

GAO

July 1987

DECENNIAL CENSUS
1980 Post Census Day
Improvement Programs



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General Government Division

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July 9, 1987

The Honorable Mervyn M. Dymally
Chairman, Subcommittee on Census
and Population
Committee on Post Office and Civil Service

The Honorable Constance A. Morella
Ranking Minority Member
Subcommittee on Census and Population
Committee on Post Office and Civil Service
House of Representatives

On June 9, 1986, subcommittee representatives requested us to review and prepare a fact sheet on the results of the Census Bureau's (Bureau) 1980 post Census Day coverage improvement programs. These programs were employed to help reduce the error, primarily a net undercount, which has historically affected census counts. The representatives specifically wanted us to include in the fact sheet information on the costs, benefits, and the timing of the various programs.

This fact sheet, responding to the request, is based on 1) our review of the Census Bureau's evaluation and research report, entitled Programs to Improve Coverage in the 1980 Census and issued in January 1987; 2) a review of Bureau research and evaluation and decision memorandums; 3) interviews with Bureau officials on the current plans for the 1990 coverage improvement programs; and 4) our prior work on the 1980 census. Our work did not include a verification of the Bureau's reported results of the coverage improvement programs or an evaluation of them.

In summary, the Census Bureau used 14 coverage improvement programs for the 1980 census. Three involved address list operations and were performed before Census Day, April 1, 1980, which was the legal date for census taking. The remaining 11 programs, such as a comparison of persons counted in the census to those included on records independent of the census (Nonhousehold Sources Program), were completed after Census Day and are described in appendix I. The Bureau reported spending about \$73 million on the 11 programs, which resulted in increasing the population count by about 2.6 million persons and assigning the tabulation of about 1 million persons to different geographic locations. However, it also resulted in double counting about 218,000 persons.

According to the Bureau's analysis, the programs achieved varying levels of success. For example, the Nonhousehold Sources Program cost the Bureau about \$77 for each person added to the count. Due to low coverage and high costs, the Bureau has decided to delete this program from the 1990 census coverage improvement program. In contrast, the Bureau claims that a Postal Service check to determine if housing units were missed cost only about \$8 for each person added. A summary of the costs and benefits of the various programs appears in appendix II.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this document until 30 days from the date of its issuance. At that time, we will send copies to the Senate Subcommittee on Federal Services, Post Office and Civil Service; other appropriate congressional committees; the Secretary of Commerce; and the Director, Office of Management and Budget. Copies will also be made available to other interested parties upon request. If there are any questions about the information presented, please call me on 275-8387.



for Gene L. Dodaro
Associate Director



ESTIMATED ADDITIONS AND COSTS OF POST CENSUS
DAY COVERAGE IMPROVEMENT PROGRAMS
(Except for unit costs, amounts are in thousands)

<u>Operation</u>	<u>Costs</u>	<u>Housing units added or transferred</u>	<u>Unit cost per housing unit^a</u>	<u>Persons added or transferred</u>	<u>Unit cost per person^a</u>	<u>Addi- tional results</u>
Nonhousehold Sources	\$ 9,820	N/A		127	\$77.32	
Vacant/Delete Followup	36,320	999 ^c	\$36.36	1,720	21.12	
Coverage Questions	7,500	93	80.65	240	31.25	
Local Review	4,310	53 28 ^b		76 56 ^b		d
Prelist Recanvass	10,290	105	98.00	217	47.42	
Post Enumeration Post Office Check	990	50	19.80	130	7.62	
Casual Count	246	N/A	—	13	\$18.92	
Whole Household Usual Home Elsewhere	550	N/A	—	1,000 ^b	.55	e
"Were You Counted?"	270	N/A	—	71	3.80	f
Assistance Centers	2,030	N/A	—	N/A	—	
Spanish Questionnaires	400	N/A	—	N/A	—	
Totals	72,726	1,300 28 ^b	N/A	2,594 1,056 ^b	N/A	

Source: Census Bureau

N/A means not applicable.

^aNo calculation made in those cases where units were both added and transferred.

^bTransferred to another geographic area.

^cThese include the conversion of about 591,000 vacant units to occupied.

^dAs a result of the local review program an estimated 20,334 housing units were deleted from census counts.

^eAn estimated 214,000 of the 1,000,000 were double counted.

^fApproximately 4,400 of the persons added were duplicates of persons already in the census counts.

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POST CENSUS DAY
COVERAGE IMPROVEMENT PROGRAMS

Coverage improvement programs can be viewed as a system of overlapping procedures, each intended to reduce errors, primarily an undercount of persons, that would result without their use. The Census Bureau has identified 14 coverage improvement programs used in the 1980 census. They fall into two groups: (1) those performed before Census Day (3 programs) which relate to the development of the address list and (2) those which occurred during the data collection period (11 programs).

Of the three pre-Census Day programs, two programs, Advance Post Office Check and Casing and Time-of-Delivery Checks, were performed by the Postal Service as checks on the Bureau's address list. The third program was a Bureau-performed check of the address list done by physically canvassing urban areas.

As requested, this report is limited to the post Census Day programs. Each of these programs is discussed below.

1. NONHOUSEHOLD SOURCES

The Nonhousehold Sources Program was a record check operation directed at reducing the disproportionate rate of undercount for minority populations. In the 1980 census, the Bureau obtained lists containing 6.8 million names, primarily of black and Spanish/Hispanic persons, from sources independent of the census. These sources included the departments of motor vehicles, the U.S. Immigration and Naturalization Service (alien registration files), and the 1979 New York City Public Assistance files. To identify persons possibly missed in the census, names from these sources were compared to the names on the census questionnaires. After potentially missed persons were identified, the Bureau attempted to contact them to confirm their status. The follow-up interviews were conducted by telephone whenever possible.

The Nonhousehold Sources Program was first tested in the 1970 census on a small scale using drivers license information from the District of Columbia. The program was later examined in the test cycle for the 1980 Census. As a result of these tests, one of the Bureau's technical groups projected that 900,000 persons might be added to the national population at a cost of \$34 per person. However, the group did not have a high degree of confidence in the validity of the projection. Overall, the Bureau had anticipated adding about 10 percent of the names on the lists processed.

Results

The number of persons added by the Nonhousehold Sources Program was substantially lower than the Bureau had anticipated. The Bureau's analysis of the program for 1980 showed that 127,000 persons were added to the Census. These persons were composed of two groups: 1) a group of 82,000 individuals, or 1.2 percent of the 6.8 million persons on the lists, and 2) a secondary group of 45,000 persons who resided at an address shown on the lists and who were added as a result of followup activities to determine whether the persons on the lists were missed.

In our examination of 16 district offices, we found that between 1 and 2 percent of the names matched were added.¹ We recommended in a report that the Secretary of Commerce evaluate the cost and effectiveness of 1980 census coverage improvement programs to determine if they should be used for 1990.² The Nonhousehold Sources Program was one of the programs that we highlighted in our report. The Census Bureau recently completed an evaluation of the cost and effectiveness of the 1980 census coverage improvement programs,³ the conclusions of which are discussed throughout this report.

Costs

The Census Bureau reported that it spent about \$9.8 million on the program in the 1980 census. This included \$6.3 million for the matching, followup, and processing operations in the district offices. An additional \$3.5 million was spent on precensus address coding and computer processing. Thus, the cost to add a person from this program was about \$77.

1986 Pretest

According to the Census Bureau, the low coverage improvement and high cost for the Nonhousehold Sources Program in the 1980 census can be attributed to operational problems and limitations in the lists, namely inadequate addresses. During the 1986 pretest, the Bureau tested new procedures for this program to

¹An Assessment of 1980 Census Results in 10 Urban Areas
(GGD-81-29, Dec. 24, 1980).

²A \$4 Billion Census in 1990? Timely Decisions on Alternatives to 1980 Procedures Can Save Millions (GGD-82-13, Feb. 22, 1982).

³Programs to Improve Coverage in the 1980 Census, Jan. 1987
(PHC 80-E3).

determine whether the 1980 problems could be overcome through the use of automated procedures. The test did not result in any appreciable improvement over the 1980 census. As a result, the Census Bureau has decided to eliminate the Nonhousehold Sources Program from the 1990 census coverage improvement program.

2. FOLLOW-UP OF VACANT AND DELETED HOUSING UNITS

During the 1970 census, the Bureau instituted a systematic review of a national sample of 15,000 housing units that had been originally classified as vacant by enumerators. On the basis of the sample, ratios were developed showing the proportion of misclassified units and the average number of persons per misclassified unit for 12 areas of the country. As a result of this procedure, known as the National Vacancy Check, the Bureau concluded that 11.4 percent of the vacant housing units in the 1970 census were misclassified and added about 1 million persons to the count.

For the 1980 census, the Bureau decided to eliminate, as much as possible, sampling procedures. Therefore, the Bureau revisited all housing units previously classified by enumerators as vacant or nonexistent.

Results

Overall, the Bureau revisited 8.4 million units initially reported as vacant or nonexistent in the 1980 census. About 10 percent, or approximately 591,000 of the 5.8 million vacant housing units revisited, were reclassified as occupied. This closely parallels the 11.4 percent proportion of misclassified vacant units detected by the 1970 procedure. The revisits to the originally reported nonexistent units resulted in the addition of about 408,000 housing units, 177,000 occupied and 231,000 vacant, to the count of housing units nationwide. Overall, the Bureau added about 1.7 million persons to the census counts from the procedure in the 1980 census.

Costs

At a cost of \$36.3 million, the followup of reported vacant and nonexistent housing units was the most expensive of all the coverage improvement programs. When viewed from a unit cost basis, the procedure cost about \$36 for each of the 999,000 housing units added or converted from vacant to occupied status.

In our February 1982 report, we expressed concern about the high cost of census taking and concluded that the vacancy check and Nonhousehold Sources Program should be critically analyzed to

determine if their costs will outweigh their benefits for the 1990 census.

In response to our report, the Bureau said:

"As the report notes, operations like the vacancy check program would be less expensive if performed on a sample basis rather than a complete inventory basis as in 1980. The extent to which such sampling is permissible during the enumeration for the production of data used for apportionment will be affected by litigation still in progress."

The Bureau currently plans to use the 100-percent followup of vacant and deleted housing units program in the 1990 census.

3. COVERAGE QUESTIONS

For the 1980 census, the Bureau included several questions in the questionnaire to promote improved population coverage. The first question on the form asked for the household roster. The response to that question was compared to information provided by the respondent on the inside of the form. If there were differences, a followup was performed.

Two questions asked the respondent to list additional persons whom they may not have included on the questionnaire but possibly should have. A review of these responses would, in some instances, reveal a person who should have been included on the questionnaire. Another question asked about listed persons who perhaps should not be included. If discrepancies were noted, followup actions were required. For the 1980 census, the Bureau did not make an evaluation of the effectiveness of these questions.

Number of quarters at address

Another question (H-4) asked respondents the number of living quarters at the address where he/she lived. For addresses with 10 or fewer units, the response on the returned questionnaire was compared to the number of units in the census records for the address. If the response showed more living quarters than identified on census records, followup was supposed to take place.

Results

On the basis of its evaluation of the effectiveness of the H-4 question, the Bureau concluded that the improvement in coverage was minimal. The Bureau's evaluation showed that an estimated 93,000 units were added to the census by the H-4 procedure, representing an improvement in the housing unit count of about 0.1 of 1 percent. The Bureau offered several possible reasons for the limited improvement, including the difficulty of properly editing the question and problems faced by respondents in accurately answering the question. Additionally, by the time the procedure was performed, very few housing units had been missed.

In our December 1980 report, we commented on deficiencies in the Bureau's H-4 operations. We found that district office personnel did not always resolve housing unit discrepancies identified by the editors, nor did the editors always identify housing unit discrepancies to be checked. In our sample of 400 enumeration districts at 40 district offices, we noted that about 61 percent had unresolved housing unit discrepancies.

The Bureau has decided not to use the H-4 question as part of its coverage improvement program for the 1990 census because it is not cost effective.

Costs

The Bureau estimated that the H-4 program cost about \$7.5 million to carry out. This amounts to about \$81 for each of the 93,000 estimated missed units.

4. LOCAL REVIEW

In an effort to make the 1980 census more accurate, the Census Bureau launched a new program to enlist the help of local government officials in about 39,000 communities. As originally planned, local review was to be conducted in two stages: before and after census counts. Although the first stage did not take place because of operational delays, the Bureau did provide local officials housing and population counts at a midpoint in the data collection phase.

The local officials were asked to respond within 10 working days and note any possible discrepancies. It was possible for the Bureau to resolve some local review challenges from census records and from additional information obtained from ongoing operations. However, if the census information could not resolve

the community's challenge, areas in question were recanvassed as time and money permitted.

Results

Of the 39,000 local governments initially provided material on the local review program, about 12,400 contacted census officials as part of local review. Overall, about 6,600 local governments responded with problems on the census counts. The remaining 5,800 expressed either satisfaction with the census count or had no interest in participating in the program. In our December 1980 report, we concluded that the effectiveness of the local review program could not be determined because of the poor condition of records maintained at the offices we reviewed. The Bureau's evaluation also commented on the difficulty of reconstructing the impact the program had on census data.

However, the Bureau's evaluation reported that problems were identified by local governments in about 28,000 census enumeration districts. Problems were resolved for about 20,000 of these districts during the district office review. The results from the remaining 8,000 enumeration districts that were recanvassed showed the following:

Table I.1:

Results of Recanvassed Enumeration Districts

	<u>Added to census counts</u>	<u>Deleted from census counts</u>	<u>Transferred to correct geography</u>
Housing unit counts	53,222	20,334	28,125
Person counts	75,741	-	56,328

Source: Census Bureau

Costs

The Bureau reported that the local review program cost about \$4.3 million. This amount was spent as follows:

Table I.2:

Analysis of Local Review Program Costs

Field recanvassing operations	\$950,000
Generating preliminary population and housing counts for local officials	2,700,000
Census district office processing	<u>660,000</u>
	<u>\$4,310,000</u>

Source: Census Bureau

The Bureau plans to use local review in the 1990 census. Current plans indicate that the Bureau will provide data to local communities at two times, before and after Census Day, an arrangement similar to that originally planned for 1980.

5. PRELIST RECANVASS OPERATION

The prelist recanvass operation was a "last minute" procedure, neither planned nor designed until late May 1980. The procedure was developed during the course of taking the 1980 census in response to concern over the completeness of the address lists in those areas for which the Bureau did not purchase commercial mailing lists, specifically suburban and rural areas (prelist areas). Part of the concern stemmed from the Bureau's cancellation of one of the planned post office checks on the address list in the prelist areas.

Results

The procedure was conducted considerably after Census Day during the later phases of field followup. The procedure involved physically canvassing rural and suburban areas to determine if housing units were omitted from the Bureau's address list. Overall, prelist recanvass was conducted in 137 district offices. The Bureau estimated that about 105,000 housing units were added, a little less than 1 percent of the census count of housing units for those areas. An estimated 217,000 persons were enumerated in the added housing units.

Costs

The Bureau estimated the cost of the prelist re canvass operation at about \$10.3 million, with the unit cost of adding about 105,000 housing units approximately \$98.

The Bureau has no specific plans to re canvass prelist areas in the 1990 census. However, the Bureau intends to employ the post office check omitted in the 1980 census as well as a procedure to reconcile differences between Bureau address data and data provided by the Postal Service.

6. POST ENUMERATION POST OFFICE CHECK

The post enumeration post office check was done in those areas for which the Bureau did not develop a mailing list. For the 1980 census, this represented about 5 percent of the population. The addresses listed by census enumerators after the initial enumeration were provided to the Postal Service for review. The Service returned addresses that were in its files, but not on the Bureau's address list. The procedure had previously been used in the South during the 1970 census.

Results

The Bureau estimated that the Postal Service provided information on about 148,000 potentially missed housing units. The Bureau did field followup activities to establish whether the units were, in fact, missed and to enumerate them if this were the case. Overall, the Bureau estimated that it added 50,000 housing units as a result of the post enumeration post office check. This represented .68 of 1 percent of the housing units in the areas where the procedure was employed. The Bureau estimated that the procedures enabled it to add about 130,000 persons to the count.

Costs

The Bureau estimated that the post enumeration post office check cost about \$990,000. Thus, this procedure cost about \$20 to add each housing unit.

The Bureau plans to use this check in the 1990 census.

7. CASUAL COUNT

The purpose of the casual count operation was to enumerate highly transient individuals who were not counted by regular

census procedures. This operation was a new program developed for the 1980 census and was conducted only in large cities, such as New York. About 6 weeks after Census Day, enumerators were sent to places where individuals might congregate, including employment offices, street corners, and bars. The census enumerators attempted to contact these persons and determine whether they had been previously counted. Those not previously counted would be enumerated using a special form--an Individual Census Report.

Results

According to the Bureau's evaluation report, the casual count operation did not have a significant impact on the 1980 census counts. The Bureau estimated that a total of about 13,000 persons were added to the census from using this operation.

Cost

The Bureau estimated that the casual count operation cost about \$246,000, or about \$18.60 for each of the estimated 13,000 persons added to the census from the casual count procedure.

The Bureau plans to use some procedures in 1990 to count persons who do not have a permanent address.

8. WHOLE HOUSEHOLD USUAL HOME ELSEWHERE

For the 1980 census, whole household usual home elsewhere (WHUHE) households were defined as housing units occupied entirely by persons who had a usual residence elsewhere. These housing units included vacation cottages, rental homes, and other housing units where all persons had been staying temporarily at the time of the census. Under the 1980 procedures, persons found in temporary housing would be counted at their usual place of residence and the temporary housing unit would be considered a vacant unit.

Results

The Bureau's evaluation report said that through the use of the WHUHE procedures, 1 million persons, at most, were reallocated to a different geographic location, and that of these, a minimum of 214,000 were counted in two locations. This double counting was caused by improper clerical data processing. The Bureau's evaluation report noted that census clerks and enumerators had great difficulty in recognizing coding and correctly processing persons affected by the procedure.

Costs

The Bureau estimated that about \$550,000 was spent on this procedure. The Bureau plans some form of the WHUHE program in the 1990 census.

9. "WERE YOU COUNTED?" CAMPAIGN

The "Were You Counted?" campaign was aimed at identifying and enumerating persons who would not otherwise be counted in the census. The program was instituted at the conclusion of the mail nonresponse followup in the mail-out/mail-back census areas and at the conclusion of enumeration in the non-mail areas.

The Census Bureau attempted to place public service advertisements in both the newspaper and electronic media to encourage persons who thought that they had not been counted in the 1980 census to complete a "Were You Counted?" census form. These forms were matched against census records to determine who should be added to the census counts. A similar campaign called the Supplements Forms Operation was used during the 1970 census.

Results

The Bureau estimated that a total of about 62,000 forms, which identified about 140,000 persons, were received. Of these individuals, an estimated 71,000 were added to the census. The Bureau also estimated that the campaign resulted in double counting of about 4,400 of the persons added.

Costs

The "Were You Counted?" campaign cost about \$270,000, which was spent in processing the forms in the district offices. Thus, each person added in the campaign cost about \$3.80.

Some form of the "Were You Counted?" campaign will be used in 1990.

10. & 11. USE OF ASSISTANCE CENTERS AND SPANISH QUESTIONNAIRES

Two other programs employed in the 1980 census were classified as coverage improvement programs--use of assistance centers and Spanish questionnaires. The assistance centers were staffed by specially trained clerical personnel who provided answers to questions from the public, arranged for enumerator visits when necessary, and recorded assistance requests. Assistance was provided by both telephone and face-to-face

contacts either in the local census office or in centralized locations, such as storefront sites.

The data necessary to study the impact of assistance centers on coverage improvement were not retained for analysis. However, Bureau records did show that the assistance centers handled over 2.2 million telephone inquiries. The Bureau reported spending about \$2 million to operate the centers.

Census questionnaires were made available in Spanish and could be requested either by phone or by marking an appropriate box on the English questionnaire. Census enumerators also had Spanish questionnaires available upon request. Additionally, questionnaires in Spanish were posted at assistance centers and other locations as examples of how the form should be completed.

The Bureau's analysis concluded that Spanish questionnaires were not widely requested on mail return questionnaires. However, the Bureau also concluded that there was evidence that Spanish questionnaires were requested through the telephone assistance centers. The only cost the Bureau associated with the Spanish questionnaires was \$400,000, which was incurred in printing the forms and associated materials.

The Bureau plans to use assistance centers and Spanish questionnaires in the 1990 census.

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