POST OFFICE EFFECTIVENESS

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I. BACKGROUND AND INTRODUCTION

For the 1980 census the bureau employed the services of the U.S. Postal Service (USPS) in five different operations to compare various sets of addresses from the bureau's files to the USPS's addresses. The resulting products from the USPS comparisons were additions, changes and deletions of addresses to the bureau's files. This evaluation assesses the yield (number) and quality (results of enumeration) of the addresses which the USPS represented as being additions to the bureau's files. Two of the postal operations were the Advance Post Office Check I and II (APOC I and APOC II). These transpired in the summer of 1979. In APOC I the USPS compared addresses which the bureau had purchased from private vendors to USPS records. Residential addresses to which the Postal Service delivered mail which were not included on the Bureau files were recorded on "blue cards" by the postal carriers. The results of the Census Bureau's enumeration of addresses given on those blue cards are analyzed in this memorandum. APOC II was an operation which double-checked the correctness of addresses designated by the USPS as deletions during APOC I. No evaluation of APOC II has been undertaken since data on the operation could not be obtained.

The next two postal operations were the Casing Check, occurring on March 5, 1980, and the Time of Delivery Check on March 28, 1980. Jointly, these are referred to as the C/TOD checks. Each of these two pre-enumeration activities were undertaken in all areas of the U.S. which were not going to be conventionally enumerated by the bureau and consisted of the USPS carriers checking whether they had received a mailing piece (census form) for each residential address on their route. Again, addresses the postal carriers considered to be additional were recorded on "blue cards" and the quality of these addresses is analyzed below.

Lastly, the Post Enumeration Post Office Check (PEPOC) was conducted in rural areas which were enumerated conventionally by the bureau. Unlike the C/TOD checks, the PEPOC was performed after the bureau's first phase of enumeration. Enumerated addresses were compared by the USPS to their records and the addresses thought to be additions were recorded on blue cards. The quality of these added addresses is also assessed in this memorandum.

For C/TOD and PEPOC the blue cards were processed in the district offices (DOs) as follows:

1. All the blue cards upon which an enumeration district (ED) was not specified by the USPS carrier were cross-referenced to block header records. If found, the ED was recorded on the card.
2. When an ED could not be identified in this way, the address was sent to the field for geocoding.
3. All blue card addresses, now geocoded, were then matched to the address registers (ARs): if matched to an address which was in the AR, a blue check was used to denote this match; if the address was not found, it was added to the AR in blue pencil. In this evaluation, addresses on blue cards in sample EDs were compared to their enumerated results for the assessments of the quality of postal adds.

II. SUMMARY OF RESULTS

The results of these evaluations are given below. Two ratio results were compared for each operation evaluated and then their variances were calculated. The denominators of the ratios are: (1) total estimated housing units affected by the operation and (2) addresses represented by the post office as adds.

APOC I added 5.5 percent of the total number of housing units enumerated in the census in areas of the country covered by APOC I at an average cost of about $1.42 per address. The Casing and Time of Delivery checks added over 3.4 percent of all enumerated households in non-conventional areas of the country at an average cost of $2.02 per address. Overall, in areas covered by APOC and C/TOD, 6.6 percent of all enumerated households were addresses added due to postal operations. The PEPOC operation added 0.68 of one percent of all enumerated households in conventional areas of the country at an average cost of $2.02 per address.

Three notes should be made.

- This summary section does not mention any estimates of total numbers of housing units enumerated as a result of each operation or the results of analyses of variance. These are given in the "Results," Section VI.
- Unexpectedly high intraclass correlation plus several procedural errors in some district offices caused the effective and the real sample size to be diminished; this in turn resulted in high variances. These "Limitations" are described in Section V.
- The "Results" Section (VI) defines more fully some of the terms and categories given in the condensed summaries below.

A. Advance Post Office Check I

In areas of the country where the bureau purchased addresses from vendors, the post office was able to add, in APOC I, a significant number of addresses of good quality; i.e., addresses that were shown after enumeration to be additional addresses not otherwise on the vendor's lists. Ninety percent of the addresses added to the Master Address Registers (MARs -- the principal listing of addresses and census control information) were valid additional addresses. These comprised 5.5 percent of the total number of housing units enumerated in the census in areas of the country covered by APOC I. Note that unclassified units are those for which no data were obtained as to the number of occupants.

B. Casing and Time of Delivery Checks

It was the intent of this evaluation to measure the effectiveness of these two checks separately. However, contrary to procedures, only six of 44 district offices in sample separated casing blue cards from those for the time of delivery check. So the two operations, which occurred in March 1980, are combined for this

analysis.

56.7 percent of addresses given to the Bureau by the post office as being additional were in fact added to the MARs. Ignoring the fact that some of these addresses were also added by other coverage improvement operations (see "Results" section for measures of this duplication), the C/TOD check adds were 3.4 percent of all enumerated households in non-conventional areas of the country. So, overall in areas covered by APOC and C/TOD, 6.6 percent of all enumerated households were addresses added due to postal operations.

C. Post Enumeration Post Office Check (PEPOC)

The PEPOC procedure is performed in conventional census areas after the Bureau has completed its initial enumeration and takes place in rural areas where addresses are not as well-defined. In part for this reason only 11.4 percent of addresses represented by the post office as not having already been enumerated were found to be occupied or vacant additional addresses. These comprised 0.68 of one percent of all enumerated households in conventional areas of the country.

D. Estimates of Sampling Error of these Ratios

As mentioned earlier, the estimated sampling errors of the above estimates are higher than anticipated for a number of reasons. Estimated intraclass correlation within enumeration districts and within district offices (i.e. the degree to which sample cases in these clusters were homogeneous) was high; also the sample was diminished by the procedural errors of losing blue cards or not recording them correctly in the Master Address Registers (see "Limitations").

The estimated sampling errors of these ratios can be represented by the following table since, using a logrithmic model, the estimated sampling errors were found to be very well correlated to their respective estimated ratios. For example, an estimated ratio of .15 has an estimated sampling error between .061 - .101 and an estimated coefficient of variation somewhere in the interval of .51 - .61.

For an estimated ratio in the range	its estimated sampling error is in the range	and its estimated coefficient of variation is in the range
0 - .01	0 - .01	1
.01 - .05	.01 - .036	.72 - 1
.05 - .10	.036 - .061	.61 - .72
.10 - .20	.061 - .101	.51 - .61
.20 - .50	.101 - .202	.40 - .51
.50 - 1.00	.202 - .340	.34 - .40

III. THE SAMPLE

The first level of sampling for projects in the 1980 Census Research, Evaluation and Experimental Program was to stratify district offices by type (centralized, decentralized, etc.) and sample each type (approximate first stage sampling fraction = .12). For each operation covered in this analysis, differences in post office effectiveness between DO types are shown in the analyses of variance sections (under "Results"). It was determined that a second stage sample within these DO's should contain 68 random enumeration districts (EDs). From each of these EDs, all blue cards were to be examined. Second stage sampling fractions were:

	for proportions of blue cards[1]	for proportions of national HUs
APOC I	0.063	.080
C/TOD	0.100	.132
PEPOC	0.048	.121

Apart from results of this examination of post office adds, ancillary data on each ED were gathered: the EDs housing unit count, whether it was urban/rural and whether it was from a Prelist Area (an area where an independent canvassing operation is done to compile a mailing list) or a Tape Address Register (TAR) Area (any area having city type mail delivery for which a vendors list is obtained). The housing unit count was used for the proportions of national housing unit counts given above and the latter two pieces of datum used in the analyses of variance sections (under "Results").

IV. THE ANALYSIS

In general, the examination of APOC I adds and blue cards[2] consisted of a search for the address in its Master Address Register (MAR) and, after it was found, recording the results of its enumeration.

For APOC I each address in sample which had been represented by the USPS as an addition to the Bureau's vendor-obtained listing was classified as to the results of its enumeration into one of the following categories: occupied (population count > 0), vacant, unclassified (as to household status and size), deleted, duplicate of another line in the MAR, not found in MAR, or other.

In the C/TOD checks the classification of USPS added addresses was more involved since the address could also have been added by other coverage improvement operations. Since district office procedures linked all addresses for each coverage improvement operation to a different color entry for those addresses in the MAR, not only were enumeration results discernable for each post office added address, but whether that address would have been added by another coverage improvement operation should have been discernable. When an address had been gained by a second coverage improvement operation, a mark was made next to the address in the MAR in a color indicative of the second operation.

During clerical examination each C/TOD post office add was cross-classified by one class in each of the following two lists:

Enumeration results	found by which operation(s)
occupied	post office
vacant	precanvass
unclassified	local review
deleted	already recorded (preprinted)
other	in MAR
special place	

Some post office adds were not enumerated for one reason or another and were so classified: post office lockbox addresses, adds with no ED number assigned (uncodeables) even after attempted field coding, and adds with an ED assigned where the add did not appear in any form in the MAR (no record in MAR).

Similarly, addresses from PEPOC represented by the post office as being adds were cross-classified by categorization in each of the following two lists:

Enumeration results	found by which operation(s)
occupied	post office
vacant	local review
unclassified	already recorded in CAR
deleted	
special place	

Tallies of these clerical examinations were made by D.O., the information computer captured and then analyzed to yield the results given below. All of these aspects of this evaluation: sample design, clerical procedures, keying specifications, quality control plans, estimation and computer specifications are documented in various "Post Office Effectiveness" memoranda.

V. LIMITATIONS ON ESTIMATES

A. Limitations due to estimates of variation

Several limitations on the results presented here should be considered. Some have been mentioned briefly above -- they center around the issue of the variances of the estimates presented. In the study's design, a design effect of 2 at the primary sampling level was assumed and the sample size determined such that coefficients of variation would be about 1/3 of their eventual actual levels presented here. This section presents most of the problems encountered which resulted in larger variance estimates than were anticipated. This section is not only given as an expression of qualification of the results of this evaluation but also as an illustration of the number and degree of problems encountered in sampling for evaluation.

For a DO, the continued processing of blue cards which were of no further value to them, and restrictions on color of pencil to be used in the MAR probably appeared to be hinderances in the production-oriented, time-pressured DO atmosphere -- so these restrictions were sometimes overlooked. The result here is a limited evaluation and, consequently, this will limit the ability of managers to judge the efficiency of the operation. Under these DO conditions, possible non-effective operations can become self-perpetuating due to limited research results.

1. Reduced sample size

38 of the 50 research and evaluation DOs contained areas where vendor lists were purchased; not all EDs in these DOs were affected by APOC. Since the number of EDs was often less than the 68 per DO which were needed -- 23 DOs had less than 68 APOC EDs -- all possible EDs in these DOs were put in sample. Even at this, the sample was reduced by 34 percent from what was planned. Since one type of the summary statistics in section II, those with a denominator of addresses the post office represented as being APOC I adds, can only include EDs with one or more adds, the planned sample size was again effectively reduced by another 14 percent. The limitation of the APOC study to the Research and Evaluation DOs decreased the intended sample size thus increasing the variances.

2. High intraclass correlation

Even for those estimates given here which had the largest sample, the fact that variances were higher than planned must in part be due to very high intraclass correlations. At the ED level, this means that the enumeration results for postal adds were highly homogeneous, so the effective sample size was reduced and between ED variance was inordinately high. Since the computer processing for this evaluation was completed by an outside contractor, available resources did not permit quantifying this intraclass correlation. At the ED level, the analyses of variance relate variances at the between ED level to the between DO and between strata sampling levels. Examination of these indicates that between DO variance often greatly exceeded the already high between ED variance. This points to possibly inordinate (but again not quanitified) intraclass correlation at the DO (secondary sampling) level. When the between DO variance is significant, it would seem that differences in DO processing and enumeration results of postal adds could be the reason.

VI. RESULTS

A. Advance Post Office Check I

1. Ratios and variances

Ratio results for APOC I:

5.14 percent of national HUs in APOC I areas were added by APOC I and enumerated as occupied

0.36 percent of national HUs in APOC I areas were added by APOC I and enumerated as vacant

0.02 percent of national HUs in APOC I areas were added by APOC I and enumerated as unclassified

0.32 percent of national HUs in APOC I areas were added by APOC I and found to have been deleted during census operations

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83.30 percent of APOC I adds were found to be enumerated as occupied

5.89 percent of APOC I adds were found to be enumerated as vacant

0.33 percent of APOC I adds were found to be enumerated as unclassified

5.13 percent of APOC I adds were found to be deleted from the MAR during the enumeration process

2.12 percent of APOC I adds were found to be duplicates of other addresses

3.6 percent of APOC I adds were not found in the MAR

Estimated sampling errors of these estimates are found in section II.D.

2. Totals and variances

For APOC I, each sampled ED had its totals (numerator and denominator for each estimate above) weighted by the HU total to the DO HU total, then to the stratum total and these added for a national estimate. The national count of blue cards given to the Bureau by the USPS was 5 million. The sample results show that, after geocoding, unduplicating, etc. the Bureau added 2.2 million blue cards (s.e. = 1.3 million) to the MARs from areas of the country affected by

APOC I. Of the 2.2 million blue cards actually added to the MARs, about 2.0 million (s.e. = 1.3 million) were additional addresses not previously on the Bureau's lists. Of these 1.8 million (s.e. = 1.2 million) were found in the census to be occupied.

3. Analysis of variance

The analyses of variance for this evaluation were designed to find differences between estimates for various aggregations of results.

For APOC I, ANOV's were used to look for differences between strata of types of DOs, and between DOs in strata and for the following ratio estimates:

(1) proportion of adds enumerated as occupied
(2) proportion of adds enumerated as vacant
(3) proportion of adds enumerated as unclassified
(4) proportion of adds found to be deleted

The only significant result ($p < .002$)[3] was that there were differences between strata with respect to proportion of APOC I adds which were found to be occupied. It appears that centralized offices enumerated an "occupied proportion of postal adds" which were on the order of 12 percentage points less than decentralized offices.

4. Cost Effectiveness

The Census Bureau paid the USPS $4,559,035 to do APOC. This includes $2,063,000 for training, $139,600 for moving the address cards to and from the post office, $125,316 for APOC II, the quality control check, and the balance, $2,231,119 for actual work done by the post office in casing the address cards.

In addition, the Census Bureau paid its staff $2,188,000 to process the additions, corrections, and deletions submitted by the post office. A contractor was paid $224,000 to label the address cards used in APOC.

In total, the Bureau spent $6,971,035 to do APOC and have the results processed. The post office added 5,036,042 cards and made changes (either corrections or deletions) to 2,867,812 others for a total of 7,903,854 cards. The cost of identifying and processing cards varied by type, but the average cost of a postal correction was $0.88 per address. If it were assumed that all corrections and deletions were made and it were taken into consideration that only 2 million of the 5 million additions were addresses not previously on the Bureau's lists, then the cost rises to $1.42 per address for addresses corrected.

B. Casing and Time of Delivery

1. Ratios and variances

Ratio results for C/TOD:

3.04 percent of national HU totals in C/TOD areas were postal adds which were additional addresses enumerated as occupied
0.30 percent of national HU totals in C/TOD areas were postal adds which were additional addresses enumerated as vacant
0.04 percent of national HU totals in C/TOD areas were postal adds which were additional addresses found enumerated as unclassified
0.40 percent of national HU totals in C/TOD areas were postal adds which were additional addresses found to be deleted
0.01 percent of national HU totals in C/TOD areas were postal adds which were additional addresses enumerated as special places and other cases

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10.50 percent of C/TOD adds were found to match preprinted addresses
50.70 percent of C/TOD adds were enumerated as occupied
5.08 percent of C/TOD adds were enumerated as vacant
0.68 percent of C/TOD adds were enumerated as unclassified
6.71 percent of C/TOD adds found to be deleted
6.11 percent of C/TOD adds were geocoded but were not found in their MARs
12.30 percent of C/TOD adds found to be uncoded to ED (probably not entered in any MAR)
7.62 percent of C/TOD adds found to be post office lockbox addresses

Variances for these ratios are given in section II.D.

Additionally, when C/TOD entries in the MARs were made using the prescribed blue colored pencil (about 54 percent of the time), the extent to which the adds given the bureau by the post office were duplicated by other coverage improvement operations could be measured. The small sample size precludes presentation of some of the more detailed results, but even the following give some quantification of the above estimates:

Of the C/TOD adds in MAR's which had blue entries;[4] i.e., were given to the bureau by the post office,

22.8 percent were added only in blue (added by postal operations)
14.7 percent were added in blue but an indication was made that they also would have been added by other coverage improvement operations
7.0 percent were added in brown (by the precanvass operations)
0.01 percent were added in purple (by the local review operation)
55.5[5] percent were either added in some other color, matched preprinted addresses or had no record in the MAR

Additionally, of all addresses given by the post office on blue cards, 1.3 percent were found to be undeleted duplicates of addresses already in the MAR.

2. Totals and variances

For the C/TOD check there are severe, unexplained discrepancies between the total number of blue cards our sample estimates to have been given to us by the post office and the number reported by the DO's to the bureau. The DO's reported a total of 7.1 million blue cards given to us by the post office and our weighted evaluation results estimate that we received only 3.6 million (s.e. = .167 million). The "Limitations" section explains the supposition that some

blue cards were lost between D.O. processing and the processing of this evaluation. This number is unknown. Discussions with managers from Field Division, regional technicians and district office managers, revealed that there were probbably errors in the counting and reporting of D.O. subtotals included in the 7.1 million figure. None of these qualifications, though, could be cited as providing a clear explanation for the discrepancy between these totals -- the issue is unresolved; for this evaluation we are left in the position of presuming that if an inordinate number of blue cards were lost between D.O. processing and processing for this evaluation, they were random blue cards.

Of the 3.6 million total blue cards estimated by this evaluation, some of the corresponding totals were:

		Standard Errors
380,990	matched preprinted addresses	32,000
1,846,362	were enumerated as occupied	135,000
184,794	were enumerated as vacant	23,000
24,705	were enumerated as unclassified	7,000
244,246	were found to be deleted	20,000
3,800	were "other" cases	1,000
3,588	were special places	1,000
244,627	were not recorded in the MAR's	26,000
277,286	were postal lockboxes	NA
446,489	had no ED code	NA

3. Analyses of Variance

The C/TOD ANOV's were designed to look for differences between:

a. Strata, DO's in strata, ED's in DO's in strata or
b. TAR and Prelist ED's or
c. Urban and rural ED's for each of the following ratio variables:
   Percent of blue cards
   (1) enumerated as occupied
   (2) enumerated as vacant
   (3) enumerated as unclassified
   (4) found to be deleted
   (5) found to have no record in the MAR's.

The following conclusions were noteworthy:

(1) There were significant differences between DO's for all the above variables -- that is, the percentages of post office added addresses which were found to be occupied (or vacant, deleted, etc.) varied widely between DO's. This could be indicative of different implementation of procedures between district offices. This also substantiates the contention that between DO differences added a significant amount of variation to this evaluation's already high between ED variances.

(2) There were no differences detected between TAR and Prelist EDs for any of the above variables.

(3) The proportions of post office added addresses which were found to be occupied and vacant in urban areas were both five percentage points higher than the percent occupied and vacant in rural areas. (So, the sum of unclassifieds, deletes, no record in MARs may be lower in urban areas than rural areas.)

4. Cost Effectiveness

Costs for the casing of questionnaires, the Time of Delivery Check, and the PEPOC were combined by the USPS. The Census Bureau paid the post office $6,149,879 to do these three checks. This includes $2,256,900 for training, $848,863 for casing the mailing pieces, $10,599 for casing the address cards in PEPOC, and the remainder, $3,033,517, for identifying additions, deletions and corrections in these three checks.

In addition, the Census Bureau paid its staff in the District Offices $3,440,807 to process the postal corrections and make the changes to the MARs. It cost $3,024,938 to code the corrections to ED and block in the field.

The post office reported that they added 7,297,262 cards and made changes (either corrections or deletions) to 2,187,290 others for a total of 9,484,552 cards. The cost of identifying the cards varied by type, but the average cost of a postal correction during 1980 Census operations (including changes, deletions and additions) was $1.33 per address.

Estimates from this study indicate that 55.6 percent of the cards added by the USPS for these three postal checks actually resulted in coverage improvement. If it were assumed that all corrections were made and that 55.6 percent of the adds provided useful information, then the cost for these postal checks rises to $2.02 per address corrected.

C. Post Enumeration Post Office Check

1. Ratios and variances

The more important estimated ratios are:

0.54	of one percent of conventional HU totals were postal adds which were additional addresses enumerated as occupied
0.14	of one percent of conventional HU totals were postal adds which were additional addresses enumerated as vacant
0.56	of one percent of conventional HU totals were postal adds which were additional addresses found to have been deleted
25.60	percent of PEPOC adds matched an address which was preprinted or handwritten in black
7.56	percent of PEPOC adds were enumerated as occupied
3.87	percent of PEPOC adds were enumerated as vacant
5.02	percent of PEPOC adds were found to be deleted
15.90	percent of PEPOC adds were geocoded but not found in their CARs
33.10	percent of PEPOC adds were found to be uncoded to ED
9.18	percent of PEPOC adds were found to be post office lockbox addresses

Estimated sampling errors for these ratios are given in section II.D.

When adds from PEPOC blue cards were entered in blue in the CARs (61 percent of the time), additional information regarding degree of overlap of conventional coverage improvement

operations was available:

Of the PEPOC adds in CAR's with blue entries which were given to the bureau by the post office[6]/

- 31.5 percent were added in blue (only)
- 1.2 percent were added in blue but an indication was given that they also would have been added by one of the other coverage improvement operations
- 0.7 percent were added in purple by the local review operation
- 66.6 percent were either added in another color, matched preprinted or handwritten (in black) addresses, or did not appear in the CAR.

Of the PEPOC addresses 0.3 of one percent were found to be undeleted duplicates.

2. Totals and variances

Unlike the C/TOD check, the total number of blue cards estimated by this evaluation to have been received from the post office is well within reasonable sampling error of the number of blue cards reported as received by the conventional DO's. This evaluation estimates this total at 148,000 (s.e. = 36,700); the DO's reported receiving 189,000 cards.

Of the 148,000 blue cards received:

	Standard Errors
40,783 were enumerated as occupied	6,700
9,423 were enumerated as vacant	3,600
9,054 were found to be deleted	2,900
2,973 were special places	2,700
23,514 were not found in their CAR's	5,600
13,554 were postal lockbox addresses	NA
48,922 were uncodeable to ED	NA

3. Analyses of Variance

In completely different results from C/TOD, there were no significant results from the PEPOC ANOV's. The analyses were designed to look for differences between the two conventional DO strata (conventional offices and conventional offices in two-procedure offices), between the DO's within these strata. The differences explored were differences in:

a. Percent of blue cards enumerated as occupied
b. Percent of blue cards enumerated as vacant
c. Percent of blue cards found to be deleted
d. Percent of blue cards enumerated as unclassified
e. Percent of blue cards with no record in the MAR
f. Percent of blue cards resulting in undeleted duplicates
g. Percent of blue cards that were not coded

As stated above, compared to the variances between ED's:

a. There was never a significantly greater amount of variance added to the overall variance of any of these variables due to differences between DO's.

b. Likewise, the overall variance of any of these variables did not increase significantly due to any differences between strata.

4. Cost Effectiveness

Costs for all the census time operations including the casing of the questionnaires, the Time of Delivery check, and the PEPOC were combined by the USPS. See Section VI., B.4.

VII. CONCLUSIONS

In summary, the APOC added an estimated 5.5 percent additional addresses to the Census address lists covered by APOC. The Casing and Time of Delivery checks resulted in 3.4 percent estimated coverage improvement of all enumerated households in nonconventional areas of the country. An estimated additional .68 of one percent of all enumerated households in conventional areas of the country was added by PEPOC.

Apart from the numerical results from this study, some other, varied points discussed in the text are summarized below.

A. In census processing many situations arise which can have a devastating effect on evaluation studies (e.g. mishandling of blue cards, non-use of colored pencils). More stress on the correct handling of these situations might facilitate evaluations in the future.

B. Small preliminary studies in pretests should be undertaken to estimate intraclass correlations needed for sample size estimation for large evaluation projects.

C. The difference between this study's estimate of total blue cards received from the postal service (during C/TOD) and the number of blue cards for which the bureau paid the USPS is striking. Considerable research into this disparity did not lead to any real resolution of the issue. Possible conclusions are mentioned in the text. This difference points to the need for better recordkeeping and material storage for evaluations (even when this is not necessary for mainline census activities).

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FOOTNOTES

1/ Not all EDs had blue cards.

2/ The difference between these data were that the blue cards were the raw production from the USPS -- some possibly not representing workable addresses -- whereas the bureau computer listing of APOC I adds were APOC blue cards which had been unduplicated, geocoded, and computer captured. See section VI.A..2.

3/ A p-value is the maximum probability which, if it had been chosen as the significance level, would have yielded a significant result (for these tests were set at .05).

4/ In the remainder of this ratios section, percentages less than 10 percent have 100 percent c.v.'s. Those greater than 10 percent have approximately 66 percent c.v.'s.

5/ by subtraction.

6/ In this section, coefficient of variation of the percentages less than 5 percent were 100 percent; the C.V. of the 31.5 percent was 25 percent. The 66.6 estimate was derived by subtraction.