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Nonresponse Adjustment for The National Sample of the National Crime Survey

by

Leroy Bailey
Statistical Research Division
U.S. Bureau of the Census
Rm. 3565, F.O.B. #3
Washington, D.C. 20233

(301) 763-7916

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1. Prefatory Remarks

The following is a summary of observations and recommendations based on research on the National Crime Survey (NCS) nonresponse adjustment procedure during the past year. Uncertainty regarding the nature of the NCS design in the fairly near future, which persisted throughout the project, encumbered the identification of a specific focus of the nonresponse research. Various observations and discussions with others involved in NCS work suggested that substantial changes in the nonresponse adjustment procedure would not be considered until more definitive decisions were made regarding to the prospect of a "redesign" of the survey during the next two-three years. Therefore our research focused essentially on general aspects of nonresponse adjustment for which recommended changes could most likely be achieved with minimum effort. Moreover we also presented alternative procedures that would be applicable if the current design is continued, but opted not to pursue such alternatives in great detail in light of pending decisions on NCS design changes.

2. Household Nonresponse Adjustment

Defining Weighting Classes

For its computational simplicity, general applicability, and rather modest safeguards against model misspecifications, it was recommended that a weighting procedure be continued as the means of compensating for unit nonresponse in the NCS. In addition, the potential detrimental effects of the relatively small NCS household nonresponse rate are assumed to be rather minimal. However, our empirical research suggests that several other considerations can be introduced in the formulation and evaluation of the

nonresponse adjustment or weighting classes. Based on 1983 data from the NCS national sample, it appears that the overall type A noninterview rates for the four census regions are comparable (see Table 1). In the selection of weighting classes, designed to compensate for nonresponse, it is generally desirable to achieve dissimilar cells that are as homogeneous as possible within.

Table 1. Regional Household Nonresponse Rates (Type A Noninterview) - First Quarter, 1983

Region	Household Nonresponse Rate (%)
Northeast	3.4
Midwest	3.5
South	3.2
West	3.5

Consequently, John Blondell investigated the potential for lower levels of geographic aggregation as the designated level within which the nonresponse adjustment classes (cells) are constructed. Table 2 provides 1983 overall type A rates by census division and by state within division. Note that the divisional rates varied from 2.4 percent to 3.9 percent, and that the corresponding range of the percentages at the state level was 1.6 to 5.1. These results, coupled with a desire to improve the level of within weighting class homogeneity, occasioned the preliminary recommendation that additional "geographic specificity" be included in the criteria for the formation of nonresponse adjustment cells. That is, it was recommended that consideration be given to the creation of household nonresponse adjustment cells either within each state or within the nine census divisions. In Memorandum 1 (Noninterview Adjustment Research for NCS - Geographic Definition of Housing Unit Noninterview Adjustment Clusters; From Blondell to Bailey;

February, 1, 1985) of his NCS Nonresponse Adjustment Memoranda Series, John Blondell suggested a set of nonresponse adjustment clusters defined within state or selected groupings of states. However, we note that the construction was not free of subjectivity, but that the principal concern of the exercise was to demonstrate the feasibility of producing weighting cells with more geographic specificity, and to suggest potential advantages of the revised procedure.

The final stage in determining a set of household nonresponse weighting cells involved the division of the "state clusters" into cells defined by other characteristics or classifiers available for both respondents and nonrespondents. As was the case with the CPS, the empirical research conducted by John Blondell provided evidence that the benefits derived from the cross classification of the nonresponse clusters by race and residence could be essentially achieved through one variable reflective of the size of a substate area. In Memoranda 2 through 4 of the NCS Memoranda Series, SMSA size, as well as subgroups of the urban/rural residential categories, were offered as plausible alternatives. Thus the final set of recommended NCS household clusters would be within the individual states or small groupings of states that would be further divided according to specified size categories. In addition to the potential advantages alluded to in the memoranda series, the suggested procedure is expected to lead to a substantial reduction in the number of weighting classes without causing a statistically significant diminution in data quality. Again we note that the specifications of a final set of weighting cells would be subjective and if derived only from the empirical research effort cited earlier, it would be based almost solely on 1983 data. Therefore the household nonresponse research has provided

indications of aspects of the current weighting procedure that warrant modifications and general guidelines that should govern the introduction of those modifications.

Table 2. Household Nonresponse Rates by Census Division and State within Division

Division/States	Household Nonresponse Rates (%)
New England	3.7
Vermont	5.1
Massachusetts	5.0
New Hampshire	3.3
Rhode Island	3.1
Connecticut	2.7
Maine	1.8
Middle Atlantic	3.2
New York	4.2
New Jersey	3.4
Pennsylvania	1.6
East North Central	3.9
Illinois	4.8
Ohio	4.1
Indiana	4.1
Michigan	3.8
Wisconsin	1.8
West North Central	2.4
Nebraska	3.8
Kansas	2.8
Missouri	2.7
Iowa	2.6
North Dakota	1.7
South Dakota	1.2
Minnesota	1.2
South Atlantic	3.2
North Carolina	4.9
District of Columbia	4.0
Virginia	3.6
Delaware	3.3
South Carolina	2.9
Maryland	2.8
Georgia	2.8
Florida	2.7
West Virginia	1.5

Table 2. Household Nonresponse Rates by Census Division and State within Division - Continued

Division/States	Household Nonresponse Rates (%)
East South Central	2.6
Mississippi	4.1
Kentucky	2.6
Tennessee	2.1
Alabama	2.0
West South Central	3.4
Louisiana	4.7
Oklahoma	4.0
Texas	3.4
Arkansas	1.4
Mountain	2.5
Montana	3.6
Colorado	3.6
Wyoming	2.4
Idaho	2.1
Arizona	2.1
Utah	2.1
New Mexico	1.7
Nevada	1.5
Pacific	3.8
Washington	4.0
California	4.0
Hawaii	3.9
Alaska	3.0
Oregon	2.8

Current and Future Research

There are still several relevant concerns regarding the NCS nonresponse adjustment for household nonresponse. Initially we reemphasize that the choice of classifiers for the NCS weighting classes is limited inasmuch as it must be restricted to characteristics for which information is available for both responding and nonresponding households. Moreover, to the extent that differences in the characteristics of respondents and nonrespondents are not properly accounted for by an adjustment procedure under these constraints, bias is introduced in the survey estimates. There remains a need to acquire

more insight into the potential effects of nonresponse engendered by these differences. It is virtually impossible to determine the exact extent of this bias; however, it is conceivable that more information can be gleaned from the historical survey data regarding the relationships between household response status and household characteristics that are not currently used or being considered in the definition of household nonresponse weighting classes. This information could in turn be used to characterize specific components of the bias associated with the use of the current nonresponse adjustment or cell balancing factors, and to design methodologies to compensate for those biases. For example, empirical evaluations of recurring surveys data by both the Bureau of the Census and Statistics Canada show evidence of a fairly discernible relationship between household response status and household size. It seems very reasonable to assume that difficulties in contacting households decrease with increasing household size, and the NCS nonresponse research data (Quarters 1-4, 1983) seem to support this assumption. The overall household nonresponse rate for households of size one was 4.5 percent; that for households of size five or more was 2 percent. Consequently, if we view weighting class nonresponse rates as survey estimates of the corresponding population nonresponse rates, then the nonresponse adjustment factors for large nonrespondent households are ostensibly too large, while those for the smaller nonrespondents may be too small. We are therefore evaluating household size as a potential classifier for unit nonresponse weighting procedures for the NCS as well as other recurring demographic surveys. Furthermore, it has been suggested that revisions to household adjustment factors to account for variation in household size be developed and evaluated empirically. Specific correlation structures of type Z households (responding households for which at least one of the eligible occupants fail

to respond to his/her personal victimization items) have also been mentioned as possible sources for identifying appropriate adjustments to the household factors.

Efforts are still under way to 1) refine response probability models within "traditionally defined" weighting classes, and 2) use the response probability models in the definition of alternative weighting classes (response propensity stratification). Relative to modeling weighting class response rates, we have been gathering historical data to study the effects and merits of two procedures. The first procedure entails the collection of NCS response/nonresponse rates for a five-year period (1981-86) and attempting to specify estimators of the population response rates for designated weighting classes based on those data and attending analyses. The second approach involves the development and evaluation of logit models relating unit response status with a set of covariates or predictors $(\vec{X})$. The following is a general expression for the models under study.

$$\text{logit } p(r|X,\beta) = \beta'X = \beta_1 x_1 + \beta_2 x_2 + \ldots \beta_p x_p.$$

Here $p(r|X,\beta)$ is the conditional probability distribution of the response indicator variable r; logit $p = \log \frac{p}{1-p}$ is the logistic function; the x's are known cateogorical or dichotomized numerical variables; and the β's are unknown regression coefficients. The inverse of the estimated response probabilities $[\hat{P}(r|X,\beta)]^{-1}$, stemming from this procedure, constitutes an alternative to the currently employed nonresponse adjustment factors. Variables that are either currently being used or will be used for the procedure include household size, size of residential area, race, family income, age of "householders", and employment status of householders.

A final area slated for future research is that of studying the effects of variability in weighting class response rates on the overall NCS estimation process. Further discussion of this topic will be deferred until the end of the presentation of the final section of the report.

3. Within Household Adjustment

Review of Principal Concerns

Since perceivable changes in the within household nonresponse adjustment procedure were deemed likely to entail substantive procedural modifications, our recommendations in this area are restricted to general encouragement to pursue comprehensively several seemingly promising adjustment or imputation options.

Unlike the household adjustment process, enough relevant data are available for the type Z households to seriously consider item imputation as an alternative to weighting. The objectives of the two procedures could conflict. The weighting approach could result in a set of weighting classes defined by variables with strong functional relationships with unit response status. On the other hand, the selected imputation scheme will seek a set of imputation cells defined by variables thought to be good predictors of the principal survey variable(s). Under an ideal set of survey conditions we are able to define weighting classes (imputation cells) that achieve both objectives. If forced to choose between weighting and imputation, a frequent concern is how to establish a set of criteria that would facilitate the choice. Clearly there are practical considerations that can be easily addressed, such as cost, simplicity, and computing convenience. However, establishing and comparing the statistical properties of the two procedures are not as tractable. The recently completed research effort did not include

those objectives, but we obtained results that may be useful when efforts are directed toward an evaluation of the statistical properties.

Major Findings

The NCS within household nonresponse research focused on three major activities:

1) Identifying potential functional relationships between survey variables and selected covariates and between unit response status and corresponding covariates;

2) Developing logit/probit analysis models for possible use in weighting and/or imputation schemes; and

3) Exploring the potential for type Z households as predictors for the unit nonrespondents or as a source to develop improvements in the household nonresponse adjustment.

A review of some of the characterizations of the nonrespondent (type A and Z households) and interviewed populations selected for the project disclosed that the distributions of these populations differed relative to several major characteristics. The interviewed population was older, more likely to be married, widowed, separated or divorced, and related to the survey reference person. In addition, females responded at a higher rate than males; blacks responded at a lower rate than other racial groups; and the two distributions are similar relative to educational attainment. Recall that the NCS within household nonresponse adjustment cells are defined by age, race and relationship to householder. The observed differences in the distributions of the respondents and nonrespondents over these categories lend support to the manner in which the weighting cells were constructed. However the inclusion or substitution of marital status and sex as potential classifiers warrants further consideration.

In tables 1-6 of the appendix, we can observe that the persons who were victims of personal crime during the first quarter of 1983 were younger (than the nonvictimized survey units), more likely to be unmarried; about as

educated as the rest of the population; and less likely to be related to the reference person. Moreover, males were victimized more than females, but blacks and whites were victimized at about the same rate.

These results suggest the following:

1) The subgroups more likely to be interviewed are less likely to be victimized. Unless this is accounted for in the design, the within household adjustment may be upwardly biasing the victimization estimates.

2) If in general, perceived differences between respondents and nonrespondents extend to personal victimizations, this too is a source of nonresponse adjustment-related bias that should be reviewed.

3) For the marital status categories the large disparity betwen the victimized and nonvictimized percentages suggests the need to determine the advantage of using marital status as a weighting/imputation cell classifier.

Numerous regression computer runs were made, and crosstabulations involving measures of uncertainty and association were developed in an effort to identify relationships between NCS survey variables and other accessible data, and between unit response status and other variables. The variables which frequently surfaced as the variables most related to criminal victimization and response status were family income, relation to reference person, marital status, age, and sex. This speaks rather well for the design of the current within household nonresponse weighting. These variables were in turn used, to varying degrees, to identify logistic regression models. A general investigation of these models is in progress. As we mentioned earlier, the models offer some promise for improvements in estimators of weighting class response/nonresponse rates, and in the construction of weighting classes.

Future Research

Although our commitment to the NCS nonresponse research project has been informally completed, in addition to the subsequent and ongoing research mentioned in section 2, as work schedules merit, we expect to

1) Pursue a general comparative study of weighting and imputation strategies in the context of the NCS.

2) Engage in research on imputation schemes conducive to both weighting and imputation.

3) Complete the evaluation of the existing logit analysis models on an expanded set of research data.

As with the household adjustment there is a concern about the effect of household size on estimates based on the current within household weighting scheme. If the larger households tend to have smaller type Z nonresponse (noninterview) rates, and if household size is also a resonably good predictor of the occurrence of personal victimization, the present NCS within household adjustment scheme permits household size-related biases associated with both differential response patterns and within cell differences between respondents and nonrespondents. Again we urge support of theoretical work and experimentation to adequately describe this problem and to advance remedial techniques.

We also eventually expect to become involved in the study of the effects of nonresponse in the NCS on sampling variability. This is an area that has been talked about extensively, but very few practical results have appeared in the literature.

For a preliminary consideration let n denote the NCS sample size from a population of size N. Associated with each of the N units in the population there is a selection probability Π_i , i= 1, 2,...N. Furthermore, we will

assume that among the n sample units, m are nonrespondents and $n_R = n-m$ are respondents. Thus, the NCS estimator for the population total after adjusting for unit nonresponse takes the following form.

$$\hat{Y}_{NCS} = \sum_{j=1}^{M} \sum_{k=1}^{P} (z_j w_k)^{-1} \sum_{\ell=1}^{n_{Rjk}} \frac{y_{Rjk\ell}}{\pi_{jk\ell}} \qquad (2.1)$$

where for sample units in the kth within household and jth household weighting classes,

$y_{Rjk\ell}$ = value of the ℓ th sample repondent

n_{Rjk} = number of sample respondents

n_{jk} = number of sample cases

z_j = the estimated household response rate

w_k = the estimated within household response rate

$\pi_{jk\ell}$ = selection probability for the ℓ th sample respondent

P = total number of within household nonresponse weighting classes

M = total number of household nonresponse weighting classes.

Implicit in the formation of the NCS nonresponse weighting classes, as well as those for other demographic surveys, are the following assumptions:

1. There is "significant" correlation between the principal survey variables and the covariates used to define noninterview clusters.
2. Within each weighting class $E\ \bar{y}_{Rj} = E\ \bar{y}_{\widetilde{Rj}}$, where $\bar{y}_{Rj}$ and $\bar{y}_{\widetilde{Rj}}$ are the means for the sample respondents and nonrespondents, respectively, in the jth weighting class. Similarly $E\ \bar{y}_{Rk} = E\ \bar{y}_{\widetilde{Rk}}$.

The overall selection probability for the NCS is approximately the same for all units in the population, thus equation (2.1) can be rewritten as

$$(\hat{Y}_{NCS}) = \left(\frac{1}{\pi_o}\right) \sum_{j=1}^{M} \sum_{k=1}^{P} (z_j w_k)^{-1} \sum_{\ell=1}^{n_{Rjk}} y_{Rjk\ell}, \qquad (2.2)$$

where

$$\Pi_{jk\ell} = \pi_o \quad \forall\ j,\ k,\ \text{and}\ \ell.$$

Therefore, assuming that the covariances between the weighted sums associated with different weighting classes are negligible, we have

$$\text{Var}\ (\hat{Y}_{NCS}) = \left(\frac{1}{\Pi_o}\right)^2 \sum_{j=1}^{M} \sum_{k=1}^{P} \text{Var} \sum_{\ell=1}^{n_{Rjk}} (z_j w_k)^{-1}\ y_{Rjk\ell}$$

$$= \left(\frac{1}{\Pi_o}\right)^2 \sum_{j=1}^{M} \sum_{k=1}^{P} \text{Var}\ y''_R\ (z_j w_k)^{-1}, \qquad (2.3)$$

where

$$y''_R = \sum_{\ell=1}^{n_{Rjk}} y_{Rjk\ell}.$$

Using the approximations

$$E\left(\frac{1}{z_j}\right) \doteq \frac{1}{Z_j} + \frac{1-Z_j}{n_j Z^2_j}$$

and

$$\text{Var}\left(\frac{1}{z_j}\right) \doteq \frac{1-Z_j}{n_j Z^3_j},$$

we have

$$\text{Var}\ (z_j w_K)^{-1}\ y''_R = E\ [\text{Var}\ (z_j w_k)^{-1}\ y''_R \mid y''_R, w_k, n_j)]$$

$$+ \text{Var}\ [E(z_j w_k)^{-1}\ y''_R \mid y''_R, w_k, n_j)]$$

$$\doteq E\left[\left(\frac{y_R}{w_k}\right)^2 \left(\frac{1-Z_j}{n_j Z^3_j}\right)\right]$$

$$+ \text{Var}\left[\frac{y''_R}{w_k}\left(\frac{1}{Z_j} + \frac{1-Z_j}{n_j Z^2_j}\right)\right]$$

$$= E\left\{E\left[\left(\frac{y''_R}{w_k}\right)^2 \left(\frac{1-Z_j}{n_j Z^3_j}\right) \mid n_j, n_k, y''_R\right]\right\}$$

$$+ E\left\{\mathrm{Var}\left[\frac{y''_R}{w_k}\left(\frac{1}{z_j} + \frac{1-z_j}{n_j z_j^2}\right)\Big| n_j, n_k, y''_R\right]\right\}$$

$$+ \mathrm{Var}\left\{E\left[\frac{y''_R}{w_k}\left(\frac{1}{z_j} + \frac{1-z_j}{n_j z_j^2}\right)\Big| n_j, n_k, y''_R\right]\right\} \qquad (2.4)$$

Equations (2.3) and (2.4), used in conjunction with accessible ancillary data and empirical research, could provide some indication of the possible effects of the nonresponse weighting scheme on the variability of the survey estimates. Moreover, they could also be used to evaluate the utility of the NCS nonresponse weighting classes relative to the ability to approximate specific levels of accuracy for acceptable costs.

General Conclusion

The results relating to the aspects of the NCS nonresponse adjustment procedures addressed in our research suggest that the methodology currently in use is reasonably good. However with a little more emphasis on the apparent functional relationships which underlie the procedures, slight improvements can be realized. We have therefore suggested modest changes in the criteria used to define both sets of nonresponse weighting classes and the adjustment factors. However, we believe that more significant improvements are possible through the pursuit of the more rigorous approaches to which we have just alluded. The NCS provides a vehicle for a number of interesting estimation research problems. We hope that over the next several years decisions will be made which will facilitate a systematic approach to these problems.

Appendix

Crosstabulation of Relation by Unit Response Status -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONINTERVIEW	INTERVIEW	ROW TOTAL
Relation				
Reference Person	1	310	14868	15178
		2.0	98.0	45.6
		38.5	45.8	
		.9	44.7	
Husband	2	33	569	602
		5.5	94.5	1.8
		4.1	1.8	
		.1	1.7	
Wife	3	106	8201	8307
		1.3	98.7	25.0
		13.2	25.2	
		.3	24.6	
Own Child	4	235	6631	6866
		3.4	96.6	20.6
		29.2	20.4	
		.7	19.9	
Parent	5	4	227	231
		1.7	98.3	.7
		.5	.7	
		.0	.7	
Brother-Sister	6	13	265	278
		4.7	95.3	.8
		1.6	.8	
		.0	.8	
Other Relative	7	32	662	694
		4.6	95.4	2.1
		4.0	2.0	
		.1	2.0	
Non-Relative	8	73	1057	1130
		6.5	93.5	3.4
		9.1	3.3	
		.2	3.2	
Column Total		806	32480	33286
		2.4	97.6	100.0

Crosstabulation of Age by Unit Response Status -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONINTERVIEW	INTERVIEW	ROW TOTAL
Age				
12 to 15	1	43	2653	2696
		1.6	98.4	8.1
		5.3	8.2	
		.1	8.0	
16 to 19	2	105	2657	2762
		3.8	96.2	8.3
		13.0	8.2	
		.3	8.0	
20 to 24	3	121	3273	3394
		3.6	96.4	10.2
		15.0	10.1	
		.4	9.8	
25 to 34	4	162	6612	6774
		2.4	97.6	20.4
		20.1	20.4	
		.5	19.9	
35 to 49	5	190	7051	7241
		2.6	97.4	21.8
		23.6	21.7	
		.6	21.2	
50 to 64	6	135	5799	5934
		2.3	97.7	17.8
		16.7	17.9	
		.4	17.4	
65 and over	7	50	4435	4485
		1.1	98.9	13.5
		6.2	13.7	
		.2	13.3	
Column Total		806	32480	33286
		2.4	97.6	100.0

Crosstabulation of Marital Status by Unit Response Status -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONINTERVIEW	INTERVIEW	ROW TOTAL
Marital Status				
Married	1	419	17922	18341
		2.3	97.7	55.1
		52.0	55.2	
		1.3	53.8	
Widowed	2	15	2283	2298
		.7	99.3	6.9
		1.9	7.0	
		.0	6.9	
Divorced	3	30	1894	1924
		1.6	98.4	5.8
		3.7	5.8	
		.1	5.7	
Separated	4	12	8.5	827
		1.5	98.5	2.5
		1.5	2.5	
		.0	2.4	
Not Married	5	302	9497	9799
		3.1	96.9	29.4
		37.5	29.2	
		.9	28.5	
Residue	8	28	69	97
		28.9	71.1	.3
		3.5	.2	
		.1	.2	
Column Total		806	32480	33286
		2.4	97.6	100.0

Crosstabulation of Sex by Unit Response Status -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONINTERVIEW	INTERVIEW	ROW TOTAL
Sex				
Male	1	523	15111	15634
		3.3	96.7	47.0
		64.9	46.5	
		1.6	45.4	
Female	2	283	17369	17652
		1.6	98.4	53.0
		35.1	53.5	
		.9	52.2	
Column Total		806	32480	33286
		2.4	97.6	100.0

Crosstabulation of Educational Attainment by Unit Response Status - First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONINTERVIEW	INTERVIEW	ROW TOTAL
Educational Attainment				
0 thru 4th	1	12	667	679
		1.8	98.2	2.0
		1.5	2.1	
		.0	2.0	
5th thru 7th	2	25	2155	2180
		1.1	98.9	6.5
		3.1	6.6	
		.1	6.5	
8th	3	50	2345	2395
		2.1	97.9	7.2
		6.2	7.2	
		.2	7.0	
9th thru 11th	4	146	5388	5534
		2.6	97.4	16.6
		18.1	16.6	
		.4	16.2	
12th	5	275	10984	11259
		2.4	97.6	33.8
		34.1	33.8	
		.8	33.0	
1-3 College	6	122	5565	5687
		2.1	97.9	17.1
		15.1	17.1	
		.4	16.7	
4+ College	7	108	5139	5247
		2.1	97.9	15.8
		13.4	15.8	
		.3	15.4	
Residue	8	68	237	305
		22.3	77.7	.9
		8.4	.7	
		.2	.7	
Column Total		806	32480	33286
		2.4	97.6	100.0

Crosstabulation of Race by Unit Response Status -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONINTERVIEW	INTERVIEW	ROW TOTAL
Race				
White	1	636	28347	28983
		2.2	97.8	87.1
		78.9	87.3	
		1.9	85.2	
Black	2	160	3397	3557
		4.5	95.5	10.7
		19.9	10.5	
		.5	10.2	
Indian, Aleut, Eskimo	3	1	130	131
		.8	99.2	.4
		.1	.4	
		.0	.4	
Asian, Pacific Islander	4	9	606	615
		1.5	98.5	1.8
		1.1	1.9	
		.0	1.8	
Column Total		806	32480	33286
		2.4	97.6	100.0

Crosstabulation of Relation by Personal Crime -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONVICTIM	VICTIM	ROW TOTAL
Relation				
Reference Person	1	14471	707	15178
		95.3	4.7	45.6
		45.8	42.4	
		43.5	2.1	
Husband	2	586	16	602
		97.3	2.7	1.8
		1.9	1.0	
		1.8	.0	
Wife	3	8036	271	8307
		96.7	3.3	25.0
		25.4	16.3	
		24.1	.8	
Own Child	4	6370	496	6866
		92.8	7.2	20.6
		20.1	29.8	
		19.1	1.5	
Parent	5	225	6	231
		97.4	2.6	.7
		.7	.4	
		.7	.0	
Brother-Sister	6	267	11	278
		96.0	4.0	.8
		.8	.7	
		.8	.0	
Other Relative	7	653	41	694
		94.1	5.9	2.1
		2.1	2.5	
		2.0	.1	
Non-Relative	8	1012	118	1130
		89.6	10.4	3.4
		3.2	7.1	
		3.0	.4	
Column Total		31620	1666	33286
		95.0	5.0	100.0

Crosstabulation of Age by Personal Crime -
First Quarter, 1983

Age	COUNT / ROW PCT / COL PCT / TOT PCT	NONVICTIM	VICTIM	ROW TOTAL
12 to 15	1	2477	219	2696
		91.9	8.1	8.1
		7.8	13.1	
		7.4	.7	
16 to 19	2	2524	238	2762
		91.4	8.6	8.3
		8.0	14.3	
		7.6	.7	
20 to 24	3	3088	306	3394
		91.0	9.0	10.2
		9.8	18.4	
		9.3	.9	
25 to 34	4	6371	403	6774
		94.1	5.9	20.4
		20.1	24.2	
		19.1	1.2	
35 to 49	5	6953	288	7241
		96.0	4.0	21.8
		22.0	17.3	
		20.9	.9	
50 to 64	6	5783	151	5934
		97.5	2.5	17.8
		18.3	9.1	
		17.4	.5	
65 and over	7	4424	61	4485
		98.6	1.4	13.5
		14.0	3.7	
		13.3	.2	
Column Total		31620	1666	33286
		95.0	5.0	100.0

Crosstabulation of Marital Status by Personal Crime -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONVICTIM	VICTIM	ROW TOTAL
Marital Status				
Married	1	17694	647	18341
		96.5	3.5	55.1
		56.0	38.8	
		53.2	1.9	
Widowed	2	2260	38	2298
		98.3	1.7	6.9
		7.1	2.3	
		6.8	.1	
Divorced	3	1802	122	1924
		93.7	6.3	5.8
		5.7	7.3	
		5.4	.4	
Separated	4	766	61	827
		92.6	7.4	2.5
		2.4	3.7	
		2.3	.2	
Not Married	5	9003	796	9799
		91.9	8.1	29.4
		28.5	47.8	
		27.0	2.4	
Residue	8	95	2	97
		97.9	2.1	.3
		.3	.1	
		.3	.0	
Column Total		31620	1664	33286
		95.0	5.0	100.0

Crosstabulation of Sex by Personal Crime -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONVICTIM	VICTIM	ROW TOTAL
Sex				
Male	1	14761	873	15634
		94.4	5.6	47.0
		46.7	52.4	
		44.3	2.6	
Female	2	16859	793	17652
		95.5	4.5	53.0
		53.3	47.6	
		50.6	2.4	
Column		31620	1666	33286
Total		95.0	5.0	100.0

Crosstabulation of Educational Attainment by Personal Crime - First Quarter, 1983

	COUNT / ROW PCT / COL PCT / TOT PCT	NONVICTIM	VICTIM	ROW TOTAL
Educational Attainment				
0 thru 4th	1	670	9	679
		98.7	1.3	2.0
		2.1	.5	
		2.0	.0	
5th thru 7th	2	2081	99	2180
		95.5	4.5	6.5
		6.6	5.9	
		6.3	.3	
8th	3	2301	94	2395
		96.1	3.9	7.2
		7.3	5.6	
		6.9	.3	
9th thru 11th	4	5197	337	5534
		93.9	6.1	16.6
		16.4	20.2	
		15.6	1.0	
12th	5	10797	462	11259
		95.9	4.1	33.8
		34.1	27.7	
		32.4	1.4	
1-3 College	6	5364	323	5687
		94.3	5.7	17.1
		17.0	19.4	
		16.1	1.0	
4^{+} College	7	4914	333	5247
		93.7	6.3	15.8
		15.5	20.0	
		14.8	1.0	
Residue	8	296	9	305
		97.0	3.0	.9
		.9	.5	
		.9	.0	
Column Total		31620	1666	33286
		95.0	5.0	100.0

Crosstabulation of Race by Personal Crime -
First Quarter, 1983

	COUNT ROW PCT COL PCT TOT PCT	NONVICTIM	VICTIM	ROW TOTAL
Race				
White	1	27533	1450	28983
		95.0	5.0	87.1
		87.1	87.0	
		82.7	4.4	
Black	2	3381	176	3557
		95.1	4.9	10.7
		10.7	10.6	
		10.2	.5	
Indian, Aleut, Eskimo	3	117	14	131
		89.3	10.7	.4
		.4	.8	
		.4	.0	
Asian, Pacific Islander	4	587	26	615
		95.8	4.2	1.8
		1.9	1.6	
		1.8	.1	
Column Total		31620	1666	33286
		95.0	5.0	100.0

Attachment A

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

February 1, 1985

MEMORANDUM FOR Leroy Bailey
Principal Researcher
Statistical Research Division

From: John Blondell
Statistical Research Division

Subject: Noninterview Adjustment Research for NCS Redesign: MEMO 1 - Geographic Definition of Housing Unit Noninterview Adjustment Clusters

INTRODUCTION

No new noninterview adjustment strategy is envisioned here. As is currently done in the NCS (undated, mimeographed Bureau of the Census document entitled "National Crime Survey, National Sample, Survey Documentation," pages (I)2-2&3, and pages (I)I-2 thru 5): (a) noninterview adjustment clusters and, within them, noninterview adjustment cells are formed on the basis of geographic and characteristics data; (b) a noninterview adjustment factor is computed for each cell; and (c) the factor is applied, as a case weight, to each of the interviewed cases within the cell.

While the noninterview adjustment strategy is the same as that in current use, numerous changes are made in (the details of) its implementation. The first change, and perhaps the main one, is to follow recent CPS redesign work (November 2, 1984 memorandum from Charles D. Jones to Thomas C. Walsh entitled "1980 CPS Redesign: Specifications for Computing Noninterview Adjustment Factors Beginning January 1985) in placing greater and initial emphasis on the geographic definition of clusters. In the NCS source, cited above, "within household noninterview factors" are defined separately for each region, while no mention of geographic level is made in discussing "household noninterview factors."

Indebtedness to Joseph Grill and John Powell for obtaining the NCS source data, to Albert Wong and Zigmund Krivitsky for doing the file design and manipulations, and to Lynn Weidman for an introduction to BMDP, is gratefully acknowledged.

CROSS CLASSIFICATION APPROACH TO CLUSTER AND CELL FORMATION

The veracity of the first part of the noninterview adjustment strategy, outlined above, is dependent upon the adequacy of the data available for forming clusters and cells, as well as on the methodology used to form them. The fundemental aim of the first part of the strategy is to classify both interviewed and A noninterview housing units into the same set of clusters and cells, so that the housing units are more similar (alike) within then they are between (among) clusters and cells. Implementation of this aim necessitates the assumption that the NCS provided data on both kinds of cases are, in fact, adequate for the purpose. And, this assumption, in turn, assumes an underlying commonness among the cases classified together, one that exists in spite of the interview status differences among them. Since these assumptions cannot be empirically verified with the available data, they are accepted as working premises, so that cluster and cell formation can proceed.

Cluster and cell formation is treated as a simultaneous, hierarchic, multiple cross classification problem, as follows: (a) clusters are defined in terms of geographic categories (in this memorandum); (b) within the geographic categories, clusters are further defined in terms of residence categories (in the next memorandum); and (c) within the geographic-residence categories, clusters are further defined in terms of SMSA size categories (in the third memorandum). What is envisioned, then, is a complex cross classification of interviewed plus A noninterview housing units. The available NCS data, for the first quarter of 1983, include 30,400 interviewed housing units and 1,055 A noninterview housing units, which gives and "A" NONINTERVIEW RATE (ANIR) of 3.4 [= 100 (1,055/(30,400 + 1,055)].

At each stage of cross classification the following three factors are taken into account in cluster or cell formation: (a) DANIR, i.e., the absolute difference in ANIR between categories of the classifier being introduced; (b) the cluster or cell frequency, i.e., the number of cases (interviewed plus A noninterview housing units) in the clusters

or cells; and (c) the order explicit in the categories of the classifier being introduced, i.e., the geographic contiguity of states, the dimensions of the definition of the residence categories and the magnitude of the SMSA size categories. In actuality, the data at each stage of cross classification are inspected, and classification into clusters and cells is done on a trial and error basis. During this process, in which the three factors may provide inconsistent (conflicting) prescriptions for cluster and cell formation, lower limits or criteria for their use evolve, and the relative importance of the factors may be judgementally changed. In general, at a given stage of cross classification, clusters and cells are first defined in terms of DANIR, and then, if necessary, the initial definitions are modified by frequency and order considerations. Since the process of cluster and cell formation, at each stage of cross tabulation, is complex, empirical and judgmental, it will be presented in detail so that the reader can form his own reaction to its efficacy.

The three factors of cluster and cell formation guide a pragmatic effort to be true to the enabling assumptions mentioned at the top of this section. Where clusters or cells are formed across categories with large DANIR, very different frequency and without regard to their explicit ordering, one might indeed intuitively think that the implementation voids the assumptions upon which it is based, even as an acceptable, practical "make do."

REGION AND DIVISION AS CLASSIFIERS

The data are presented in table 1. The criterion used in reading the data is a DANIR = 0.5 +, i.e., an absolute difference between regions and divisions of 0.5 or more in the ANIR. The ANIR is the "A" NONINTERVIEW RATE, which is shown in the last column of the table. The ANIR is defined as the quotient of the number of A noninterview housing units divided by the sum of the number of interviewed housing units plus the number of A noninterview housing units, times 100. The region data are as follows:

Region	ANIR	DANIR
Northeast	3.4	0.1
Midwest	3.5	0.3
South	3.2	0.3
West	3.5	

Since the DANIR criterion is not met, region is considered an ineffective classifier. The interpretation is that below criterion differences indicate the interviewed and A noninterview housing units are not more similar (alike) within regions then between regions.

The division data are as follows:

Division	ANIR	DANIR
New England	3.7	0.5
Middle Atlantic	3.2	
East North Central	3.9	1.5
West North Central	2.4	
South Atlantic	3.2	0.6
East South Central	2.6	0.8
West South Central	3.4	
Mountain	2.5	1.3
Pacific	3.8	

Since the DANIR criterion is always met, division is considered an effective classifier. The interpretation is that criterion level differences indicate interviewed and A noninterview housing units are more similar within then among divisions, a finding which is hidden by the regional classification.

STATE AS A CLASSIFIER

The frequency (base 2) and ANIR ("A" NONINTERVIEW RATE) data are presented in table 2. Since it was found above that each division (within its respective region) is an

effective classifier, each state (grouping) is defined within its respective division. In otherwords, state is a geographic subclassifier within division. DANIR, frequency and geographic contiguity are taken into account in defining state groupings, but their application is tailored to the data for each division.

The New England data are ordered by ANIR as follows:

STATE	ANIR	DANIR	Frequency	Class
Vermont	5.1	0.1	79	I
Massachusetts	5.0	1.7	781	I
New Hampshire	3.3	0.2	121	II
Rhode Island	3.1	0.4	131	II
Connecticut	2.7	0.9	550	II
Maine	1.8		224	II

Vermont and Massachusetts are combined to form class I since the DANIR = 0.1 and they are contiguous. New Hampshire, Rhode Island and Connecticut are combined to form class II, in spite of geographic discontiguity, since the DANIR's are less then 0.5 among them. Maine is added, in spite of a 0.9 DANIR with Connecticut (since geographic contiguity is already breached) to maintain frequency.

The Middle Atlantic data are ordered by ANIR as follows:

State	ANIR	DANIR	Frequency	Class
New York	4.2	0.8	2,329	I
New Jersey	3.4	1.8	1,080	II
Pennsylvania	1.6		1,567	III

Since the DANIR's exceed 0.5 and the frequencies are large, each state defines a class.

The East North Central data are ordered by A NIR as follows:

State	A NIR	D A NIR	Frequency	Class
Illinois	4.8	0.7	1,445	I
Ohio	4.1	0.0	1,545	II
Indiana	4.1	0.3	774	III
Michigan	3.8	2.0	1,348	IV
Wisconsin	1.8		653	V

In spite of D A NIR's of 0.0 and 0.3, and even though geographic contiguity would be preserved, Ohio, Indiana and Michigan each define a class, since the frequencies are large. At the next stage of cross classification, residence is introduced and clusters are defined on the basis of division, state and residence. At that juncture, it may be appropriate to combine any two or all of these states.

The West North Central data are ordered by A NIR as follows:

State	A NIR	D A NIR	Frequency	Class
Nebraska	3.8	1.0	213	I
Kansas	2.8	0.1	317	I
Missouri	2.7	0.1	748	I
Iowa	2.6	0.9	423	I
North Dakota	1.7	0.5	121	II
South Dakota	1.2	0.0	86	II
Minnesota	1.2		514	II

Nebraska is combined with the contiguous states of Kansas, Missouri and Iowa to form a class, in spite of a 1.0 D A NIR with Kansas, to maintain frequency. North Dakota is combined with the contiguous states of South Dakota and Minnesota, in spite of a 0.5 D A NIR with South Dakota, to maintain frequency.

The South Atlantic data are ordered by ANIR as follows:

State	ANIR	DANIR	Frequency	Class
North Carolina	4.9	0.9	792	I
District of Columbia	4.0	0.4	101	II
Virginia	3.6	0.3	781	II
Delaware	3.3	0.4	92	III
South Carolina	2.9	0.1	341	IV
Maryland	2.8	0.0	667	III
Georgia	2.8	0.1	773	IV
Florida	2.7	0.8	1,318	V
West Virginia	1.5		194	III

The District of Columbia is combined with Virginia to maintain frequency without geographic discontiguity. Delaware is combined with Maryland and West Virginia to preserve geographic contiguity and maintain frequency, in spite of a 0.5 DANIR with Maryland and a 1.8 DANIR with West Virginia. South Carolina is combined with Georgia to maintain frequency and geographic contiguity, since the DANIR is 0.1. In spite of DANIR's of 0.1 and 0.2 with Georgia and South Carolina, and even though geographic continuity would be preserved, Florida defines a class, since its frequency is large. In spite of a 0.1 DANIR with Florida and South Carolina and a 0.0 DANIR with Georgia, the Maryland (class) is not combined with them since the frequency is large and geographic contiguity would be breached. At the next stage of cross classification, when residence is introduced, it may be appropriate to combine any two or all of these classes.

The East South Central data are ordered by ANIR as follows:

State	ANIR	DANIR	Frequency	Class
Mississippi	4.1	1.5	365	I
Kentucky	2.6	0.5	494	I
Tennessee	2.1	0.1	578	II
Alabama	2.0		508	II

Mississipi and Kentucky are combined, in spite of a 1.5 DANIR and geographic discontiguity, to increase frequency. Tennessee is combined with Alabama since the DANIR is 0.1 and they are contiguous.

The West South Central data are ordered by ANIR as follows:

State	ANIR	DANIR	Frequency	Class
Louisiana	4.7	0.7	506	I
Oklahoma	4.0	0.6	302	I
Texas	3.4	2.0	1,997	II
Arkansas	1.4		370	II

Louisiana and Oklahoma are combined, in spite of a 0.7 DANIR and geographic discontinuity, to maintain frequency. Texas and Arkansas, contiguous states, are combined in spite of a 2.0 DANIR, to maintain frequency.

The Mountain data are ordered by ANIR as follows:

State	ANIR	DANIR	Frequency	Class
Montana	3.6	0.0	112	I
Colorado	3.6	1.2	418	I
Wyoming	2.4	0.3	42	II
Idaho	2.1	0.0	190	II
Arizona	2.1	0.0	477	II
Utah	2.1	0.4	144	II
New Mexico	1.7	0.2	178	II
Nevada	1.5		67	II

*Montana and Colorado are combined, in spite of geographic discontiguity, and because of a 0.0 DANIR, to increase frequency. The remaining states are contiguous and lack of DANIR of 0.5 or more among them.

The Pacific data are ordered by ANIR as follows:

State	ANIR	DANIR	Frequency	Class
Washington	4.0	0.0	599	I
California	4.0	0.1	3,396	II
Hawaii	3.9	0.9	103	II
Alaska	3.0	0.2	33	III
Oregon	2.8		468	III

Hawaii is combined with California to preserve frequency, and the same holds for combining Alaska with Oregon. Even though the DANIR is 0.0, Washington is not combined with California, since the frequency is large and geographic contiguity would be breached. At the next stage of cross classification, when residence is introduced, it may be appropriate to combine the two.

SUMMARY

A summary of these results is a list of the 26 states (groupings) which define the geographic context of subsequent noninterview adjustment work, as follows:

State (groupings)	"A" NONINTERVIEW RATE	Number of interviewed plus A noninterview housing units
NEW ENGLAND		
Vermont, Massachusetts	5.0	860
New Hampshire, Rhode Island, Connecticut, Maine	2.6	1,026
MIDDLE ATLANTIC		
New York	4.2	2,329
New Jersey	3.4	1,080
Pennsylvania	1.6	1,567
EAST NORTH CENTRAL		
Illinois	4.8	1,445
Ohio	4.1	1,545
Indiana	4.1	774
Michigan	3.8	1,348
Wisconsin	1.8	653
WEST NORTH CENTRAL		
Nebraska, Kansas, Missouri, Iowa	2.8	1,701
Minnesota, North Dakota, South Dakota	1.2	721
SOUTH ATLANTIC		
North Carolina	4.9	792
District of Columbia, Virginia	3.6	882
South Carolina, Georgia	2.9	1,114
Florida	2.7	1,318
Delaware, Maryland, West Virginia	2.6	953
EAST SOUTH CENTRAL		
Mississippi, Kentucky	3.3	859
Tennessee, Alabama	2.0	1,086
WEST SOUTH CENTRAL		
Louisiana, Oklahoma	4.5	808
Texas, Arkansas	3.1	2,367
MOUNTAIN		
Montana, Colorado	3.6	530
Wyoming, Idaho, Arizona, Utah, New Mexico, Nevada	2.0	1,098
PACIFIC		
Washington	4.0	599
California, Hawaii	4.0	3,499
Alaska, Oregon	2.8	501

Table 1. INTERVIEW STATUS PERCENT DISTRIBUTION AND "A" NONINTERVIEW RATE BY REGION AND DIVISION FOR FIRST QUARTER 1983

Region and division	Base[b]	Interview status[a]				Base2[c]	"A" NONINTERVIEW RATE
		Interviews	A noninterviews	B noninterviews	C noninterview		
NATION	(36,287)	83.8	2.9	12.7	0.6	(31,455)	3.4
NORTHEAST	(7,921)	83.7	2.9	12.9	0.5	(6,862)	3.4
New England	(2,174)	83.5	3.2	12.9	0.4	(1,886)	3.7
Middle Atlantic	(5,747)	83.8	2.8	12.9	0.5	(4,976)	3.2
MIDWEST	(9,266)	85.3	3.1	11.2	0.4	(8,187)	3.5
East North Central	(6,503)	85.2	3.5	10.9	0.4	(5,765)	3.9
West North Central	(2,763)	85.6	2.0	11.9	0.5	(2,422)	2.4
SOUTH	(12,075)	81.6	2.7	14.9	0.8	(10,179)	3.2
South Atlantic	(5,971)	82.0	2.7	14.5	0.8	(5,059)	3.2
East South Central	(2,276)	83.2	2.2	13.7	0.9	(1,945)	2.6
West South Central	(3,828)	80.1	2.8	16.3	0.8	(3,175)	3.4
WEST	(7,025)	85.5	3.1	10.7	0.7	(6,227)	3.5
Mountain	(1,889)	84.0	2.2	13.1	0.7	(1,628)	2.5
Pacific	(5,136)	86.1	3.5	9.8	0.6	(4,599)	3.8

[a] A noninterviews are occupied housing units, eligible for the survey, for which an interview could not be completed.
B noninterviews are unoccupied housing units, or those occupied by persons where usual residence is elsewhere.
C noninterviews are housing units in the sample by mistake, or no longer in existence, or no longer inhabitable.

[b] Base 1, the base of the interview status percent distribution, is the expected number of housing units in the sample.

[c] Base 2, the base of the "A" NONINTERVIEW RATE, is the number of interviewed housing units plus the number of A noninterview housing units.

[d] "A" NONINTERVIEW RATE $= 100\left(\frac{\text{no. of A noninterviewed HU's}}{\text{no. of interviewed HU's + no. of A noninterviewed HU's}}\right)$

Table 2. INTERVIEW STATUS DISTRIBUTION AND "A" NONINTERVIEW RATE BY STATE FOR FIRST QUARTER 1983

Interview status[a]	State					
NEW ENGLAND	ME	NH	VT	MA	RI	CT
Base 1[b]	(314)	(164)	(108)	(826)	(158)	(604)
Interviews	70.1	71.4	69.4	89.8	80.4	88.6
A noninterviews	1.3	2.4	3.7	4.7	2.5	2.5
B noninterviews	28.3	25.0	26.9	4.9	17.1	8.9
C noninterviews	0.3	1.2	0.0	0.6	0.0	0.0
Base 2[c]	(224)	(121)	(79)	(781)	(131)	(550)
"A" NONINTERVIEW RATE[d]	1.8	3.3	5.1	5.0	3.1	2.7

MIDDLE ATLANTIC	NY	NJ	PA
Base 1[b]	(2,733)	(1,199)	(1,815)
Interviews	81.6	87.0	85.0
A noninterviews	3.6	3.1	1.4
B noninterviews	14.0	9.6	13.3
C noninterviews	0.8	0.3	0.3
Base 2[c]	(2,329)	(1,080)	(1,567)
"A" NONINTERVIEW RATE[d]	4.2	3.4	1.6

EAST NORTH CENTRAL	OH	IN	IL	MI	WI
Base 1[b]	(1,698)	(919)	(1,605)	(1,564)	(717)
Interviews	87.3	80.7	85.7	82.9	89.4
A noninterviews	3.7	3.5	4.3	3.3	1.7
B noninterviews	8.6	15.2	9.4	13.7	8.5
C noninterviews	0.4	0.6	0.6	0.1	0.4
Base 2[c]	(1,545)	(774)	(1,445)	(1,348)	(653)
"A" NONINTERVIEW RATE[d]	4.1	4.1	4.8	3.8	1.8

Table 2. INTERVIEW STATUS DISTRIBUTION AND "A" NONINTERVIEW RATE BY STATE FOR FIRST QUARTER 1983 -Continued

WEST NORTH CENTRAL	MN	IA	MO	ND	SD	NE	KS
Base 1[b]	(581)	(474)	(888)	(133)	(106)	(243)	(338)
Interviews	87.4	86.9	82.0	89.5	80.2	84.4	91.1
A noninterviews	1.0	2.3	2.2	1.5	0.9	3.3	2.7
B noninterviews	11.2	10.4	15.1	9.0	18.9	11.5	5.9
C noninterviews	0.4	0.4	0.7	0.0	0.0	0.8	0.3
Base 2[c]	(514)	(423)	(748)	(121)	(86)	(213)	(317)
"A" NONINTERVIEW RATE[d]	1.2	2.6	2.7	1.7	1.2	3.8	2.8

SOUTH ATLANTIC	DE	MD	DC	VA	WV	NC	SC	GA	FL
Base 1[b]	(119)	(712)	(121)	(873)	(237)	(931)	(424)	(872)	(1,682)
Interviews	74.8	91.0	80.2	86.3	80.6	80.9	78.1	86.1	76.2
A noninterviews	2.5	2.7	3.3	3.2	1.3	4.2	2.3	2.5	2.1
B noninterviews	20.2	6.2	16.5	10.2	16.0	13.8	18.9	10.8	20.6
C noninterviews	2.5	0.1	0.0	0.3	2.1	1.1	0.7	0.6	1.1
Base 2[c]	(92)	(667)	(101)	(781)	(194)	(792)	(314)	(773)	(1,318)
"A" NONINTERVIEW RATE[d]	3.3	2.8	4.0	3.6	1.5	4.9	2.9	2.8	2.7

EAST SOUTH CENTRAL	KY	TN	AL	MS
Base 1[b]	(570)	(676)	(595)	(435)
Interviews	84.4	83.7	83.7	80.5
A noninterviews	2.3	1.8	1.7	3.4
B noninterviews	12.4	13.9	13.1	15.6
C noninterviews	0.9	0.6	1.5	0.5
Base 2[c]	(494)	(578)	(508)	(365)
"A" NONINTERVIEW RATE[d]	2.6	2.1	2.0	4.1

Table 2. INTERVIEW STATUS DISTRIBUTION AND "A" NONINTERVIEW RATE BY STATE FOR FIRST QUARTER 1983 - Continued

WEST SOUTH CENTRAL	AR	LA	OK	TX
Base 1[b]	(428)	(619)	(339)	(2,442)
Interviews	85.3	77.8	85.6	79.0
A noninterviews	1.2	3.9	3.5	2.8
B noninterviews	12.4	17.8	10.6	17.4
C noninterviews	1.1	0.5	0.3	0.8
Base 2[c]	(370)	(506)	(302)	(1,997)
"A" NONINTERVIEW RATE[d]	1.4	4.7	4.0	3.4

MOUNTAIN	MT	ID	WY	CO	NM	AZ	UT	NV
Base 1[b]	(140)	(215)	(43)	(464)	(194)	(590)	(166)	(77)
Interviews	77.1	86.5	95.4	86.9	90.2	79.2	84.9	85.7
A noninterviews	2.9	1.9	2.3	3.2	1.5	1.7	1.8	1.3
B noninterviews	20.0	10.2	2.3	9.5	6.7	18.6	11.5	13.0
C noninterviews	0.0	1.4	0.0	0.4	1.6	0.5	1.8	0.0
Base 2[c]	(112)	(190)	(42)	(418)	(178)	(477)	(144)	(67)
"A" NONINTERVIEW RATE[d]	3.6	2.1	2.4	3.6	1.7	2.1	2.1	1.5

PACIFIC	WA	OR	CA	AK	HI
Base 1[b]	(718)	(534)	(3,728)	(42)	(114)
Interviews	80.1	85.2	87.5	76.2	86.8
A noninterviews	3.3	2.4	3.6	2.4	3.5
B noninterviews	15.2	11.6	8.4	21.4	8.8
C noninterviews	1.4	0.8	0.5	0.0	0.9
Base 2[c]	(599)	(468)	(3,396)	(33)	(103)
"A" NONINTERVIEW RATE[d]	4.0	2.8	4.0	3.0	3.9

[a] A noninterviews are occupied housing units, eligible for the survey, for which an interview could not be completed.
B noninterviews are unoccupied housing units, or those occupied by persons where usual residence is elsewhere.
C noninterviews are housing units in the sample by mistake, or no longer in existence, or no longer inhabitable.

[b] Base 1, the base of the interview status percent distribution, is the expected number of housing units in the sample.

[c] Base 2, the base of the "A" NONINTERVIEW RATE, is the number of interviewed housing units plus the number of A noninterview housing units.

[d] $$\text{"A" NONINTERVIEW RATE} = 100\left(\frac{\text{no. of A noninterviewed HU's}}{\text{no. of interviewed HU's + no. of A noninterviewed HU's}}\right)$$

Attachment B

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

February 27, 1985

MEMORANDUM FOR Leroy Bailey
Principal Researcher
Statistical Research Division

From: John Blondell
Statistical Research Division

Subject: Noninterview Adjustment Research for NCS Redesign:
MEMO 2 - Definition of Housing Unit Noninterview Adjustment Clusters by State and Residence

INTRODUCTION

This memorandum continues the work done in MEMO 1. To the clusters defined in terms of state (groupings) in that memorandum, subclassification by residence is added in this memorandum, so that noninterview adjustment clusters are defined by residence categories within state.

The residence source variable offers two dimensions for ordering the residence categories of a given state as follows:

	All	Urban	Rural
All		U	R
SMSA	S		
CC	Sc	Uc	
Not CC	Snc	Unc	
Not SMSA	NS		

with the SMSA category further dichotomized as central city/not central city.

CHOICE OF RESIDENCE DIMENSION

The data base, for the state-by-state choice of residence dimension, is presented in table 1, which gives the ANIR ("A" NONINTERVIEW RATE) and the base (denominator) of the ANIR for every possible residence category, for every state.

Since it is preferable to follow the lead of already implemented CPS redesign work (November 2, 1984 memorandum from Charles D. Jones to Thomas C. Walsh entitled "1980 CPS Redesign: Specifications for Computing Noninterview Adjustment Factors Beginning January 1985"), priority is given to the use of the SMSA/not SMSA dimension, over the urban/rural dimension, unless there is clear evidence to the contrary. The clear, contrary evidence, indicating that the urban/rural rather than the SMSA/not SMSA dimension should be used for a given state, involves two criteria, both of which must be met. Each criterion is the result of a comparison. First, the urban minus rural DANIR (the absolute difference in the "A" NONINTERVIEW RATE) must exceed the SMSA minus not SMSA DANIR for the whole state. (In terms of the insert on the first page, the absolute value of U minus R must exceed S minus NS.) And, second, the urban central city minus not central city DANIR must exceed the state central city minus not central city DANIR. (In terms of the insert on the first page, the absolute value of Uc minus Unc must exceed Sc minus Snc.) The results of these two comparisons and the choice of the residence dimension to be used in classification for each state are presented in table 2. Note (last column of table 2) that in New Jersey, Ohio, District of Columbia-Virginia, Florida, Tennessee-Alabama, and Wyoming-Idaho-Arizona-Utah-New Mexico-Nevada, the evidence is clear for using the urban/rural instead of the SMSA/not SMSA dimension, for defining residence categories.

CHOICE OF INDIVIDUAL STATE RESIDENCE CATEGORIES

More often then not, the dimension of residence classification indicated in the last column of table 2 is the best one for forming residence categories for the given state. It seems unnecessary to discuss the choice of residence categories in states where this is true. The base data are reported in table 1 and, what the residence categories are, is reported in table 3. It is only where this is not true, or where combining of categories proves necessary, that the residence category formation process of given, individual states is discussed below. The three factors (identical to those used in MEMO 1), taken

into account in the individual state residence category formation process are: (a) DANIR, i.e., the absolute difference in ANIR ("A" NONINTERVIEW RATE) between residence categories; (b) category frequency, i.e., the number of interviewed plus A noninterviewed housing units in the category; and (c) the order explicit in the residence categories.

The New Jersey data (table 1) by urban/rural are combined, in spite of DANIR's of 0.7 (between urban central city and not central city) and of 1.7 (between rural SMSA-not cc and not SMSA), to maintain frequency, as follows:

Residence	ANIR	DANIR	Base
Urban, SMSA	3.8	0.9	654
Urban, not SMSA	4.7	3.4	190
Rural	1.3		236

The Ohio data (table 1) by urban/rural are combined, in spite of DANIR's of 0.5 (between urban SMSA, not central city and not SMSA) and of 0.3 (between rural SMSA-not cc and not SMSA), to maintain frequency, as follows:

Residence	ANIR	DANIR	Base
Urban, SMSA, cc	3.8	1.1	450
Urban, SMSA, not cc and not SMSA	4.9	2.0	716
Rural	2.9		379

The Wisconsin data (table 1) for total SMSA, not cc and not SMSA are combined, in spite of adequate frequencies, because of a 0.0 DANIR, as follows:

Residence	ANIR	DANIR	Base
SMSA, cc	0.4	2.2	227
SMSA, not cc and not SMSA	2.6		426

The North Dakota-South Dakota-Minnesota data (table 1) for SMSA, central city and not central city are combined, in spite of a 0.6 DANIR, to maintain frequency, as follows:

Residence	ANIR	DANIR	Base
SMSA	0.8	0.9	371
Not SMSA	1.7		350

The North Carolina data (table 1) for SMSA, central city and not central city are combined, in spite of a 4.2 DANIR, to maintain frequency, as follows:

Residence	ANIR	DANIR	Base
SMSA	5.8	1.6	359
Not SMSA	4.2		433

The District of Columbia-Virginia data (table 1) by urban/rural are combined, in spite of DANIR's of 0.6 (between urban, SMSA, not central city and not SMSA) and of 0.4 (between rural SMSA-not cc and not SMSA), to maintain frequency, as follows:

Residence	ANIR	DANIR	Base
Urban, SMSA, cc	3.5	1.3	259
Urban, SMSA, not cc and not SMSA	4.8	2.4	330
Rural	2.4		293

The South Carolina-Georgia data (table 1) for total, SMSA, cc and not cc are combined, in spite of a DANIR of 0.8, to maintain frequency. Since this results in a DANIR of 0.1 between total, SMSA and not SMSA, and in spite of adequate frequency, these two categories are combined, leaving no residence categories, but only the state total.

The Florida data (table 1) for urban, SMSA, not cc and not SMSA are combined, in spite of a 1.2 DANIR, to maintain frequency as follows:

Residence	ANIR	DANIR	Base
Urban, SMSA, cc	2.0	0.6	295
Urban, SMSA, not cc and not SMSA	2.6	0.9	625
Rural	3.5		398

The Delaware-Maryland-West Virginia data (table 1) for total, SMSA, central city, and not cc are combined, in spite of a 2.1 DANIR, to maintain frequency as follows:

Residence	ANIR	DANIR	Base
SMSA	2.9	0.8	626
not SMSA	2.1		327

The Mississippi-Kentucky data (table 1) for total, SMSA, central city and not cc are combined, in spite of a 2.0 DANIR, to maintain frequency as follows:

Residence	ANIR	DANIR	Base
SMSA	4.1	1.4	339
Not SMSA	2.7		520

The Tennessee-Alabama data (table 1) for urban, SMSA, central city and not cc are combined, in spite of a 2.6 DANIR, to maintain frequency as follows:

Residence	ANIR	DANIR	Base
Urban, SMSA	2.0	1.5	357
Urban, not SMSA	3.5	1.1	227
Rural	1.4		502

The Louisiana-Oklahoma data (table 1) for total, SMSA, central city and not cc are combined, in spite of adequate frequencies, because of a 0.0 DANIR as follows:

Residence	ANIR	DANIR	Base
SMSA	5.1	1.6	491
Not SMSA	3.5		317

The Montana-Colorado data (table 1) for total, SMSA, not cc and not SMSA are combined, in spite of a 0.7 DANIR, to maintain frequency as follows:

Residence	ANIR	DANIR	Base
SMSA, cc	3.9	0.5	232
SMSA, not cc and not SMSA	3.4		298

The Wyoming-Idaho-Arizona-Utah-New Mexico-Nevada data (table 1) for urban, SMSA, not cc and not SMSA are combined, in spite of adequate frequencies, because of a 0.3 DANIR as follows:

Residence	ANIR	DANIR	Base
Urban, SMSA, cc	2.1	1.3	292
Urban, SMSA, not cc and not SMSA	0.8	3.1	497
Rural	3.9		309

The Washington data (table 1) for total, SMSA, central city, and not cc are combined, in spite of a 1.2 DANIR, to maintain frequency as follows:

Residence	ANIR	DANIR	Base
SMSA	3.1	2.7	391
Not SMSA	5.8		208

The Alaska-Oregon data (table 1) for total, SMSA, central city and not cc are combined, in spite of a 2.0 DANIR, to maintain frequency as follows:

Residence	ANIR	DANIR	Base
SMSA	2.1	1.6	282
Not SMSA	3.7		219

SUMMARY

A summary of these results (table 3) is a listing of the 26 states (groupings) by the residence category pattern used to define noninterview adjustment clusters, as follows:

Residence category pattern	State
SMSA, cc/SMSA, not cc/ not SMSA (3 categories)	Vermont-Massachusetts/New Hampshire-Rhode Island-Connecticut-Maine/ New York/Pennsylvania/Illinois/Indiana/ Michigan/Nebraska-Kansas-Missouri-Iowa/Texas-Arkansas/California-Hawaii (10 states)
Urban, SMSA/urban, not SMSA/rural (3 categories)	New Jersey/Tennessee-Alabama (2 states)
Urban, SMSA, cc/Urban, SMSA, not cc and not SMSA/ rural (3 categories)	Ohio/District of Columbia-Virginia/ Florida/Wyoming-Idaho-Arizona-Utah-New Mexico-Nevada (4 states)
SMSA, cc/SMSA not cc and not SMSA (2 categories)	Wisconsin/Montana-Colorado (2 states)
SMSA/not SMSA (2 categories)	North Dakota-South Dakota-Minnesota/ North Carolina/Delaware-Maryland-West Virginia/Mississippi-Kentucky/Louisiana-Oklahoma/Washington/Alaska-Oregon (7 states)
No residence categories (zero categories)	South Carolina- Georgia (1 state)

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE AND RESIDENCE FOR FIRST QUARTER 1983[a]

Residence	State					
NEW ENGLAND	VT, MA		NH, RI, CT, ME			
Total	5.0	860	2.6	1,026		
SMSA	5.4	667	2.9	611		
CC	6,3	255	2.6	235		
Not CC	4.9	412	3.2	376		
Not SMSA	3.6	193	2.2	415		
Urban	5.3	675	2.4	633		
SMSA	5.6	604	2.7	479		
CC	6.3	255	2.6	235		
Not CC	5.2	349	2.9	244		
Not SMSA	2.8	71	1.3	154		
Rural	3.8	185	3.1	393		
SMSA-not CC	3.2	63	3.8	132		
Not SMSA	4.1	122	2.7	261		
MIDDLE ATLANTIC	NY		NJ		PA	
Total	4.2	2,329	3.4	1,080	1.6	1,567
SMSA	4.1	2,070	3.5	714	1.9	1,242
CC	5.0	1,198	3.2	94	1.2	408
Not CC	2.9	872	3.5	620	2.3	834
Not SMSA	5.0	259	3.3	366	0.3	325
Urban	4.4	2,005	4.0	844	1.6	1,081
SMSA	4.3	1,901	3.8	654	1.8	951
CC	5.0	1,198	3.2	94	1.2	408
Not CC	3.0	703	3.9	560	2.2	543
Not SMSA	6.7	104	4.7	190	0.0	130
Rural	3.1	324	1.3	236	1.6	486
SMSA-not CC	2.4	169	0.0	60	2.4	291
Not SMSA	3.9	155	1.7	176	0.5	195

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE AND RESIDENCE FOR FIRST QUARTER 1983[a]-Continued

Residence	State									
EAST NORTH CENTRAL	**IL**		**OH**		**IN**		**MI**		**WI**	
Total	4.8	1,445	4.1	1,545	4.1	774	3.8	1,348	1.8	653
SMSA	4.7	1,114	4.1	1,229	3.2	439	3.3	980	1.5	459
CC	6.8	425	3.8	450	4.9	225	4.2	284	0.4	227
Not CC	3.3	689	4.2	779	1.4	214	2.9	696	2.6	232
Not SMSA	5.1	331	4.1	316	5.4	335	5.2	368	2.6	194
Urban	5.0	1,152	4.5	1,166	4.2	476	3.6	900	1.7	471
SMSA	5.0	1,007	4.3	997	3.5	339	3.7	758	1.1	378
CC	6.8	425	3.8	450	4.9	225	4.2	284	0.4	227
Not CC	3.6	582	4.8	547	0.9	114	3.4	474	2.0	151
Not SMSA	5.5	145	5.3	169	5.8	137	2.8	142	4.3	93
Rural	3.8	293	2.9	379	4.0	298	4.2	448	2.2	182
SMSA-not CC	1.9	107	3.0	232	2.0	100	1.8	222	3.7	81
Not SMSA	4.8	186	2.7	147	5.1	198	6.6	226	1.0	101

WEST NORTH CENTRAL	**NE, KS, MO, IA**		**ND, SD, MN**	
Total	2.8	1,701	1.2	721
SMSA	3.5	832	0.8	371
CC	3.2	409	1.1	185
Not CC	3.8	423	0.5	186
Not SMSA	2.2	869	1.7	350
Urban	3.2	1,080	1.2	484
SMSA	3.1	737	0.9	345
CC	3.2	409	1.1	185
Not CC	3.7	328	0.6	160
Not SMSA	2.9	343	2.2	139
Rural	2.1	621	1.3	237
SMSA-not CC	4.2	95	0.0	26
Not SMSA	1.7	526	1.4	211

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE AND RESIDENCE FOR FIRST QUARTER 1983[a]-Continued

Residence		State									
SOUTH ATLANTIC		**NC**		**DC, VA**		**SC, GA**		**FL**		**DE, MD, WV**	
Total	4.9	792	3.6	882	2.9	1,114	2.7	1,318	2.6	953	
SMSA	5.8	359	4.0	656	2.9	544	2.5	884	2.9	626	
CC	3.6	166	3.5	259	2.4	167	2.0	295	4.5	133	
Not CC	7.8	193	4.3	397	3.2	377	2.7	589	2.4	493	
Not SMSA	4.2	433	2.7	266	2.8	570	3.2	434	2.1	327	
Urban	4.2	359	4.2	589	2.7	558	2.4	920	3.2	539	
SMSA	4.1	217	4.2	542	2.7	373	2.6	743	3.4	473	
CC	3.6	166	3.5	259	2.4	167	2.0	295	4.5	133	
Not CC	5.9	51	4.9	283	2.9	206	2.9	448	2.9	340	
Not SMSA	4.2	142	4.3	47	2.7	185	1.7	177	1.5	66	
Rural	5.5	433	2.4	293	3.1	556	3.5	398	1.9	414	
SMSA-not CC	8.5	142	2.6	114	3.5	171	2.1	141	1.3	153	
Not SMSA	4.1	291	2.2	179	2.9	385	4.3	257	2.3	261	

EAST SOUTH CENTRAL	**MS, KY**		**TN, AL**	
TOTAL	3.3	859	2.0	1,086
SMSA	4.1	339	1.6	494
CC	3.2	185	2.6	274
Not CC	5.2	154	0.5	220
Not SMSA	2.7	520	2.4	592
Urban	3.8	443	2.6	584
SMSA	4.0	297	2.0	357
CC	3.2	185	2.6	274
Not CC	5.4	112	0.0	83
Not SMSA	3.4	146	3.5	227
Rural	2.6	416	1.4	502
SMSA-not CC	4.8	42	0.7	137
Not SMSA	2.4	374	1.6	365

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE AND RESIDENCE FOR FIRST QUARTER 1983[a]-Continued

Residence	State			
WEST SOUTH CENTRAL	**LA, OK**		**TX, AR**	
Total	4.5	808	3.1	2,367
SMSA	5.1	491	3.6	1,528
CC	5.1	275	4.0	933
Not CC	5.1	216	3.0	595
Not SMSA	3.5	317	2.1	839
Urban	4.3	558	3.1	1,724
SMSA	4.6	413	3.5	1,355
CC	5.1	275	4.0	933
Not CC	3.6	138	2.4	422
Not SMSA	3.4	145	1.9	369
Rural	4.8	250	3.0	643
SMSA-not CC	7.7	78	4.6	173
Not SMSA	3.5	172	2.3	470
MOUNTAIN	**MT, CO**		**WY, ID, AZ, UT, NM, NV**	
Total	3.6	530	2.0	1,098
SMSA	3.7	427	1.6	550
CC	3.9	232	2.1	292
Not CC	3.6	195	1.2	258
Not SMSA	2.9	103	2.4	548
Urban	3.5	423	1.3	789
SMSA	3.8	394	1.6	489
CC	3.9	232	2.1	292
Not CC	3.7	162	1.0	197
Not SMSA	0.0	29	0.7	300
Rural	3.7	107	3.9	309
SMSA-not CC	3.0	33	1.6	61
Not SMSA	4.1	74	4.4	248

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE AND RESIDENCE FOR FIRST QUARTER 1983[a]-Continued

Residence	State					
PACIFIC	**WA**		**CA, HI**		**AK, OR**	
Total	4.0	599	4.0	3,499	2.8	501
SMSA	3.1	391	3.9	3,281	2.1	282
CC	3.8	158	4.8	1,315	0.9	112
Not CC	2.6	233	3.4	1,966	2.9	170
Not SMSA	5.8	208	4.6	218	3.7	219
Urban	3.8	369	4.1	3,136	1.0	302
SMSA	3.1	295	4.2	3,016	0.9	217
CC	3.8	158	4.8	1,315	0.9	112
Not CC	2.2	137	3.7	1,701	1.0	105
Not SMSA	6.8	74	3.3	120	1.2	85
Rural	4.3	230	2.5	363	5.5	199
SMSA-not CC	3.1	96	1.1	265	6.2	65
Not SMSA	5.2	134	6.1	98	5.2	134

[a]"A" NONINTERVIEW rate = 100 (# A noninterview HU/(# A noninterview HU + # interviewed HU)). The base is the denominator of the rate.

Table 2. COMPARISON OF SELECTED, ABSOLUTE RESIDENCE DIFFERENCES IN "A" NONINTERVIEW RATE BY STATE FOR FIRST QUARTER 1983[a]

State	Total SMSA minus Not SMSA	vs.	Urban minus rural	Central city minus not central city Total	vs.	Urban	Residence dimension used in classification
NEW ENGLAND							
VT, MA	1.8	>	1.5	1.4	>	1.1	SMSA/not SMSA
NH, RI, CT, ME	0.7	=	0.7	0.6	>	0.3	SMSA/not SMSA
MIDDLE ATLANTIC							
NY	0.9	<	1.3	2.1	>	2.0	SMSA/not SMSA
NH	0.2	<	2.7	0.3	<	0.7	Urban/rural
PA	1.6	>	0.0	1.1	>	1.0	SMSA/not SMSA
EAST NORTH CENTRAL							
IL	0.4	<	1.2	3.5	>	3.2	SMSA/not SMSA
OH	0.0	<	1.6	0.4	<	1.0	Urban/rural
IN	2.2	>	0.2	3.5	<	4.0	SMSA/not SMSA
MI	1.9	>	0.6	1.3	>	0.8	SMSA/not SMSA
WI	1.1	>	0.5	2.2	>	1.6	SMSA/not SMSA
WEST NORTH CENTRAL							
NE, KS, MO, IA	1.3	>	1.1	0.6	>	0.5	SMSA/not SMSA
ND, SD, MN	0.9	>	0.1	0.6	>	0.5	SMSA/not SMSA
SOUTH ATLANTIC							
NC	1.6	>	1.3	4.2	>	2.3	SMSA/not SMSA
DC, VA	1.3	<	1.8	0.8	<	1.4	Urban/rural
SC, GA	0.1	<	0.4	0.8	>	0.5	SMSA/not SMSA
FL	0.7	<	1.1	0.7	<	0.9	Urban/rural
DE, MD, WV	0.8	<	1.3	2.1	>	1.6	SMSA/not SMSA
EAST SOUTH CENTRAL							
MS, KY	1.4	>	1.2	2.0	<	2.2	SMSA/not SMSA
TN, AL	0.8	<	1.2	2.1	<	2.6	Urban/rural
WEST SOUTH CENTRAL							
LA, OK	1.6	>	0.5	0.0	<	1.5	SMSA/not SMSA
TX, AR	1.5	>	0.1	1.0	<	1.6	SMSA/not SMSA
MOUNTAIN							
MT, CO	0.8	>	0.2	0.3	>	0.2	SMSA/not SMSA
WY, ID, AZ, UT, MN, NV	0.8	<	2.6	0.9	<	1.1	Urban/rural
PACIFIC							
WA	2.7	>	0.5	1.2	<	1.6	SMSA/not SMSA
CA, HI	0.7	<	1.6	1.4	>	1.1	SMSA/not SMSA
AK, OR	1.6	<	4.5	2.0	>	0.1	SMSA/not SMSA

[a] Source data are presented in table 1.

Table 3. "A" NONINTERVIEW RATE AND BASE OF HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE AND RESIDENCE FOR FIRST QUARTER 1983[a]

State	Residence: SMSA, CC		SMSA, not CC		Not SMSA	
NEW ENGLAND						
Vermont, Massachusetts	6.3	255	4.9	412	3.6	193
New Hampshire, Rhode Island, Connecticut, Maine	2.6	235	3.2	376	2.2	415
MIDDLE ATLANTIC						
New York	5.0	1,198	2.9	872	5.0	259
New Jersey[b]	3.8[b]	654	4.7[b]	190	1.3[b]	236
Pennsylvania	1.2	408	2.3	834	0.3	325
EAST NORTH CENTRAL						
Illinois	6.8	425	3.3	689	5.1	331
Ohio[c]	3.8[c]	450	4.9[c]	716	2.9[c]	379
Indiana	4.9	225	1.4	214	5.4	335
Michigan	4.2	284	2.9	696	5.2	368
Wisconsin[d]	0.4[d]	227	2.6[d]	426		
WEST NORTH CENTRAL						
Nebraska, Kansas, Missouri, Iowa	3.2	409	3.8	423	2.2	869
North Dakota, South Dakota, Minnesota[e]	0.8[e]	371	1.7[e]	350		
SOUTH ATLANTIC						
North Carolina[e]	5.8[e]	359	4.2[e]	433		
District of Columbia, Virginia[c]	3.5[c]	259	4.8[c]	330	2.4[c]	293
South Carolina, Georgia[f]	2.9[f]	1,114				
Florida[c]	2.0[c]	295	2.6[c]	625	3.5[c]	398
Delaware-Maryland-West Virginia[e]	2.9[e]	626	2.1[e]	327		
EAST SOUTH CENTRAL						
Mississippi-Kentucky[e]	4.1[e]	339	2.7[e]	520		
Tennessee-Alabama[b]	2.0[b]	357	3.5[b]	227	1.4[b]	502
WEST SOUTH CENTRAL						
Louisiana-Oklahoma[e]	5.1[e]	491	3.5[e]	317		
Texas-Arkansas	4.0	933	3.0	595	2.1	839
MOUNTAIN						
Montana-Colorado[d]	3.9[d]	232	3.4[d]	298		
Wyoming-Idaho-Arizona-Utah-New Mexico-Nevada[c]	2.1[c]	292	0.8[c]	497	3.9[c]	309
PACIFIC						
Washington[e]	3.1[e]	391	5.8[e]	208		
California-Hawaii	4.8	1,315	3.4	1,966	4.6	218
Alaska-Oregon[e]	2.1[e]	282	3.7[e]	219		

[a] Source data are presented in table 1.
[b] Residence categories are urban, SMSA; urban, not SMSA; rural.
[c] Residence categories are urban, SMSA, CC; urban, SMSA, not CC and not SMSA; rural.
[d] Residence categories are SMSA, CC; SMSA, not CC and not SMSA.
[e] Residence categories are SMSA; not SMSA.
[f] No residence categories, only the state level.

Attachment C

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

March 1, 1985

MEMORANDUM FOR Leroy Bailey
Principal Researcher
Statistical Research Division

From: John Blondell JB
Statistical Research Division

Subject: Noninterview Adjustment Research for NCS Redesign: MEMO 3 - Definition of Housing Unit Noninterview Adjustment Clusters by State, Residence and SMSA Size

INTRODUCTION

This memorandum continues the work done in MEMO 1 and MEMO 2, and concludes the first stage in the synthesis of the noninterview adjustment clusters. Stage one entails the use of the 1980 CPS redesign classifiers (state, SMSA status and size, and residence), without consideration of the alternative measures of size and residence provided on the NCS source file. While the 1980 CPS redesign classifiers are used in stage one, differences are found in their operational definitions and in the details of implementation, i.e., their actual use in cross classification to form clusters (January 14, 1985 Susan Campbell memorandum for documentation entitled "1980 CPS Redesign: Assignment of Noninterview Cluster Codes to 1980 Design PSUs and 1970 Design PSUs (Series #K-31)).

SMSA SIZE AS A CLASSIFIER

The database, upon which the choice of SMSA size categories for forming clusters is based, is presented in table 1. Table 2 presents the first stage clusters. The reader is asked to compare entries, line-by-line, between the two tables, in order to see how the SMSA size categories were used to form first stage clusters (within each cluster as already defined by state and residence).

Inspection of the data should show that, in general, a SMSA size category forms a first stage cluster if it has a DANIR (absolute difference in "A" NONINTERVIEW RATE) of 0.5 or more with the next smaller size category and if it has a frequency of 100 or more. Where it is necessary to combine SMSA size categories (within a state and residence defined cluster) to obtain a frequency of 100 or more, categories (including "not SMSA", if present) are combined in descending SMSA size order, regardless of DANIR. After the frequency criterion has been met, categories are further combined in descending order, where the DANIR is less than 0.5 between contiguous categories.

SUMMARY

A summary of the table 2 results for first stage clusters is as follows:

Division	Total number	Range in "A" NONINTERVIEW RATE	Number with frequency of 250 or more
NATION	109	0.0 to 8.7	45
New England	10	1.6 to 8.3	2
Middle Atlantic	16	0.3 to 5.5	8
East North Central	22	0.0 to 6.8	10
West North Central	6	0.8 to 4.0	4
South Atlantic	18	0.6 to 8.7	6
East South Central	7	0.7 to 5.1	3
West South Central	11	0.4 to 6.9	4
Mountain	7	0.8 to 4.8	3
Pacific	12	1.5 to 5.8	5

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]

State and Residence	SMSA size 3+M	1 to 3 M	1/2 to 1M[b]	1/4 to 1/2M	< 1/4M	Not SMSA	Total
VT, MA							
SMSA, CC		11.0/82	3.9/51	3.3/30	4.3/90		6.3/255
SMSA, not CC		5.2/305	9.4/32	0.0/15	1.7/60		4.9/412
Not SMSA					3.6/193		
NH, RI, CT, ME							
SMSA, CC			2.5/80	6.1/33	1.6/122		2.6/235
SMSA, not CC			3.5/143	2.7/73	3.1/160		3.2/376
Not SMSA						2.2/415	
NY							
SMSA, CC	5.5/999	4.6/65	1.0/97	2.7/37			5.0/1,198
SMSA, not CC	4.6/153	3.1/456	2.0/200	0.0/63			2.9/872
Not SMSA						5.0/259	
NJ							
Urban, SMSA	4.3/117	3.8/420	2.5/81	5.6/36			3.8/654
Urban, not SMSA						4.7/190	
Rural	0.0/25	0.0/11	0.0/12	0.0/12		1.7/176	1.3/236
PA							
SMSA, CC	1.8/219	0.0/67	2.4/42	0.0/65	0.0/15		1.2/408
SMSA, not CC	1.9/260	3.5/230	2.3/44	1.5/270	3.3/30		2.3/834
Not SMSA						0.3/325	
IL							
SMSA, CC	7.3/383			2.4/42			6.8/425
SMSA, not CC	3.8/559	0.0/67		3.2/63			3.3/689
Not SMSA						5.1/331	
OH							
Urban, SMSA, CC		5.1/136	3.0/234	2.4/41	5.1/39		3.8/450
Urban, SMSA, not CC & not SMSA		4.4/227	5.3/243	4.5/44	3.0/33	5.3/169	4.9/716
Rural		0.0/44	4.7/128	5.0/20	0.0/40	2.7/147	2.9/379

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]-Continued

State and Residence	SMSA size 3+M	1 to 3 M	1/2 to 1M	1/4 to 1/2M	< 1/4M	Not SMSA	Total
IN							
SMSA, CC		2.3/87	12.5/40	3.0/33	4.6/65		4.9/225
SMSA, not CC		1.7/58	1.5/67	2.2/45	0.0/44		1.4/214
Not SMSA						5.4/335	
MI							
SMSA, CC	6.8/162		4.0/25	0.0/40	0.0/57		4.2/284
SMSA, not CC	3.6/414		2.4/85	2.0/98	1.0/99		2.9/696
Not SMSA						5.2/368	
WI							
SMSA, CC		0.8/120		0.0/45	0.0/62		0.4/227
SMSA, not CC and not SMSA		0.8/120		1.8/57	7.3/55	2.6/194	2.6/426
NE, KS, MO, IA							
SMSA, CC		1.9/160	6.8/44	2.4/82	4.1/123		3.2/409
SMSA, not CC		3.7/327	4.5/22	8.7/23	2.0/51		3.8/423
Not SMSA						2.2/869	
ND, SD, MN							
SMSA		1.1/283		0.0/15	0.0/73		0.8/371
Not SMSA						1.7/350	
NC							
SMSA			2.8/107	3.8/80	8.7/172		5.8/359
Not SMSA						4.2/433	
DC, VA							
Urban, SMSA, CC		4.0/101	3.5/86	3.1/32	2.5/40		3.5/259
Urban, SMSA, not CC & not SMSA		5.2/134	5.8/120	0.0/3	0.0/26	4.3/47	4.8/330
Rural		0.0/39	6.7/30		2.2/45	2.2/179	2.4/293
SC, GA							
State		2.9/276		2.7/184	23.6/84	2.8/570	2.9/1,114

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]-Continued

State and Residence	SMSA size 3+M	1 to 3 M	1/2 to 1M	1/4 to 1/2M	< 1/4M	Not SMSA	Total
FL							
Urban, SMSA, CC		3.6/137	0.0/111	2.6/38	0.0/9		2.0/295
Urban, SMSA, not CC & not SMSA		3.4/235	1.1/93	2.8/106	7.1/14	1.7/177	2.6/625
Rural		2.9/68	0.0/1	1.7/60	0.0/12	4.3/257	3.5/398
DE, MD, WV							
SMSA		3.0/532		1.3/79	6.7/15		2.9/626
Not SMSA						2.1/327	
MS, KY							
SMSA		3.4/29	5.5/109	1.5/67	4.5/134		4.1/339
Not SMSA						2.7/520	
TN, AL							
Urban, SMSA			1.8/222	3.8/78	0.0/57		2.0/357
Urban, not SMSA						3.5/227	
Rural			0.0/43	2.0/51	0.0/43	1.6/365	1.4/502
LA, OK							
SMSA		6.9/145	3.7/108	4.7/190	4.2/48		5.1/491
Not SMSA						3.5/317	
TX, AR							
SMSA, CC		6.2/324	6.7/120	3.2/248	0.4/241		4.0/933
SMSA, not CC		2.3/301	2.5/122	3.0/67	5.7/105		3.0/595
Not SMSA						2.1/839	
MT, CO							
SMSA, CC		4.8/104			3.1/128		3.9/232
SMSA, not CC & not SMSA		3.8/159			2.8/36		3.4/298

Table 1. "A" NONINTERVIEW RATE AND BASE BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]-Continued

State and Residence	SMSA size 3+M	1 to 3 M	1/2 to 1M	1/4 to 1/2M	< 1/4M	Not SMSA	Total
WY, ID, AZ, UT, NM, NV							
Urban, SMSA, CC			1.9/155	2.2/137			2.1/292
Urban, SMSA, not CC & not SMSA			1.3/159	0.0/38		0.7/300	0.8/497
Rural			0.0/33	3.6/28		4.4/248	3.9/309
WA							
SMSA		3.0/270		3.3/121			3.1/391
Not SMSA						5.8/208	
CA, HI							
SMSA, CC	5.0/643	4.8/395	6.1/82	4.8/124	1.4/71		4.8/1,315
SMSA, not CC	3.9/914	3.4/612	2.8/177	1.7/180	1.2/83		3.4/1,966
Not SMSA						4.6/218	
AK, OR							
SMSA		1.8/164			2.5/118		2.1/282
Not SMSA						3.7/219	

[a]"A" NONINTERVIEW RATE = 100 (# A noninterview HU/(# A noninterview HU + # interviewed HU)). The base is the denominator of the rate.

Table 2. "A" NONINTERVIEW RATE AND BASE OF HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]

State and residence	SMSA size		
NEW ENGLAND			
Vermont, Massachusetts			
	1/2 to 3M	< 1/2M	
SMSA, CC	8.3/133	4.1/122	
	1 to 3M	< 1M	
SMSA, not CC	[5.2/305][b]	3.7/107	
	not SMSA		
Not SMSA	3.6/193		
New Hampshire, Rhode Island, Connecticut, Maine			
	1/4 to 1M	< 1/4M	
SMSA, CC	3.5/113	1/6/122	
	1/2 to 1M	< 1/2M	
SMSA, not CC	3.5/143	3.0/233	
	not SMSA		
Not SMSA	[2.2/415]		
MIDDLE ATLANTIC			
New York			
	1+M	1/4 to 1M	
SMSA, CC	[5.5/1,064]	1.5/134	
	3+M	1 to 3M	1/4 to 1M
SMSA, not CC	4.6/153	[3.1/456]	[1.5/263]
	not SMSA		
Not SMSA	[5.0/259]		
New Jersey			
	3+M	1/4 to 3M	
Urban, SMSA	4.3/117	[3.7/537]	
	not SMSA		
Urban, not SMSA	4.7/190		
	All		
Rural	1.3/236		

Table 2. "A" NONINTERVIEW RATE AND BASE OF HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]-Continued

State and residence	SMSA size		
Pennsylvania			
SMSA, CC	3+M 1.8/219	< 3M 0.5/189	
SMSA, not CC	3+M [1.9/260]	1 to 3M 3.5/230	< 1M [1.7/344]
Not SMSA	not SMSA [0.3/325]		
EAST NORTH CENTRAL			
Illinois			
SMSA, CC	All [6.8/425]		
SMSA, not CC	3+M [3.8/559]	1/2 to 3M 1.5/130	
Not SMSA	not SMSA [5.1/331]		
Ohio			
Urban, SMSA, CC	1 to 3M 5.1/136	< 1M [3.2/314]	
Urban, SMSA, not CC and not SMSA	1 to 3M 4.4/227	< 1M [5.1/489]	
Rural	All [2.9/379]		
Indiana			
SMSA, CC	All 4.9/225		
SMSA, not CC	All 1.4/214		
Not SMSA	not SMSA [5.4/335]		

Table 2. "A" NONINTERVIEW RATE AND BASE OF HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]--Continued

State and residence	SMSA size		
Michigan			
	3+M	< 1M	
SMSA, CC	6.8/162	0.8/122	
	3+M	< 1M	
SMSA, not CC	[3.6/414]	[1.8/282]	
	not SMSA		
Not SMSA	[5.2/368]		
Wisconsin			
	1 to 3M	< 1/2M	
SMSA, CC	0.8/120	0.0/107	
	1 to 3M	< 1/4 to 1/2M	not SMSA
SMSA, not CC and not SMSA	0.8/120	4.5/112	2.6/194
WEST NORTH CENTRAL			
Nebraska, Kansas Missouri, Iowa			
	1 to 3M	< 1M	
SMSA, CC	1.9/160	4.0/249	
	All		
SMSA, not CC	[3.8/423]		
	not SMSA		
Not SMSA	[2.2/869]		
North Dakota, South Dakota, Minnesota			

Table 2. "A" NONINTERVIEW RATE AND BASE OF HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]-Continued

State and residence	SMSA size		
District of Columbia, Virginia			
	1 to 3M	< 1M	
Urban, SMSA, CC	4.0/101	3.2/158	
	1 to 3M	< 1M	
Urban, SMSA, not CC and not SMSA	5.2/134	4.6/196	
	All		
Rural	[2.4/293]		
South Carolina, Georgia			
	All		
State	[2.9/1,114]		
Florida			
	1 to 3M	< 1M	
Urban, SMSA, CC	3.6/137	0.6/158	
	1 to 3M	<1/4 to 1M	not SMSA
Urban, SMSA, not CC and not SMSA	3.4/235	2.3/213	1.7/177
	<1/4 to 3M	not SMSA	
Rural	2.1/141	[4.3/257]	
Delaware, Maryland, West Virginia			
	All		
SMSA	[2.9/626]		
	not SMSA		
Not SMSA	[2.1/327]		
EAST SOUTH CENTRAL			
Mississippi, Kentucky			
	1/2 to 3M	< 1/2M	
SMSA	5.1/138	3.5/201	
	not SMSA		
Not SMSA	[2.7/520]		

Table 2. "A" NONINTERVIEW RATE AND BASE OF HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]--Continued

State and residence	SMSA size			
Tennessee, Alabama				
Urban, SMSA	All [2.0/357]			
Urban, not SMSA	not SMSA 3.5/227			
Rural	< 1/4 to 1 M 0.7/137	not SMSA [1.6/365]		
WEST SOUTH CENTRAL				
Louisiana, Oklahoma				
SMSA	1 to 3 M 6.9/145	1/2 to 1 M 3.7/108	< 1/2 M 4.6/238	
Not SMSA	not SMSA [3.5/317]			
Texas, Arkansas				
SMSA, CC	1 to 3 M [6.2/324]	1/2 to 1 M 6.7/120	1/4 to 1/2 M 3.2/248	< 1/4 M 0.4/241
SMSA, not CC	1/4 to 3 M [2.4/490]	< 1/4 M 5.7/105		
Not SMSA	not SMSA [2.1/839]			
MOUNTAIN				
Montana, Colorado				
SMSA, CC	1 to 3 M 4.8/104	< 1/4 M 3.1/128		
SMSA, not CC and not SMSA	< 1/4 to 3 M 3.6/195	not SMSA 2.9/103		

Table 2. "A" NONINTERVIEW RATE AND BASE OF HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE, RESIDENCE AND SMSA SIZE FOR FIRST QUARTER 1983[a]-Continued

State and residence	SMSA size			
Wyoming, Idaho, Arizona, Utah, New Mexico, Nevada				
Urban, SMSA, CC	All {2.1/292}			
Urban, SMSA, not CC and not SMSA	All {0.8/497}			
Rural	All {3.9/309}			
PACIFIC				
Washington				
SMSA	All {3.1/391}			
Not SMSA	not SMSA 5.8/208			
California, Hawaii				
SMSA, CC	1/2 +M {5.0/1,120}	< 1/2 M 3.6/195		
SMSA, not CC	3+M {3.9/914}	1 to 3M {3.4/612}	1/2 to 1M 2.8/177	< 1/2 M {1.5/263}
Not SMSA	not SMSA 4.6/218			
Alaska, Oregon				
SMSA	1 to 3M 1.8/164	< 1/4 M 2.5/118		
Not SMSA	not SMSA 3.7/219			

[a]"A" NONINTERVIEW RATE = 100 (# A noninterview HU/(# A noninterview Hu + # interviewed HU)). The base is the denominator of the rate.

[b]Braces indicate a cluster whose frequency may be large enough (250 or more) to allow further subclassification by time in sample or poverty rate or segment type of race of head.

Attachment D

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

May 1, 1985

MEMORANDUM FOR Leroy Bailey
Principal Researcher
Statistical Research Division

From: John Blondell JB
Statistical Research Division

Subject: Noninterview Adjustment Research for NCS Redesign: MEMO 4 - Housing Unit Noninterview Adjustment Clusters and Factors By State and SMSA National Rank and Status

INTRODUCTION

Recent reported changes in the resource situation of this research make it imperative to push rapidly toward useful products, sacrificing some experimenting with ideas of uncertain promise and limiting the depth to which other important ideas are explored.

In the introduction to MEMO 3 of this series, the "stage two" work of introducing other classifiers to further subclassify noninterview adjustment clusters, and exploring the effectiveness of alternative measures of size and residence are implied. This work I now consider of uncertain promise. Some decision about what classifiers to use in defining a "final" set of clusters is the keystone to progressing with the research. The decisions I have made and their implementation are the subject of this memorandum.

Indebtedness to Lynn Weidman and Charles Alexander, for helpful discussions of the ideas that I am trying to implement in these memoranda, is gratefully acknowledged.

CLASSIFIERS

The reader who has been with me through the CPS noninterview adjustment work, as well as the NCS noninterview work, may have some sense of my frustration, which I will dub the "regression experience." From before the very first contact with the data, and over the course of the research, it has become abundently clear that, trying to characterize (find) the relationship between a quantitatively trivial dependent variable (type A noninterview housing units are 3.4 percent) and a set of uninformative, but "available", independent variables, does in fact "degenerate" to no clear or definitive findings. My response to this situation is to recast my concept of the research problem and thus the objective of cluster formation, since I cannot change the data set.

The new concept is, to drop the singular focus on housing unit noninterview adjustment and, to consider interview status, "responsiveness" and estimating the incidence of household crime as interrelated factors. The former conception was to consider noninterview adjustment discretely, then consider housing unit responsiveness (the reporting or not of family income) discretely, then try to ascertain the relationships between the two, then consider household crime estimation discretely, and finally try to ascertain the three-way relationships. The new conception is to consider all three simultaneously. This reconceptualization greatly enhances the importance of how the clusters, within which these relationships are studies, are formed.

I go back, again and more firmly, to an idea incompletely explored during my CPS noninterview work (MEMO 11 in that series). The key to effective cluster formation is geographic specificity. This idea is not new, indeed it may make a human ecologist, urban sociologist, geopolitician or whatever chuckle, but is borrowed from the census concern with providing data for small

areas. The trick to implementing geographic specificity is to define (identify) areas so that the interrelationship among the three (dependent) variables is adequately described by a singular characterization. The description of the interrelationship among the dependent variables should "fit well" over the entire cluster, not fit perfectly in some subportions, indifferently in other subportions, and not at all in yet other subportions.

While it may be that the "crucial" variable(s) is not included among the classifiers (population density is often mentioned yet unavailable on the NCS source data file), it is necessary to make the best possible use of the available classifiers. I have kept state as a classifier (from MEMOS 1-3), and exchanged residence and SMSA size for SMSA national rank and status. This allows the possibility that some of the 98 largest (1970 population size) SMSAs may form clusters, which is considered a step toward more geographic specificity. This substitution retains a "size measure", which was the only effective classifier identified in my CPS work (MEMO 5 of that series), but replaces an "absolute" one with a "relative" one, i.e., SMSA 1970 population size with respect to (ranked against) all SMSA's nationally.

The absolute size measure, used previously, was represented by SMSA 1970 population size categories (per state) such as 3 million or more, 1 to 3 million, 1/2 to 1 million, 1/4 to 1/2 million, less than 1/4 million, and not an SMSA. The relative (1970 population) size measure, used here, is represented (per state) by such categories as an individual SMSA (from among those SMSA nationally ranked from the largest as first to the ninety eighth largest, as smallest), (other) ranked SMSA (table 2, grouping of individual SMSA, nationally ranked among the ninety eight largest, that do not meet the frequency criterion of 200 cases), unranked SMSA (those which would rank ninety ninth or more, if the national ranking were extended to all SMSA),

(other) SMSA (table 2, grouping of nationally ranked and unranked SMSA to meet the frequency criterion), and not SMSA.

So, the two classifiers used (in table 1) are state and SMSA national rank and status. It is recognized that this set excludes residence. One final matter needs decision and this is the minimum size of cluster. On an intuitive basis, I have simply doubled the size criterion used in MEMO 3 of 100 interviewed plus type A noninterview housing units, which was intuitively arrived at. Hopefully this will provide an adequate number of cases (200) for reliably characterizing the simultaneous relationship between interview status, family income reporting status and household crime reporting status.

FORMING THE CLUSTERS

The data base for the cluster formation process is presented in table 1. Again the process is empirical and judgmental, and no claim is made that the set of clusters arrived at is the best possible, even using the same classifiers. Perhaps the basic facet of the process was to try to have as many individual, nationally ranked SMSAs form clusters as possible. This sometimes meant combining the data for contiguous states, which had the advantage of enabling the formation of other SMSA categories such as "other ranked SMSA", "unranked SMSA" and "not SMSA" as clusters. Within a given state (grouping) "not SMSA" always forms a separate cluster. In general, the same strategy and principles were used here as were used in MEMOS 1-3. The exception is that the DANIR (absolute difference in "A" noninterview rate between categories of a classifier) has been dropped. The frequency criterion is 200 interviewed plus type A noninterview housing units, for a cluster. Where it was necessary to meet the frequency criterion, the "other ranked

SMSA" and the "unranked SMSA" were combined within a state (grouping). Where possible, division boundaries were adhered to in combining states, so that departures from customary aggregation would be minimized.

The clusters actually formed constitute the column headings of the parts of table 2. For a detailed understanding of the formation of each cluster, the reader is asked to compare the relevant data between tables 1 and 2. The combinations of categories to form clusters, that seem more judgmental to this researcher, are discussed below.

Even though Maine meets the frequency criterion, it is combined with New Hampshire and Vermont to form a cluster, since they are continguous states and no nationally ranked SMSA is involved. Even after combining, only the "not SMSA" category meets the frequency criterion, so all three states are combined to form a cluster.

Massachusetts, Rhode Island and Connecticut are combined because one nationally ranked SMSA overlaps the first two and another overlaps the second two. The combining generates enough frequency that all three possible SMSA categories can form clusters.

Illinois, Missouri and Kansas are combined (across division boundaries) because they are linked by two high ranking SMSA's, and in order to generate enough frequency for an "other SMSA" cluster and a "not SMSA" cluster from Missouri and Kansas.

Michigan, Wisconsin and Minnesota are combined (across division boundaries) because they are contiguous and to generate enough frequency to form clusters of each of the three generic SMSA categories.

Iowa, North Dakota, South Dakota and Nebraska are combined because they are contiguous and enough frequency is generated to form an "SMSA" cluster.

Delaware and West Virginia are combined with Maryland and Virginia because they are contiguous and to avoid crossing division boundaries.

South Carolina and Georgia are combined because they are contiguous and to generate enough frequency for an "other SMSA" cluster.

Alabama, Mississippi and Louisiana are combined (across division boundaries) because they are contiguous coastal states and to generate enough frequency to form a "ranked SMSA" and an "unranked SMSA" cluster.

Arkansas and Oklahoma are combined because they are contiguous and to generate enough frequency to form "SMSA" and "not SMSA" clusters.

Montana, Idaho, Wyoming and Nevada are combined because they are contiguous and all have below criterion frequency.

Colorado, New Mexico, Arizona and Utah are combined because they are contiguous and to generate enough frequency to form an "other SMSA" cluster.

Washington and Oregon are combined because they are contiguous, have a highly ranked SMSA in common and to generate enough frequency to form "other SMSA" and "not SMSA" clusters.

Alaska and Hawaii are combined with California on the assumption that so doing will have the least effect upon the data for any Pacific coast state.

It might be informative to summarize the clusters formed as follows:

Type	Number
State	2
Nationally ranked SMSA	28
All other SMSA categories	26
(Other) ranked SMSA	6
Unranked SMSA	5
(Other) SMSA	15
Not SMSA	23
Total	79

which shows some success in forming clusters of individual, nationally ranked SMSAs.

NONINTERVIEW ADJUSTMENT FACTORS

Interview status statistics, including noninterview adjustment factors, are presented in table 2. The statistics (for each cluster) are defined as follows:

"N" is the sum of the number of type A noninterview housing units plus the number of interviewed housing units.

"NI" is the number of type A noninterview housing units.

"I" is the number of interviewed housing units.

"NI/I" is the ratio of type A noninterview housing units to interviewed housing units. It is the amount by which interviewed housing units are "weighted up to account for type A noninterview housing units." (See following definition of F.)

"F" is the noninterview adjustment factor. F=1 + (NI/I).

"f" is the mean of the "household noninterview factors" on interviewed housing units records, on the analysis file. While I cannot completely reconstruct how these factors were obtained, it is clear that their derivation is different from F.

"sef" is the standard error of f.

"F-f" is the arithmetic difference between F and f.

The maximum F minus f difference in table 2 is .024. If differences of $\pm$.005 or more are considered large, the percent of clusters in each range may be computed, for clusters classified by region and type, as a summary of the results obtained in table 2. The summary data are presented in table 3. These data show that (a) relative to the national minus range percent of 25.3, the corresponding percent is high for MIDWEST/individual SMSA and SOUTH/other SMSA; and (b) relative to the national plus range percent of 26.6, the corresponding percent is high for MIDWEST/total, SOUTH/individual SMSA, MIDWEST/other SMSA and WEST/not SMSA.

Table . NUMBER OF TYPE A NONINTERVIEW AND INTERVIEWED HOUSING UNITS BY STATE AND SMSA NATIONAL RANK AND STATUS[a]

State	SMSA National Rank and Status			
NEW ENGLAND				
Maine	Total 244	Unranked SMSA 74	Not SMSA 140	
New Hampshire	Total 121	Unranked SMSA 28	Not SMSA 93	
Vermont	Not SMSA 79			
Massachusetts	Total 781	Boston 387	Providence, Pawtucket, Warwick[b] 13	Springfield, Chicopee, Holyoke[c] 70
		Worcester 45	Unranked SMSA 152	Not SMSA 114
Rhode Island	Total 131	Providence, Pawtucket, Warwick[b] 103	Unranked SMSA 3	Not SMSA 25
Connecticut	Total 550	Hartford 116	Springfield, Chicopee, Holyoke[c] 4	Bridgeport 62
		New Haven 44	Unranked SMSA 177	Not SMSA 147
MIDDLE ATLANTIC				
New York	Total 2,329	New York 1,152	Nassau, Suffolk 328	Buffalo 193
		Rochester 115	Albany, Schenectady, Troy 107	Syracuse 75
		Utica, Rome 54	Unranked SMSA 46	Not SMSA 259

Table 1. NUMBER OF TYPE A NONINTERVIEW AND INTERVIEWED HOUSING UNITS BY STATE AND SMSA NATIONAL RANK AND STATUS[a] - Continued

State	SMSA National Rank and Status			
New Jersey	Total 1,080	Philadelphia[d] 142	Newark 238	Paterson, Clifton, Passaic 193
		Jersey city 78	Allentown, Bethlehem, Easton[e] 15	Wilmington[f] 12
		Unranked SMSA 36	Not SMSA 366	
Pennsylvania	Total 1,567	Philadelphia[d] 479	Pittsburgh 297	Allentown, Bethlehem, Easton[e] 86
		Harrisburg 72	Wilkes-Barre, Hazelton 43	York 42
		Lancaster 32	Unranked SMSA 191	Not SMSA 325
EAST NORTH CENTRAL				
Ohio	Total 1,545	Cleveland 262	Cincinnati[g] 145	Columbus 148
		Dayton 151	Toledo[h] 116	Arkon 115
		Youngstown, Warren 75	Canton 60	Unranked SMSA 157
		Not SMSA 316		
Indiana	Total 774	Cincinnati[g] 8	Indianapolis 137	Louisville[i] 27
		Gary, Hammond, East Chicago 80	Unranked SMSA 187	Not SMSA 335

Table 1. NUMBER OF TYPE A NONINTERVIEW AND INTERVIEWED HOUSING UNITS BY STATE AND SMSA NATIONAL RANK AND STATUS[a] - Continued

State	SMSA National Rank and Status			
Illinois	Total 1,445	Chicago 942	St. Louis[j] 677	Davenport, Rock Island, Moline[k] 30
		Peoria 42	Unranked SMSA 33	Not SMSA 331
Michigan	Total 1,348	Detroit 576	Toldeo[h] 17	Grand Rapids 93
		Flint 92	Lansing 46	Unranked SMSA 156
		Not SMSA 368		
Wisconsin	Total 653	Milwaukee 240	Unranked SMSA 219	Not SMSA 194
WEST NORTH CENTRAL				
Minnesota	Toal 514	Minneapolis, St. Paul 283	Unranked SMSA 41	Not SMSA 190
Iowa	Total 423	Omaha[l] 14	Davenport, Rock Island, Moline[k] 19	Unranked SMSA 98
		Not SMSA 292		
Missouri	Total 748	St. Louis[j] 268	Kansas City[m] 140	Unranked SMSA 71
		Not SMSA 269		

Table . . NUMBER OF TYPE A NONINTERVIEW AND INTERVIEWED HOUSING UNITS BY STATE AND SMSA NATIONAL RANK AND STATUS[a] - Continued

State	SMSA National Rank and Status			
	Total	Unranked SMSA	Not SMSA	
North Dakota	121	47	74	
	Not SMSA			
South Dakota	86			
	Total	Omaha[l]	Not SMSA	
Nebraska	213	52	161	
	Total	Kansas City[m]	Wichita	Unranked SMSA
Kansas	317	79	44	47
		Not SMSA		
		147		
SOUTH ATLANTIC				
	Total	Wilmington[f]	Not SMSA	
Delaware	92	57	35	
	Total	Washington[n]	Baltimore	Wilmington[f]
Maryland	667	179	353	4
		Not SMSA		
		131		
District of Columbia	Washington[n] 101			
	Total	Washington[n]	Norfolk, Portsmouth,	Richmond
Virginia	781	173	121	115
		Unranked SMSA	Not SMSA	
		146	226	
	Total	Unranked SMSA	Not SMSA	
West Virginia	194	33	161	

Table 1. NUMBER OF TYPE A NONINTERVIEW AND INTERVIEWED HOUSING UNITS BY STATE AND SMSA NATIONAL RANK AND STATUS[a] - Continued

State	SMSA National Rank and Status			
North Carolina	Total 792	Greensboro, Winston, Salem, High Point 107	Charlotte 80	Unranked SMSA 172
		Not SMSA 433		
South Carolina	Total 341	Columbia 40	Unranked SMSA 117	Not SMSA 184
Georgia	Total 773	Atlanta 276	Chattanooga[o] 4	SMSA 107
		Not SMSA 386		
Florida	Total 1,318	Miami 237	Tampa, St. Petersburg 203	Ft. Lauderdale, Hollywood 127
		Jacksonville 78	Orlando 115	West Palm Beach 89
		Unranked SMSA 35	Not SMSA 434	
EAST SOUTH CENTRAL				
Kentucky	Total 494	Cincinnati[g] 29	Louisville[i] 109	Unranked SMSA 86
		Not SMSA 270		
Tennessee	Total 578	Memphis[p] 99	Nashville 71	Knoxville 35
		Chattanooga[o] 24	Not SMSA 349	

Table 1. NUMBER OF TYPE A NONINTERVIEW AND INTERVIEWED HOUSING UNITS BY STATE AND SMSA NATIONAL RANK AND STATUS[a] - Continued

State	SMSA National Rank and Status			
	Total	Birmingham	Mobile	Unranked SMSA
Alabama	508	95	70	100
		Not SMSA		
		243		
	Total	Unranked SMSA	Not SMSA	
Mississippi	365	115	250	
WEST SOUTH CENTRAL				
	Total	Memphis[p]	Little Rock, North Little Rock	Unranked SMSA
Arkansas	370	3	51	7
		Not SMSA		
		309		
	Total	New Orleans	Unranked SMSA	Not SMSA
Louisiana	506	145	136	225
	Total	Oklahoma City	Tulsa	Not SMSA
Oklahoma	302	108	102	92
	Total	Houston	Dallas	San Antonio
Texas	1,997	361	264	11
		Fort Worth	El Paso	Beaumont, Port Arthur, Orange
		126	64	72
		Unranked SMSA	Not SMSA	
		467	530	
MOUNTAIN				
	Total	Unranked SMSA	Not SMSA	
Montana	112	57	55	

Table 1. NUMBER OF TYPE A NONINTERVIEW AND INTERVIEWED HOUSING UNITS BY STATE AND SMSA NATIONAL RANK AND STATUS[a] - Continued

State	SMSA National Rank and Status			
Idaho	Not SMSA 190			
Wyoming	Not SMSA 42			
Colorado	Total 418	Denver 263	Unranked SMSA 107	Not SMSA 48
New Mexico	Total 178	Albuquerque 61	Not SMSA 117	
Arizona	Total 447	Phoenix 249	Tuscon 75	Not SMSA 153
Utah	Total 144	Salt Lake City 98	Not SMSA 46	
Nevada	Unranked SMSA 67			
PACIFIC				
Washington	Total 599	Seattle, Everett 252	Portland[q] 18	Tacoma 70
		Unranked SMSA 51	Not SMSA 208	
Oregon	Total 468	Portland[q] 164	Unranked SMSA 118	Not SMSA 186
California	Total 3,396	Los Angeles, Long Beach 1,065	San Francisco, Oakland 492	Anaheim, Santa Ava, Garden Grove 295

Table 1. NUMBER OF TYPE A NONINTERVIEW AND INTERVIEWED HOUSING UNITS BY STATE AND SMSA NATIONAL RANK AND STATUS[a] - Continued

State	SMSA National Rank and Status		
	San Diego 297	San Bernardino, Riverside, Ontario 227	San Jose 188
	Sacramento 156	Fresno 73	Oxnard, Ventura 48
	Bakersfield 69	Unranked SMSA 268	Not SMSA 218
Alaska	Not SMSA 33		
Hawaii	Honolulu 103		

[a]Within a state, individual SMSAs are listed in ascending order by rank.
[b]In Massachusetts and Rhode Island.
[c]In Massachusetts and Connecticut.
[d]In New Jersey and Pennsylvania.
[e]In New Jersey and Pennsylvania.
[f]In New Jersey, Delaware and Maryland.
[g]In Ohio, Indiana and Kentucky.
[h]In Ohio and Michigan.
[i]In Indiana and Kentucky.
[j]In Illinois and Missouri.
[k]In Illinois and Iowa.
[l]In Iowa and Nebraska.
[m]In Missouri and Kansas.
[n]In Maryland, District of Columbia and Virginia.
[o]In Georgia and Tennessee.
[p]In Tennessee and Arkansas.
[q]In Washington and Oregon.

Table 2. FIRST QUARTER 1983 INTERVIEW STATUS STATISTICS FOR HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE AND SMSA [illegible] RANK AND STATUS

Statistics	Housing unit noninterview adjustment clusters				
	ME,NH,VT	Boston MA	MA,RI,CT other ranked SMSA	MA,RI,CT Unranked SMSA	MA,RI,CT not SMSA
N	424	387	457	332	286
NI	12	25	17	10	6
I	412	362	440	322	280
NI/I	.0291	.0691	.0386	.0311	.0214
F	1.029	1.069	1.039	1.0031	1.021
f	1.027	1.061	1.049	1.028	1.021
sef	.0006	.0013	.0010	.0010	.0010
F-f	+.002	+.008	-.010	+.003	0.000

	New York NY	Nassau, Suffolk NY	NY other SMSA	NY not SMSA
N	1,152	328	590	259
NI	62	9	14	13
I	1,090	319	576	246
NI/I	.0569	.0282	.0243	.0528
F	1.057	1.028	1.024	1.053
f	1.054	1.035	1.024	1.032
sef	.0003	.0007	.0007	.0008
F-f	+.003	-.007	0.000	+.021

	Newark NJ	NJ other SMSA	NJ not SMSA
N	238	334	366
NI	9	11	12
I	229	323	354
NI/I	.0393	.0341	.0339
F	1.039	1.034	1.034
f	1.036	1.037	0.136
sef	.0005	.0005	.0007
F-f	+.003	-.003	-.002

	Philadelphia PA,NJ	Pittsburgh PA	PA other SMSA	PA not SMSA
N	621	297	466	325
NI	14	8	7	1
I	607	289	459	324
NI/I	.0231	.0277	.0153	.0031

Table 2. FIRST QUARTER 1983 INTERVIEW STATUS STATISTICS FOR HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE AND SMSA NATIONAL RANK AND STATUS - Continued

Statistics	Housing unit noninterview adjustment clusters			
F	1.023	1.028	1.015	1.003
f	1.023	1.028	1.014	0.126
sef	.0005	.0010	.0005	.0009
F-f	0.000	0.000	+.001	-.023

	Cleveland OH	OH other SMSA	OH not SMSA
N	262	967	316
NI	13	37	13
I	249	930	303
NI/I	.0522	.0398	.0429
F	1.052	1.040	1.043
f	1.039	1.028	1.046
sef	.0007	.0005	.0016
F-f	+.013	+.012	-.003

	IN SMSA	IN not SMSA	Chicago IL	St. Louis MO,IL	Kansas City KS,MO
N	439	335	942	335	219
NI	14	18	49	8	7
I	425	317	893	327	212
NI/I	.0329	.0568	.0549	.0245	.0330
F	1.033	1.057	1.055	1.024	1.033
f	1.031	1.041	1.056	1.041	1.027
sef	.0010	.0015	.0008	.0006	.0008
F-f	+.002	+.016	-.001	-.017	+.006

	IL,MO,KS other SMSA	IL not SMSA	MO,KS not SMSA
N	267	331	416
NI	10	17	7
I	257	314	409
NI/I	.0389	.0541	.0171
F	1.039	1.054	1.017
f	1.032	1.045	1.028
sef	.0015	.0013	.0011
F-f	+.007	+.009	-.011

Table 2. FIRST QUARTER 1983 INTERVIEW STATUS STATISTICS FOR HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE AND SMSA NATIONAL RANK AND STATUS - Continued

Statistics	Housing unit noninterview adjustment clusters			
	Detroit MI	Milwaukee WI	Minneapolis, St. Paul MN	
N	576	240	283	
NI	26	2	3	
I	550	238	280	
NI/I	.0473	.0084	.0107	
F	1.047	1.008	1.011	
f	1.047	1.032	1.028	
sef	.0008	.0008	.0006	
F-f	0.000	-.024	-.017	
	MI other ranked SMSA	MI,WI,MN unranked SMSA	MI not SMSA	WI,MN not SMSA
N	248	416	368	384
NI	5	6	19	8
I	243	410	349	376
NI/I	.0206	.0146	.0544	.0213
F	1.021	1.015	1.054	1.021
f	1.019	1.022	1.045	1.030
sef	.0005	.0010	.0014	.0009
F-f	+.002	-.007	+.009	-.009
	IA,ND,SD,NE SMSA	IA not SMSA	ND,SD,NE not SMSA	
N	230	292	321	
NI	7	7	8	
I	223	285	313	
NI/I	.0314	.0246	.0256	
F	1.031	1.025	1.026	
f	1.023	1.032	1.030	
sef	.0010	.0013	.0010	
F-f	+.008	-.007	-.004	
	Washington DC,MD,VA	Baltimore MD	DE,MD,VA,WV other SMSA	DE,MD,VA,WV not SMSA
N	453	353	476	553
NI	18	9	17	13
I	435	344	459	540
NI/I	.0414	.0262	.0370	.0241

Table 2. FIRST QUARTER 1983 INTERVIEW STATUS STATISTICS FOR HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE AND SMSA NATIONAL RANK AND STATUS - Continued

Statistics	Housing unit noninterview adjustment clusters				
F	1.041	1.026	1.037	1.024	
f	1.041	1.021	1.040	1.028	
sef	.0011	.0011	.0011	.0009	
F-f	0.000	+.005	-.003	-.004	
	NC SMSA	NC not SMSA	Atlanta GA	SC,GA other SMSA	SC,GA not SMSA
N	359	433	276	268	570
NI	21	18	8	8	16
I	338	415	268	260	554
NI/I	.0621	.0434	.0299	.0308	.0289
F	1.062	1.043	1.030	1.031	1.029
f	1.039	1.024	1.033	1.039	1.031
sef	.0015	.0010	.0012	.0028	.0010
F-f	+.023	+.019	-.003	-.008	-.002
	Miami FL	Tampa, St. Peterburg FL	FL other SMSA	FL not SMSA	
N	237	203	444	434	
NI	12	3	7	14	
I	225	200	437	420	
NI/I	.0533	.0150	.0160	.0333	
F	1.053	1.015	1.016	1.033	
f	1.035	1.032	1.030	1.033	
sef	.0009	.0007	.0007	.0007	
F-f	+.018	-.017	-.014	0.000	
	KY SMSA	KY not SMSA	TN ranked SMSA	TN not SMSA	
N	224	270	229	349	
NI	9	4	3	9	
I	215	266	226	340	
NI/I	.0419	.0150	.0133	.0265	
F	1.042	1.015	1.013	1.026	
f	1.045	1.021	1.029	1.028	
sef	.0026	.0009	.0009	.0013	
F-f	-.003	-.006	-.016	-.002	

Table 2. FIRST QUARTER 1983 INTERVIEW STATUS STATISTICS FOR HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE AND SMSA NATIONAL RANK AND STATUS - Continued

Statistics	Housing unit noninterview adjustment clusters				
	AL,LA ranked SMSA	AL,MS,LA unranked SMSA	AL,MS,LA not SMSA	AR,OK SMSA	AR,OK not SMSA
N	310	351	718	271	401
NI	15	12	22	9	8
I	295	339	696	262	393
NI/I	.0508	.0354	.0316	.0344	.0204
F	1.051	1.035	1.032	1.034	1.020
f	1.047	1.025	1.032	1.053	1.032
sef	.0017	.0006	.0010	.0021	.0010
F-f	+.004	+.010	0.000	-.019	-.012

	Houston TX	Dallas TX	TX other ranked SMSA	TX unranked SMSA	TX not SMSA
N	361	264	375	467	530
NI	16	11	12	15	14
I	345	253	363	452	516
NI/I	.0464	.0435	.0331	.0332	.0271
F	1.046	1.044	1.033	1.033	1.027
f	1.032	1.043	1.041	1.036	1.024
sef	.0006	.0020	.0015	.0010	.0010
F-f	+.014	+.001	-.008	-.003	+.003

	MT,ID,WY,NV	Denver CO	Phoenix AZ	CO,MN,AZ,UT other SMSA
N	411	263	249	341
NI	10	11	2	9
I	401	252	247	332
NI/I	.0249	.0437	.0081	.0271
	1.025	1.044	1.008	1.027
f	1.035	1.047	1.032	1.028
sef	.0011	.0005	.0009	.0006
F-f	-.010	-.003	-.024	-.001

	Seattle, Everett WA	WA,OR other SMSA	WA,OR not SMSA
N	252	421	394
NI	6	12	19
I	246	409	375
NI	.0244	.0293	.0507

Table 2. FIRST QUARTER 1983 INTERVIEW STATUS STATISTICS FOR HOUSING UNIT NONINTERVIEW ADJUSTMENT CLUSTERS AS DEFINED BY STATE AND SMSA NATIONAL RANK AND STATUS - Continued

Statistics	Housing unit noninterview adjustment clusters		
F	10.24	1.029	1.051
f	1.025	1.024	1.041
sef	.0003	.0008	.0014
F-f	-.001	+.005	+.010

	Los Angeles, Long Beach CA	San Francisco, Oakland CA	Anaheim, Santa Ana, Garden Grove CA	San Diego CA	San Bernardino, Riverside, Ontario CA
N	1,065	492	295	297	227
NI	50	18	13	14	8
I	1,015	474	282	283	219
NI/I	.0493	.0380	.0461	.0495	.0365
F	1.049	1.038	1.046	1.050	1.036
f	1.049	1.038	1.044	1.030	1.028
sef	.0008	.0004	.0007	.0006	.0014
F-f	0.000	0.000	+.002	+.020	+.008

	CA,HI other ranked SMSA	CA unranked SMSA	CA,AK not SMSA
N	637	268	251
NI	21	5	11
I	616	263	240
NI/I	.0341	.0190	.0458
F	1.034	1.019	1.046
f	1.033	1.021	1.029
sef	.0010	.0015	.0014
F-f	+.001	-.002	+.017

Table 3. PERCENT OF CLUSTERS WITH F MINUS f DIFFERENCE IN MINUS .005 TO MINUS .025 RANGE AND IN PLUS .005 TO PLUS .025 RANGE BY REGION AND TYPE OF CLUSTER[a]

Region	Total		Type of cluster: Individual SMSA		Other SMSA[b]		Not SMSA	
	Minus .005 to minus .025	Plus .005 to plus .025	Minus .005 to minus .025	Plus .005 to plus .025	Minus .005 to minus .025	Plus .005 to plus .025	Minus .005 to minus .025	Plus .005 to plus .025
NATION	25.3 (79)	26.6	21.4 (28)	28.6	28.6 (28)	21.4	26.1 (23)	30.4
NORTHEAST	18.8 (16)	12.5	16.7 (6)	16.7	16.7 (6)	0.0	25.0 (4)	25.0
MIDWEST	33.3 (21)	38.1	42.8 (7)	28.6	16.7 (6)	50.0	37.5 (8)	37.5
SOUTH	29.7 (27)	22.2	14.3 (7)	42.8	45.4 (11)	18.2	22.2 (9)	11.1
WEST	13.3 (15)	33.4	12.5 (8)	25.0	20.0 (5)	20.0	0.0 (2)	100.0

[a] Base (number of clusters) of each pair of percents is shown in parentheses.
[b] Includes all other SMSA categories in table 2, (i.e., other than individual (nationally ranked) SMSAs) and states.