complete enough. The lists themselves do not provide the expected coverage and are sometimes outdated. In addition, very few vendors can provide lists which suit Bureau needs.

Few vendors meet Bureau needs

Few commercial vendors met the Bureau's needs for supplying residential addresses, resulting in limited competition. Address files provided also needed many corrections.

On August 1, 1977, the Bureau issued a solicitation for residential mail list covering 272 major urban areas. Initially, the Bureau received responses from seven national commercial mail list vendors. The Bureau's review of the proposals showed one vendor nonresponsive and two vendors not qualified since their address files did not contain the actual apartment unit designation. Competition for each of the 272 major urban areas was reduced to 4 or fewer vendors per area because each vendor did not have address files for every area.

Further review of the four proposals showed that three vendors could not guarantee apartment unit designations for all multiunit structures. These vendors' coverage of apartment unit designations ranged from about 20 percent to almost 100 percent depending on the major urban area. One vendor updated his address files and remained in the competition. This left two vendors in competition for the contract.

Although only the two vendors with the most complete mail lists were initially selected, the Bureau was not satisfied with the quality of some of the lists. The Bureau therefore requested that both vendors have a postal review made on portions of their lists with poor estimated coverage rates. To further improve coverage rates, the Bureau purchased a second

mail list for 26 selected areas from a third vendor. However, even after these steps the Bureau still had problems with the ordered files.

The problem encountered with many of the files was the incorrect placement of address information, such as street name before house number. This placement was contrary to the contract specification for address record format and appeared mainly in the files supplied by the Bureau's major address supplier.

The Bureau received assistance in correcting the problem from two vendors but limited assistance from its major address supplier. This vendor informed the Bureau that the condition of the files supplied was as updated by the Postal Service and as provided for in the contract. The Bureau official responsible for compiling and updating the mail list advised us that the Bureau had to make many individual file repairs/corrections which caused delays.

Addresses are not complete enough

Addresses in commercial mailing lists are not complete enough to meet census requirements. In particular, the lack of apartment unit designations limits the usefulness of these lists and affects postal checks.

Mail lists developed and maintained by commercial firms generally consist of residential mailing addresses that sometimes contain the name of the addressee but usually lack the complete mailing address, such as apartment unit designations. This type of address, although not complete, does not affect the ability to deliver the mailing pieces because postal carriers can usually identify the specific mailing address using the addressee's name or street address.

However, because census questionnaires distributed in major urban areas do not include the name of the addressee as part of the mailing address, the Bureau requires greater detail. Addresses for census use must contain the following elements: house number, street name and type, directional prefix and/or suffix, post office name, State name, and zip code. In addition, addresses must contain, where applicable, apartment designation or location description for each unit in a multiunit structure or site or lot numbers for residential sites in trailer courts. These specific address elements provide increased control in counting households by identifying questionnaires mailed back and those requiring followup activity.

Apartment unit designations are particularly important. The 1970 census data showed that approximately 50 percent of the people in central cities of major urban areas live in multiunit structures. If apartment unit designations are initially missing from purchased address files, these designations must be obtained during the Postal Service reviews. A 50-percent correction rate could significantly affect the cost, timeliness, and quality of the postal checks. Bureau experience has shown that the quality of Postal Service reviews is related to the quality of the address list provided. As discussed in chapter 4, the Postal Service can be expected to improve a list by only about 25 percent. Thus, to obtain a complete and accurate mail list for census use, the Bureau must initially obtain the best possible lists.

Some lists are incomplete or inaccurate

Complete and accurate mail lists may not be available for parts of major urban areas where there is limited demand for a commercial list. For example, the president of the mail list firm which supplies most of the purchased addresses, including the ones for New York, testified in March 1979 before the House Subcommittee on Census and Population that his company had probably not mailed anything to the South Bronx portion of New York City in 10 years.

Because of this area's high poverty rate, a firm has no incentive to maintain a current list for such purposes as commercial advertising.

Commercial lists do not provide the coverage the Bureau had expected. The Bureau expected that the commercial mail list, prior to postal corrections, would provide coverage rates of between 80 to 90 percent. However, the Bureau's evaluation revealed that about 80 percent of the lists submitted provided less than 80-percent coverage. The Bureau estimated that 9 percent of the lists submitted, including about 13.6 million addresses (28 percent of those purchased), provided less than 70-percent coverage. The overall coverage provided by the purchased lists for the Nation's four largest urban areas--New York, Chicago, Philadelphia, and Los Angeles--was estimated by the Bureau to be about 59 percent.

The quality of the commercial mail lists for some areas is illustrated by the number of address changes, including adds, corrections, duplicates, business only, and nonexistent addresses, made by the Postal Service during the advance review of the list for major urban areas. The overall results to date indicate about an 80-percent accuracy for commercial lists purchased, but the accuracy rates for many urban areas fell far below this level. These results, which cover 275 of the

276 major urban areas, show that about 30 percent of the areas had address change levels above 20 percent. For example, Albuquerque had about a 35-percent change in its mail list; Honolulu, 44 percent; Phoenix, 58 percent; Austin, 30 percent; and Killeen, Texas, 61 percent. Some of the largest urban areas also had high change rates: New York and Chicago, 29 percent, and Detroit, 24 percent. Many areas below 80-percent accuracy were in the South and West.

Commercial lists have not yielded the expected number of addresses. The Bureau planned to purchase about 52 million residential addresses from commercial mail list vendors for 276 major urban areas. However, vendors could provide only about 48 million addresses, which included about 5 million duplicates. The Bureau deleted these duplicate addresses from the files prior to the advance post office check.

In total, the advance post office check increased the Bureau's address file for major urban areas by about 5 million addresses. This increase and the higher than anticipated number of prelist addresses basically compensates for the 9-million address shortfall in the purchased mail lists.

PROBLEMS IN EVALUATING COMMERCIAL MAIL LISTS

The Bureau had problems in selecting commercial mail lists because of limitations in evaluating the lists. Vendors' mail lists were evaluated using several criteria, among which quality and completeness were the most important. These criteria were measured by matching the vendors' mail lists by major urban area against a sample of housing units selected from the Bureau's 1970 census mail list supplemented by construction permit updates. Thus, the Bureau's evaluation of vendors' mail lists was limited because comparison addresses were incomplete and outdated.

The evaluation study for vendors files was limited to 214 of the 276 major urban areas (272 originally planned for purchase and 4 others subsequently bought) for which mail lists were purchased. The Bureau's use of a sample pattern from its 1970 Current Population Survey sample design did not provide coverage for the other 62 major urban areas. The 62 areas, of which 19 could be supplied by only 1 vendor, comprise about 5 percent of the mail addresses purchased. Although coverage of the evaluation study was not complete, the Bureau made no additional effort to obtain addresses to evaluate vendors' lists for the 43 remaining areas covered by more than 1 vendor. Bureau officials believed there was neither sufficient time nor funds to physically verify these addresses through canvassing.

The Bureau's use of an outdated address file for evaluation purposes might have benefited vendors with outdated files. The Bureau used the 1970 census mail list because it was on magnetic tape, cheap to obtain, a probability sample, and the only address file available in a reasonable time frame. The Bureau believed that no vendor it would select would have an outdated address file back to 1970. On the basis of this premise, each vendor selected should have had a fairly updated mail list. However, postal workers we spoke to after the advance post office check in New York City and Atlanta estimated that the purchased address lists were from 4 to 10 years old.

BUREAU ADDS ADDRESSES TO IMPROVE MAIL LISTS

To its credit, the Bureau used a matching technique to increase address coverage. According to the Bureau's evaluation study, 29 of the purchased address files consisting of about 8.5 million addresses had estimated group coverage rates of 62 percent or lower. The Bureau decided to increase the number of addresses by matching 2 address files for each of the 29 address files and thereby possibly improve each file's coverage rate. The source of 26 of the additional address files used for the match was a vendor that had previously been eliminated from consideration due to poor apartment unit designation coverage.

The Bureau decided to match the three other files with its 1970 census address files since no other vendor could provide substantially better coverage. These files as supplied by the original vendor contained about 6.1 million addresses including addresses for some of the largest urban areas: New York, Chicago, and Philadelphia. However, since a matching of these areas would have taken a mammoth effort, the Bureau limited the match to the central city portions of these areas. This reduced the list to 5.3 million addresses where the estimated coverage was the lowest.

The New York area match was unique because it was a three-way match of address files to develop one file. The additional file used was the Bureau's Lower Manhattan mail list which had been updated by the Postal Service during an earlier census dress rehearsal. This file provided the most current addresses available for the match.

The matching operation added 898,977 addresses, an increase of approximately 11.6 percent. The files for New York, Chicago and Philadelphia increased by about 10.6 percent or 564,009 addresses. The remaining 26 address files increased by about 14 percent, or 334,968 addresses.

Generally these additional addresses should benefit the census by decreasing the addresses added during Postal Service reviews. However, the type of match made by the Bureau may have had a side effect of adding some non-existent addresses. If so this would increase the Postal Service's workload. In Lower Manhattan, for example, postal employees whom we contacted after the advance post office check stated that the Bureau's mail list had all the same errors that they had previously corrected during the dress rehearsal for the area.

ANTICIPATED PROBLEMS IN CANVASSING MAJOR URBAN AREAS

The Bureau plans to precanvass all the areas covered by the commercial mail lists to increase the number of addresses for major urban areas. The operation is scheduled to take a few weeks, to cover a large portion of the country, and to be done by temporary personnel in the winter months. The operation will be difficult to control because of the size and the short time period. Therefore, close monitoring of the precanvass operation is needed.

Precanvassing--how done?

For comparison with addresses listed in a precanvass register from the commercial mail lists, an enumerator systematically travels an assigned area looking for every place where people live or could live. The enumerator adds units not listed in the register, corrects the number of units within the structures already listed, and deletes listings for structures that do not exist or do not contain any living quarters.

As a quality control procedure over the enumerator's work, the Bureau deleted (suppressed) 10 of the 325 to 550 housing unit listings in each precanvass register. When the enumerator completes an area, another employee determines if the deleted units were added to the register. The work is accepted if no more than two of the deleted units are missed. The reviewer reconciles the discrepancies in the field if three or more of the deleted units were missed. The entire area is recanvassed if the reviewer finds that three or more units were actually missed. Recanvassing is done by the reviewer, another enumerator, or a supervisor.

The Bureau believes that the precanvass operation will increase the number of housing units by 2 percent. This estimate is based on the results of two pretests.

Potential problem areas

The prec canvass for the 1980 census is more extensive than in 1970. In the 1970 census the prec canvass was performed in sections of 17 major urban areas. In the 1980 census the Bureau will prec canvass all areas for which commercial addresses have been purchased. The operation will be directed from 359 offices and will require about 17,000 temporary employees.

Time to accomplish the prec canvass is very limited. The operation was originally scheduled for January 31 through February 22, 1980. However, because of problems with other operations, the prec canvass was delayed and did not start until February 21, 1980. The current scheduled completion is around mid-March 1980.

Time is also very limited for correcting addresses developed from the procedures. The Bureau originally planned to make corrections, address questionnaires, and annotate address registers by March 5, 1980, in time for the Postal Service casing check. However, this time frame has been reduced and is currently scheduled to be completed by the later part of March. The Bureau will not be able to send newly addressed questionnaires to the Postal Service for the casing check. According to the Bureau, as of early March 1980, there is a strong possibility that the prec canvass operation in some offices will not be completed before the mail-out of the census questionnaires on March 28, 1980. Areas expected to have this problem include Philadelphia, San Francisco, and San Diego.

Because of time and fund limitations, the Bureau has decided to reduce by 60 percent the number of areas in which suppressed units will be verified in advance. This could mean that more prec canvassed areas will require reconciling because of the discrepancies between the suppressed units and prec canvasser's results.

Several other factors may undermine an efficient operation. First, weather conditions in the northern part of the country during winter are not conducive to effective neighborhood canvassing. Second, because emphasis is on quality, the prec canvass enumerators will be paid on an hourly basis, in contrast to the piece rate basis which prelist enumerators were paid. Consequently, enumerators might not be motivated to expedite the prec canvass. Third, the prospect of recruiting, hiring, training, and retaining staff and insuring the quality of work of an army of temporary employees for several weeks is an awesome project.

The Bureau does not plan to monitor the prec canvass. Rather, it will evaluate the operation after it is complete. Results of that postevaluation may be used for future prec canvass operations.

CONCLUSIONS

On the basis of past experience, the Bureau determined that the mail-out/mail-back procedure improves census results and that commercial mail lists are a good starting point for developing a mail list. However, few vendors could meet the Bureau's overall needs for mail lists, and limitations in the Bureau's mail list evaluation procedures did not assure that the best lists were purchased. Commercial mail lists are not ideally suited for a census, because address identifiers are limited and lists for some locations are not current.

While Bureau efforts to improve the lists generally proved worthwhile, the first Postal Service review shows that about 30 percent of the areas had address change levels above 20 percent. Although two additional reviews of the list by the Postal Service remain, past experience has shown that the improvement to the Bureau's lists that can be expected from Postal Service reviews is limited. To further improve the list, the Bureau planned a massive prec canvassing of major urban areas. However, some quality controls that could help the prec canvass operation, such as the Postal Service's review of prec canvass corrections and monitoring, did not take place. Time will be very limited before census day to react to problems with the prec canvass operation.

For the 1980 census the Bureau decided it would be more beneficial to purchase commercial mail lists rather than attempt to update the mail lists used for the 1970 census. Considering the mid-decade census requirement and the problems with commercial mail lists, the Bureau should look into periodically updating the mail list for major urban areas through Postal Service reviews.

RECOMMENDATION

We recommend that the Director, Bureau of the Census, use the mail list developed for the 1980 census in the major urban areas for future Bureau needs, such as the planned mid-decade census, by periodically updating the list through Postal Service reviews.

AGENCY RESPONSE AND OUR EVALUATION

The Bureau agreed that it seemed reasonable to periodically update the mail list. However, it believed that a careful cost analysis would be necessary before deciding on such an approach. We agree that a cost analysis would be appropriate. In view of the possible need for a mail list for the mid-decade census, the Bureau should initiate a cost analysis in the near future and should include the expected quality of commercial mail lists.

CHAPTER 4

THE 1980 CENSUS MAIL

LIST COULD BE IMPROVED BY EFFECTIVE

QUALITY CONTROLS OVER POSTAL SERVICE REVIEWS

The Postal Service's successive reviews of the Bureau of the Census mail lists are a valuable check on the accuracy and completeness of the lists. Because of the previously cited problems in developing the census mail lists, the Postal Service's reviews are all the more critical in the Bureau's final development of the lists. These reviews can be improved if the Bureau develops quality control measures and coordinates their implementation with the Postal Service. The Service, in response to our proposal, has begun developing a quality control measure which should help the 1980 census.

POSTAL CHECKS--HOW, WHEN, AND WHY

The Bureau of the Census planned to have the Postal Service review the Bureau's mailing list at three separate times to make the list as accurate as possible. The reviews are the primary aid to the Bureau in identifying and adding addresses missing from the mailing list, in deleting non-existent and duplicate addresses, and in correcting inaccurate addresses on the list.

The first review, the advance post office check, was only partly completed. For this review the Bureau sends the Postal Service a mailing list in the form of cards with address labels. The cards are distributed to the appropriate mail carriers who compare them to the addresses located on their routes. Each carrier returns the correct cards, deletes addresses that no longer exist, corrects the ones that are incorrect, and adds the addresses that are missing. This review was scheduled to be performed approximately 10 months prior to Census Day. The review occurred close to schedule for that part of the list covered by commercial mail lists. The review was cancelled, however, for the list the Census Bureau developed by prelist operations.

The second postal review, the casing check, took place in most areas 3 weeks prior to Census Day, on March 5, 1980. The Bureau sends the Postal Service the addressed questionnaires to distribute to carriers, who will eventually deliver them to households. The carriers match each mailing piece to the corresponding address on their route cases, as was done in the first review. The Postal Service sends all

added addresses to the Bureau and stores all deliverable questionnaires until time of delivery, March 28, 1980, when the third review, the time of delivery check, is made while delivering the questionnaires. For this third review, the carriers again provide the necessary correction services.

Once the postal reviews are completed, the updated mailing list serves not only as the mailing identifier but also as a control device in many of the Bureau's census activities. Primarily it will enable the Bureau to

- provide broader initial coverage of households with a relatively small effort on census day,
- establish control over the number and location of households to be enumerated, and
- follow up more effectively persons who do not respond to the mailed census form.

TESTS SHOW POSTAL REVIEWS OF MAIL LISTS
ARE VALUABLE, BUT MANY ADDRESSES ARE MISSED

While the Postal Service significantly improves the mail lists, it does miss a sizable number of addresses in each review. For example, during two tests preparatory to the 1980 census, at Travis County, Texas, and Camden, New Jersey, the three postal reviews increased the purchased mail list by about 25 percent. In another test--the rural listing test in which the Bureau prepared the mail list by canvassing--the coverage through postal reviews was increased by approximately 13 percent. The Bureau evaluates the quality of the Postal Service reviews by withholding a sample of good addresses. The results of these evaluations show that the Postal Service generally can be expected to miss an average of 30 percent of the withheld addresses in both the advance post office check and casing review. Data is not available on the time of delivery check. In a series of Bureau tests conducted prior to the 1980 census, results show the Postal Service failed to add between 7 and 48 percent of the withheld addresses.

The miss rate of a mail list after Postal Service reviews depends on the quality of the initial list and the quality of the Postal Service's review. Bureau tests have demonstrated that a Postal Service review of a good mailing list will yield a better quality list than will a review of a poor quality list. For example, in the advance post office check of the mail list for the major urban areas for the 1980 census, the Postal Service added about 5 million addresses to the 42.5 million addresses provided. On the basis of the Bureau's experience, these added addresses represent about

70 percent of possible additions, leaving about 2.2 million addresses still missing. Even after the casing check adds an estimated 70 percent of these, 647,000 addresses will still be missing. As discussed in chapter 3, the quality of the lists varied for individual locations. For example, the added address rate for Phoenix was 52 percent and for Milwaukee, 3 percent. The following table uses simplified calculations to illustrate possible miss rates depending on the quality of the original list provided to the Postal Service.

	<u>List 1</u>	<u>List 2</u>	<u>List 3</u>
	- - - - (percent) - - - -		
Missing addresses from original list	10.0	17.0	20.0
Miss rate in advance post office check (note a)	20.0	30.0	40.0
Missed addresses after advance post office check	2.0	5.1	8.0
Miss rate in casing check (note a)	20.0	30.0	40.0
Miss rate after advance post office check and casing check	.4	1.53	3.2

a/ Percent showing estimated increased miss rate with poorer quality mail lists.

CONTROLS OVER POSTAL CHECKS ARE INADEQUATE TO CORRECT ERRORS

Although good quality control procedures cannot guarantee that all households will be identified, they will increase the probability that the number of households missed will be within acceptable limits. The Bureau, however, did not develop adequate procedures to control the quality of the postal reviews during the advance post office check.

Methods of quality control

The Census Bureau's two quality control methods will not insure that addresses missing from residential lists are added by the Postal Service.

The Bureau's "double nixie" check requires the postal carriers to review and delete undeliverable or duplicate addresses twice before they are removed from the address list.

When the Postal Service indicates an address is nonexistent or otherwise undeliverable, the Bureau prepares another card with the same address, selects and mixes in a sample of good addresses, and resubmits them all to the Postal Service for verification. Only those addresses that are again identified as nonexistent or undeliverable are deleted from the Bureau's list.

A major problem with this procedure is that the postal carrier knows in advance that it will take place. Also, the procedure is not a control for addresses missed by the carrier that should be added to the list.

The advance post office check on the 1980 census mail list was performed in late June. The results of the double nixie check had not been evaluated by the end of 1979. If the carrier deletes all of the addresses, including the sample of "good" cards, or otherwise fails the quality control check, seemingly good addresses will be deleted. Although this check has limited value, the results should be evaluated.

In January 1979, postal supervisors suggested to the Bureau the use of its "possible mail deliveries" as a quality control over postal carriers' checking the Bureau's mail lists. The Postal Service maintains a record of the number of delivery points (possible deliveries) on each carrier's route, including vacant and occupied units that received mail at one time. The Bureau decided to establish a quality control procedure by comparing possible deliveries with the number of housing units on the carrier's routes. Postal supervisors would record the number of possible residential deliveries, compare the number to the total of address cards returned after the advance post office check for each route, and write explanations for large differences.

The Bureau was slow in coordinating the plan with the Postal Service. By the time the Postal Service received the instructions, one half of the Postal Service stations had already completed the advance post office check. The other stations were scheduled to begin 6 days later. Most of the stations that did receive the instructions in time tried to comply.

Differences between the Postal Service's and the Bureau's definition of the term "possible deliveries" caused problems. For example, the Bureau would expect to receive an address listing for each housing unit in a multifamily structure, even if all units received mail in one receptacle. The Postal Service would normally list only one possible delivery for that address. The Bureau wants an address for all vacant housing units that have not been condemned by local authorities.

The Postal Service, in many cases, drops from its list vacant units that are boarded up or appear not to be inhabitable. These differences in definition were not clarified in the instructions the Bureau provided to postal supervisors. Also, the instructions did not make clear the exact procedures the supervisors were expected to follow. From our visits to three postal stations in one Postal Service region and discussions with postal officials in two other regions, we detected confusion in preparing the form which recorded possible deliveries. This resulted in inconsistent preparation of the form.

Bureau evaluations of
Postal Service performance

The Bureau performs two evaluations of the quality of the Postal Service's performance during the advance post office check. Both evaluations employ deleting addresses from the residential list provided to the Postal Service. Neither method as implemented by the Bureau will assure quality Postal Service reviews of the mailing lists.

First, in the national sample for overall effectiveness, the Bureau randomly selected a sample of at least 2,500 address cards from areas nationwide and withheld them from the Postal Service during the advance post office check. By comparing the sample with an add-corrections list, the Bureau would be able to estimate an overall miss rate. Results of the test have not yet been tabulated, and therefore it was not used to improve the mail list.

Second, the Bureau selected a sample of post offices to test how effectively the Postal Service's quality controls detected substandard carriers. The test could not be used for this purpose, however, because the Postal Service did not use any quality control procedures to evaluate carriers' efforts in detecting and adding missing addresses. Nevertheless, the plan might be useful in generating information to help in developing future guidelines.

The Bureau rejected a quality control plan to use postal supervisors to closely monitor the advance post office check. The cost of the operation was given as the major reason for the rejection. In making this decision, the Bureau compared the estimated quality control cost of \$1.5 million to the approximate cost of \$5 million for the postal check. As a rule, the Bureau believes 10 to 25 percent of the operations cost should be spent on quality control procedures. We believe, however, that the cost of this control when combined with other quality control costs, should be compared to the total cost of preparing the mail list. The postal checks are an

integral part of the process of developing a complete and accurate mail address register.

CONCLUSIONS

The Postal Service reviews are very important in developing a complete and accurate mail list. Past experience has shown that the Postal Service does materially improve a list but that there are still many missing addresses. The percent missed is not alarming when the Postal Service is initially provided a good list and when successive reviews are made. Some of the Bureau's lists for the major urban areas, however, will not be of that level of quality. Also, the list developed from the prelist operation will not have the advantage of the advance post office check.

The Bureau has developed some good procedures for evaluating Postal Service reviews, but proper implementation and timely review of results is a problem. Moreover, the Bureau needs to design a quality control procedure to help reduce the number of addresses that are missed by postal carriers when reviewing mail lists.

AGENCY ACTION

On December 21, 1979, we submitted our findings to the Bureau and the Postal Service. On January 7, 1980, we met with the Bureau's Deputy Director and other top Bureau officials and on January 8, 1980, with the Postal Service officials responsible for the census operations to further discuss our findings and needed agency actions to implement quality controls over reviews to be made by the Postal Service.

The Bureau stated that its prior efforts with quality controls over postal reviews have not proven cost effective. The Bureau further stated that it was generally pleased with the quality of the Postal Service's work.

The Postal Service subsequently advised us in a letter dated January 25, 1980, that it was planning a quality control. This control incorporates a reconciliation between Postal Service records on possible residential deliveries and the number of questionnaires and add address cards. When the number of questionnaires and add cards is less than the number of addresses on a route and the carrier can not reconcile the discrepancy, add address cards will be prepared for the missing addresses. We believe this procedure will improve the postal checks.

CHAPTER 5

SCOPE OF REVIEW

Our review was primarily directed at evaluating the Bureau of the Census plans, procedures, and practices for developing the mail list for the 1980 Decennial Census. Our field work was completed in early October 1979, prior to the full development and implementation of some procedures. This was done so our findings would be useful in effecting changes where warranted. Consequently, the Bureau may have made changes to operating procedures not reflected in this report.

In our evaluation we:

- Interviewed Bureau and Postal Service officials at the national and regional offices.
- Reviewed Bureau procedure and training manuals, instructions, and reports on procedure results in tests and in the 1970 Census.
- Examined U.S. Postal Services laws, regulations, and instructions on postal checks for mail lists.
- Visited the Bureau's temporary prelist offices in Annapolis, Maryland, and Atlanta, Georgia; the data processing office in New Orleans, Louisiana; and the mapmaking operation in Jeffersonville, Indiana.
- Visited some Postal Service offices, including the Northeast Regional Office, and local post offices in New York City and Atlanta.
- Solicited the views of temporary Bureau employees in seven prelist offices.
- Reviewed the work done by the internal audit staff of the Department of Commerce on the 1980 census.

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