

An Evaluation of the 1995 Census Test Address List Operation for the Urban Sites

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I. INTRODUCTION

The Census Bureau has historically conducted an address list operation in urban areas called "precanvass". During the 1995 Census Test, the precanvass operation was conducted to verify the accuracy and completeness of the Master Address File (MAF) developed for the two urban test sites, Paterson, New Jersey and Oakland, California. The results from the precanvass operation will help measure how complete the MAF was at the start of the test and provide an opportunity to begin defining the scope of a targeted address list operation for future censuses. This report documents the results of the precanvass operation and evaluates the changes to the Precensus MAF for both test sites.

For the two urban test sites, Paterson and Oakland, the addresses from the 1990 Address Control File (ACF) were computer matched to the addresses from the United States Postal Services's (USPS) December 1993 Delivery Sequence File (DSF) to create the census address list or the Precensus MAF. The Precensus MAF contained addresses that matched (ACF/DSF matches), addresses from the ACF that were not on the DSF, (ACF nonmatches) and addresses from the DSF that were not on the ACF, (DSF nonmatches). The addresses were computer and/or clerically geocoded then clerically reviewed to identify any additional matches. This file was used to prepare the census address list for precanvass.

The precanvass operation was conducted during the period from October 20, 1994 through November 18, 1994. During precanvass, the field staff systematically canvassed each census block in their assignment area using the "ground to book" approach to update the address list and maps. The field staff updated the address list by adding units not listed, deleting units that did not exist, correcting addresses, and assigning units listed in the wrong block to the correct block (moves). The precanvass operation was also responsible for updating the maps with feature changes as well.

II. ACF AND DSF MATCH STATUSES

The computer match between the ACF and the DSF

were based on the match result of the basic street address (BSA) and for matching BSAs, the number of units between the DSF and ACF was compared. (The basic street address is the house number and street name.) No attempt was made to match the individual units at the BSA. Below are the definitions and notations used in this report for identifying the various ACF/DSF match statuses and the type of unit identifiers (i.e. apartment designations) used on the MAF.

ACF/DSF Matches

ACF=DSF - The ACF and DSF BSAs matched. The number of unit(s) on the ACF was equal to the number of unit(s) on the DSF. The MAF used the DSF unit identifiers.

ACF>DSF - The ACF and DSF BSAs matched. The number of units on the ACF was greater than the number of units on the DSF. The MAF used the ACF unit identifiers.

DSF>ACF - The ACF and DSF BSAs matched. The number of units on the DSF was greater than the number of units on the ACF. The MAF used the DSF unit identifiers.

ACF Nonmatches

ACF Only - The ACF address did not match the address on the DSF. The unit(s) at the BSA were from the ACF only. The MAF used the ACF unit identifiers.

DSF Nonmatches

DSF Only - The DSF address did not match the address on the ACF. The unit(s) at the BSA were from the DSF only. The MAF used the DSF unit identifiers.

III. RESULTS

The results are based on 100 percent data for each site. Since the results are not estimates and were not derived from a sample, no statistical significance tests or associated standard errors were necessary for comparing the data.

A. Summary of Precanvass Actions

Table 1, provides the number and rate of precanvass actions for each action for each test site. The precanvass operation added housing units at a rate of 3.4 percent for Paterson and 2.2 percent for Oakland.

Precanvass deleted housing units from the Precensus MAF at a rate of 7.8 percent. The rate for Oakland was 5.7 percent.

Precanvass corrected the address for 6.5 percent and 2.6 percent of the housing units on the Precensus MAF for Paterson and Oakland, respectively.

For both sites, precavass transferred or "moved" housing units from one census geography to another at a rate less than one percent.

Although precavass added, deleted, corrected and moved housing units at greater rates in Paterson than in Oakland, there was almost no difference between the move rates and a relatively small difference between the add rates. However, Paterson had much higher delete and correction rates than Oakland.

B. Precanvass Adds

1. Adds by Type and Size of Structure

Table 2 provides the number of housing units on the Precensus MAF and the number of adds by type and size of structure for each test site. (Throughout the remainder of the report, the number of units at the BSA is used as a proxy for size of structure). The majority of the housing units on the Precensus MAF for Paterson were multiunits. Over half (57 percent) of the housing units in Paterson were small multiunit structures containing 2 to 4 housing units. Analogous with the housing unit stock, over half (65 percent) of the adds in Paterson were also at small multiunit structures containing 2 to 4 housing units. In Oakland, there were more single units (57.3 percent) than multiunits. Most of the adds in Oakland were either single units or were at small multiunit structures containing 2 to 4 housing units. For both test sites the percent of adds were comparable to the percent of the housing stock by type and size of structure.

2. New BSAs vs Existing BSAs

Housing units added during precavass were added as new or whole BSAs or as additional housing units to BSAs which already existed on the Precensus MAF. About 21 percent of the added housing units were at new BSAs and 78.9 percent of the adds were at existing BSAs in Paterson. There were more housing units (56.3 percent) added at existing BSAs than housing units (43.7 percent) added at new BSAs in Oakland.

The relative frequencies of added new BSAs suggest coverage of BSAs on the Precensus MAF for Paterson was more complete than the Precensus MAF for Oakland. The high frequencies of new BSAs in

Oakland may be attributed to new construction or conversions from business to residential.

3. Add Rates by Block for Paterson

Table 3 illustrates the distribution of *blocks* within a range of add rates for Paterson. No housing units were added in 56.2 percent of the 1,208 blocks in Paterson during precavass. Of the total blocks in the site, 40.8 percent had an add rate less than 20 percent but greater than zero. Although, less than one percent of the total blocks had an add rate of 50 percent or more, there were seven blocks in Paterson that had an add rate of 100 percent or more. These blocks were located in the central and southwestern sections of the city.

4. Add Rates by Block Group for Oakland

Table 4 shows the distribution of *block groups* by range of add rates for Oakland. Precavass added housing units for about 84 percent of the block groups in Oakland. Most (73 percent) of the 418 block groups, had an add rate of less than five percent.

C. Precanvass Deletes

1. Deletes by Type and Size of Structure

Table 5 provides the number and percent of housing units deleted and the number and percent of housing units on the Precensus MAF by type and size of structure. Over half (53.8 percent) of the 3,846 deletes in Paterson were at small multiunit structures containing 2 to 4 housing units. Large multiunits containing 10 to 19 housing units comprised the smallest percent of the deletes in Paterson. However, in Oakland, over half (50.6 percent) of the 9,150 deletes were single housing units. As with the adds, the percent of the deletes are analogous with the percent of housing units originally on the Precensus MAF by size and type of structure for each site.

2. Delete Rates by Address Source

Tables 6 and 7 provide delete rates by ACF/DSF match status and type of structure. The rate of housing units deleted by address source, that is, the BSA was from both the ACF and DSF (ACF/DSF matches), the ACF only (ACF nonmatches) or the DSF only (DSF nonmatches) were examined. The match status of the BSA is used as a proxy for address source.

Housing units at ACF/DSF matched BSAs which comprised the majority of the housing units on the

Precensus MAF (92.9 percent in Paterson and 95.3 percent in Oakland), had the smallest delete rate among the three address source categories for both sites. About 6.4 percent and 4.1 percent of the housing units at matched BSAs were deleted during prec canvass in Paterson and Oakland, respectively.

Although, ACF only housing units represented the smallest percentage of housing units on the Precensus MAF (3 percent-Paterson and 1 percent-Oakland), there was a greater proportion of ACF only housing units deleted than DSF only housing units deleted for both sites. Almost 40 percent of the housing units from the ACF only was deleted during prec canvass for Paterson and Oakland, respectively. These rates were the highest delete rates among the three address sources. For Paterson, housing units from the DSF only were deleted at a rate of 18.2 percent. For Oakland, the rate was 37.4 percent. DSF only housing units comprised about 5 percent and 4 percent of the Precensus MAF for Paterson and Oakland, respectively.

The delete rates of ACF only and DSF only housing units for the test sites suggest a need for a MAF reconciliation operation that would include verifying nonmatched addresses. Although, there were large proportions of ACF and DSF only housing units deleted, approximately 60 percent or more of the housing units from these sources were not deleted. Including housing units from the DSF and ACF only improved coverage of the Precensus MAF.

3. Delete Rates by Block for Paterson

Table 8 illustrates the distribution of *blocks* within a range of delete rates for Paterson. Of the total blocks in Paterson, over half (50.9 percent) had a delete rate less than 20 percent but greater than zero. All of the housing units in the block were deleted during prec canvass for 2.2 percent of the blocks. The blocks with a delete rate of 100 percent in Paterson were sporadically distributed.

4. Delete Rates by Block Group for Oakland

Table 9 shows the distribution of *block groups* by a range of delete rates. Prec canvass deleted housing units for about 95 percent of the 418 block groups in Oakland. Over half (57.2 percent) of the block groups, had a relatively small delete rate (less than five percent but greater than zero). Of the 12 block groups, that had a delete rate of 50 percent or more, most were centralized in northwest Oakland, closest to the San Francisco Bay area and one block group was located in northeast Oakland. The Oakland fire of 1991 may have

attributed to the high delete rates in this area.

5. Delete Reasons

The majority of the total deletes for both sites (73 percent for Paterson and 54.8 percent for Oakland) were deleted because the enumerator was unable to locate the address and determined that the housing unit did not exist. The second most reason housing units were deleted during prec canvass was that the enumerator found the unit to be nonresidential. Approximately 11 percent of the deletes for Paterson were deleted as nonresidential. For Oakland the percentage was 18.5 percent.

D. The Precensus MAF After Prec canvass

Figures 1 and 2, graph and compare the number of housing units on the Precensus MAF before prec canvass to the number of housing units on the MAF after prec canvass. For both test sites, there were no prec canvass actions taken for the majority of the housing units on the Precensus MAF. Over 85 percent of the housing units originally on the Precensus MAF were unchanged by prec canvass in each test site (Paterson-85.1 percent, Oakland 91.3 percent). However, the total number of housing units on the MAF after prec canvass resulted in a decrease from the number of housing units on the Precensus MAF by approximately 4 percent. For Paterson, the Precensus MAF decreased by 2,189 housing units (3.5 percent) after prec canvass. For Oakland, the loss was 5,642 housing units (4.4 percent).

IV. CONCLUSION

Since the majority of the housing units on the Precensus MAF was unchanged by the prec canvass operation and the Precensus MAF missed a relatively small percent of the addresses for both test sites, it may be reasonable to streamline the prec canvass workload by targeting housing units with certain characteristics, such as type and size of structure or ACF/DSF match status to correct the MAF. Perhaps, it may be possible to "customize" the type and size of structure categories for the urban sites by identifying the housing unit stock of the area. For the 1995 Census Test, most of the changes were at the size and type of structure most prevalent in the site. (In Paterson, most of the changes and most of the housing units were small multiunits containing 2 to 4 housing units. For Oakland, it was single units and/or small multiunits containing 2 to 4 housing units). Another potential characteristic to use

to streamline the prec canvass workload is by ACF/DSF match status. The high delete rates for Paterson and Oakland suggest a need for verifying housing units at nonmatched addresses. All ACF only and DSF only housing units could be targeted for prec canvass if not part of the suggested MAF reconciliation operation.

Further research is necessary before determining if a targeted address list operation is feasible to correct the MAF for the 2000 Census. The changes to the Precensus MAF created for each test site corresponded to different variables and no one pattern or characteristic was observed across both sites that could be used to define the scope of a targeted prec canvass for all urban areas in 2000.

V. REFERENCES

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- [2] Miskura, Susan M. and Thompson, John H., "Evaluation Requirements Document for the 1995 Census Test Research Objective: Master Address File," August 22, 1994.
- [3] Jones, Charles D., 2000 Decennial Census DMD Memorandum MAF Series No. 94-01, "Master Address File: Address Matching," March 3, 1994.

Table 1. Summary of Precanvass Actions

	PATERSON		OAKLAND	
	Num	Pct	Num	Pct
Precensus MAF	49,371	100.0	161,675	100.0
ADDS	1,657	3.4	3,468	2.2
DELETES	3,846	7.8	9,150	5.7
CORRECTIONS	3,196	6.5	4,226	2.6
MOVES	337	0.7	771	0.5

Table 2. Precanvass Adds by Type and Size of Structure

Type and Size of Structure	PATERSON				OAKLAND			
	Precensus MAF		Adds		Precensus MAF		Adds	
	Num	Pct	Num	Pct	Num	Pct	Num	Pct
Total	49,371	100.0	1,657	100.0	161,675	100.0	3,468	100.0
Single Unit	7,687	15.6	109	6.6	92,559	57.3	918	26.5
Small Multiunit (2 - 4 HUs)	28,146	57.0	1,080	65.2	18,512	11.5	1,162	33.5
Small Multiunit (5 - 9 HUs)	3,960	8.0	228	13.8	11,948	7.4	383	11.0
Large Multiunit (10 - 19 HUs)	3,414	6.9	130	7.8	11,058	6.8	338	9.7
Large Multiunit (20+ HUs)	7,159	14.5	110	6.6	27,598	17.1	667	19.3

Table 3. Distribution of Blocks by Add Rate

PATERSON				
ADD Rate Range	Num of Blks	Pct of Blks	Cumulative	
			Num	Pct
No Adds	679	56.2	679	56.2
0.01 - 19.99%	493	40.8	1,172	97.0
20.0 - 49.99%	25	2.1	1,197	99.1
50.0 - 99.99%	4	0.3	1,201	99.4
100.0 or more	7	0.6	1,208	100.0

Table 4. Distribution of Block Groups by Add Rates

OAKLAND				
Add Rate Range	Num of Block Groups	Pct of Block Groups	Cumulative	
			Num	Pct
No Adds	68	16.3	68	16.3
0.01- 4.99%	305	73.0	373	89.2
5.0 - 9.99%	25	6.0	398	95.2
10.0 -99.99%	19	4.5	417	99.8
100.0 or more	1	0.2	418	100.0

Table 5. Precanvass Deletes by Type and Size of Structure

Type and Size of Structure	PATERSON				OAKLAND			
	Num	Pct	Num	Pct	Num	Pct	Num	Pct
Total	49,371	100.0	3,846	100.0	161,675	100.0	9,150	100.0
Single Unit	7,687	15.6	516	13.4	92,559	57.3	4,627	50.6
Small Multiunit (2 - 4 HUs)	28,146	57.0	2,068	53.8	18,512	11.5	1,153	12.6
Small Multiunit (5 - 9 HUs)	3,960	8.0	534	13.9	11,948	7.4	568	6.2
Large Multiunit (10 - 19 HUs)	3,414	6.9	340	8.8	11,058	6.8	526	5.7
Large Multiunit (20+ HUs)	7,159	14.5	388	10.1	27,598	17.1	2,276	24.9

Table 6. Delete Rates by ACF/DSF Match Status and Type of Structure - PATERSON

ACF/DSF Match Status	Total			Single Units			Multiunits		
	PreMAF HUs	Del'd HUs	Del Rate	PreMAF HUs	Del'd HUs	Del Rate	PreMAF HUs	Del'd HUs	Del Rate
Total	49,371	3,846	7.8	7,687	516	6.7	41,684	3,330	8.0
ACF/DSF Matches ACF = DSF, ACF > DSF, DSF > ACF	45,841	2,930	6.4	6,831	194	2.8	39,010	2,736	7.0
ACF Nonmatches ACF Only	1,326	514	38.7	273	155	56.8	1,053	359	34.1
DSF Nonmatches DSF Only	2,204	402	18.2	583	167	28.7	1,621	235	14.5

Table 7. Delete Rates by MAF Match Status and Type of Structure - OAKLAND

ACF/DSF Match Status	Total			Single Units			Multiunits		
	PreMAF HUs	Del'd HUs	Del Rate	PreMAF HUs	Del'd HUs	Del Rate	PreMAF HUs	Del'd HUs	Del Rate
Total	161,675	9,150	5.7	92,559	4,627	5.0	69,116	4,523	6.5
ACF/DSF Matches ACF=DSF, ACF>DSF, DSF>ACF	154,080	6,271	4.1	87,750	2,577	2.9	66,330	3,694	5.6
ACF Nonmatches ACF Only	1,805	713	39.5	1,003	402	40.1	802	311	38.7
DSF Nonmatches DSF Only	5,790	2,166	37.4	3,806	1,648	43.3	1,984	518	26.1

Table 8. Distribution of Blocks by Delete Rate

PATERSON				
DELETE Rate Range	Num of Blks	Pct of Blks		
			Num	Pct
No Deletes	462	38.2	462	38.2
0.01 - 19.99%	615	50.9	1,077	89.2
20.0 - 49.99%	86	7.1	1,163	96.3
50.0 - 99.99%	19	1.6	1,182	97.8
100.0 or more	26	2.2	1,208	100.0

Table 9. Distribution off Block Groups by Delete Rate

Oakland				
DELETE Rate Range	Num of Block Groups	Pct of Block Groups	Cumulative	
			Num	Pct
No Deletes	20	4.8	20	4.8
0.01- 4.99%	239	57.2	259	62.0
5.0 - 9.99%	81	19.4	340	81.3
10.0 -99.99%	66	15.8	406	97.1
100.0 or more	12	2.9	418	100.0

Figure 1. MAF After Precanvass-PATERSON

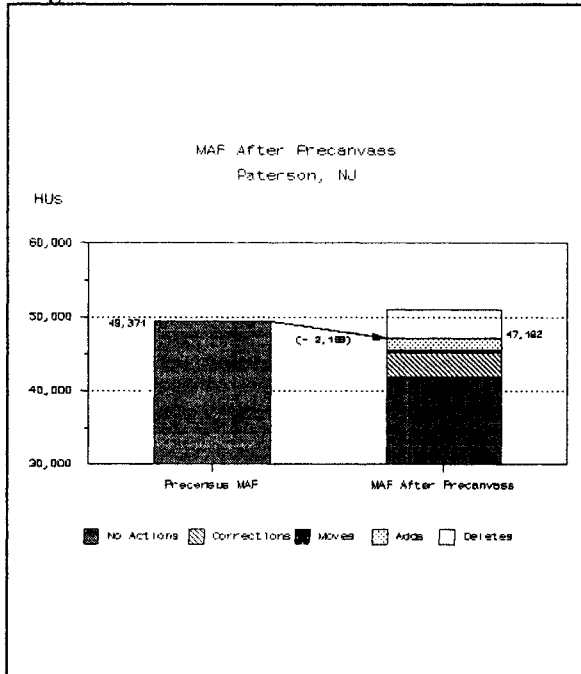


Figure 2. MAF After Precanvass-OAKLAND

