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**Weighting Alternatives to Compensate for Longitudinal
Nonresponse in the Survey
of Income and Program Participation**

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Key Words: attrition; wave nonresponse; longitudinal weighting; logistic regression

1. Introduction.[1]

It is well established in the survey sampling literature that the commonly used estimators for population parameters may be biased when based only on the sample respondents. Since the early days of the development of sampling theory various methods for compensating for this bias have been derived and implemented. These methods have ranged from ad hoc techniques to complex modeling procedures which sought to capture functional relationships between sample respondents and nonrespondents. While considerable attention has been devoted to this problem, nonresponse-related error remains one of the more prominent sources of nonsampling error affecting the quality of survey estimates. Moreover, general concern regarding the effects of nonrespose is growing as a result of a trend toward declining response rates.

The Survey of Income and Program Participation (SIPP) has produced national-level estimates for the U.S. resident population and subgroups, and provides the basis for studies and analysis of selected dynamic characteristics. Beginning with the 2004 SIPP panel, the survey will produce both the national and state-level estimates. The duration of the panels ranges from 30 to 48 months. The survey uses a 4-month recall period, and approximately the same number of interviews are conducted each month of a 4-month data collection period or wave.

SIPP is a longitudinal survey in which we encounter wave nonresponse. That is, data for certain sample units are missing for a given round or wave of data collection. In recent years the Bureau of the Census has shown increased interest in the levels of wave nonresponse and attrition in the survey and the extent to which they are affecting the principal survey estimates. For the research described in this paper, longitudinal nonresponse refers to wave nonresponse in SIPP that occurred within a given extended period of a panel. Longitudinal respondents will refer to members of the survey sample for whom data are collected every wave of the longitudinal period under consideration.

 To compensate for the potential effects of longitudinal nonresponse bias in SIPP, we adjust the weights of the longitudinal respondents. Researchers have investigated the effectiveness of this weight modification. See for example, Rizzo, Kalton, Brick and Petroni (1994), Folsom and Witt (1994), and Hendrick (1996). There is a persistent need to ensure that our compensatory procedures are adaptable to changes in the rate of longitudinal nonresponse and that their effectiveness is not significantly diminished. The paper reports some of the findings of an

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extensive research effort relating to weighting to account for SIPP longitudinal nonresponse.

The following section summarizes the theoretical framework for selected weighting schemes to adjust for longitudinal nonresponse. Sections 3 and 4 provide respectively a summary of a preliminary assessment of the potential effects of longitudinal nonresponse on selected SIPP estimates, and a discussion of plausible adjustment alternatives. In Section 5 empirical results are presented from the application of the suggested weighting alternatives, and concluding remarks are offered in Section 6.

2. Theoretical Framework for Longitudinal Weighting.

The focus of the study is the effectiveness of reweighting sample data to account for wave nonresponse in providing estimates of descriptive statistics such as totals, means, and ratios for a finite, labeled population. From the population denoted by $U = \{ U_1, U_2, ..., U_N \}$, we select a sample s of size n. For survey variable y, let Y_k denote the population value for the kth unit of U, and π_k be the first order inclusion probability for the kth unit. That is, $\pi_k = Pr\{U_k \epsilon\ s\}$. For the complete response case, we know that an unbiased estimator of the population total $T_y = \Sigma_1^N Y_k$ is $\Sigma_{k \epsilon s} Y_k \pi_k^{-1}$, the Horvitz-Thompson estimator (HTE). This of course assumes no measurement error. However, when there is wave nonresponse, the estimator is modified to account for the missing data.

The methodology generally accepted for reweighting for wave nonresponse in longitudinal surveys is associated with a random response model for the survey's response mechanism. We focused on this approach for the work presented in this paper. We assume that for wave t the kth population unit has a nonzero probability ϕ_{kt} of responding to the survey, and the unbiased

estimator corresponding to the HTE becomes $\hat{T}_{yt} = \sum_{k \epsilon s_{r(t)}} \dfrac{Y_{kt}}{\pi_k \phi_{kt}}$, where $s_{r(t)}$ is the set of

longitudinal respondents. Unfortunately we don't know the ϕ_{kt}, and have to resort to modeling to obtain a suitable reweighting estimator designed to reduce the bias associated with the absence of the nonrespondents' data. To ensure that the sum of the final survey weights is consistent with known population control totals for specific auxiliary variables, a poststratification ratio adjustment is often made at the final stage of the reweighting process. The resultant expression for the estimator of the total is

$$\hat{T}_{yt} = \sum_{k \epsilon s_{r(t)}} \dfrac{Y_{kt} g_{kt}(s)}{\pi_k \hat{\phi}_{kt}}, \qquad (2.1)$$

where $g_{kt}(s)$ is the adjustment factor designed to benchmark the weights to population control totals, and $\hat{\phi}_{kt}$ is determined by the estimation methodology applicable to the assumed response model. One of the advantages of a longitudinal survey is that it permits the use of data from previous waves of data collection for the computation of $g_{kt}(s)$ and the estimation of ϕ_{kt}, which can possibly effect a reduction in bias attributable to panel or other longitudinal nonresponse.

In SIPP, the reweighting procedure designed to compensate for person level longitudinal nonresponse divides the sample into nonresponse adjustment or weighting cells, believed to be homogeneous relative to response propensity and values of survey variables. The cells are determined prior to the beginning of a SIPP panel, and remain fixed for the duration of the panel, in some instances for two, three or more panels. While the computing convenience associated with a relatively fixed set of nonresponse weighting cells and a fairly simple nonresponse weighting methodology is desirable, two of the relevant questions that this research attempts to address are (1) How effective is the current nonresponse adjustment methodology in accounting for longitudinal nonresponse in survey estimation, and (2) Are the characteristics of the SIPP nonresponse adjustment cells and the concomitant assumptions resistant to changes in the sample engendered by attrition?

3. Preliminary Assessment of Major Factors Affecting Longitudinal Nonresponse Bias in SIPP

The primary data sources for the study were the 1992, 1993, and 1996 SIPP panels, which included ten, nine, and twelve waves, respectively. The associated sample sizes (households) for the three panels were 21,577, 21,823, and 40,188.

3.1 Attrition Rates.

Table 3.1 presents the attrition rates for the 1990-96 SIPP panels. The rate for the households of the eight-wave 1990 panel was about 21%, while the corresponding rate for the twelve waves of the 1996 panel was nearly 36%. The Wave 1 attrition rates for households ranged from 7.3 to 9.3 percent. There is usually a substantial loss of sample units at Wave 2, with a lower rate of attrition occurring with each subsequent wave. In comparing rates for the five SIPP panels displayed in the table, we also observe that there is a general trend toward increased attrition over time for the corresponding waves of the respective panels. For example, the attrition rate after Wave 8 steadily increased from 21.3% for the 1990 panel to 31.3 % for the 1996 panel. While we seek to develop survey methods that will ensure that these rates will not reach levels that will seemingly compromise the quality of the survey results, there is also a need to derive and maintain effective compensatory procedures.

With attrition rates exceeding 35% at the end of a four-year panel, the potential for sizable nonresponse related bias in survey estimates is substantial, especially if the increases in attrition are accompanied by violations of the major assumptions regarding the properties of the extant weighting cells.

Table 3.1 SIPP Attrition Rates for the 1990-1996 Panels

Wave\Panel	1990	1991	1992	1993	1996
1	7.3%	8.4%	9.3%	8.9%	8.4%
2	12.6%	13.9%	14.6%	14.2%	14.5%
3	14.4%	16.1%	16.4%	16.2%	17.8%
4	16.6%	17.7%	18.0%	18.2%	20.9%
5	18.8%	19.3%	20.3%	20.2%	24.6%
6	20.2%	20.3%	21.6%	22.2%	27.4%
7	21.1%	21.0%	23.0%	24.3%	29.9%
8	21.3%	21.4%	24.7%	25.5%	31.3%
9	----	----	26.2%	26.9%	32.8%
10	-----	----	26.6%	-----	34.0%
11	-----	-----	-----	-----	35.1%
12	-----	-----	-----	-----	35.5%

3.2 A Comparison of SIPP Respondents and Nonrespondents.

To complete the identification of the response groups of a SIPP panel we will define intermittent respondents as those members of the survey panel who were respondents for the last wave of the longitudinal period, but were nonrespondents for at least one of the previous waves. The attritive respondents are the dropouts or individuals who responded to at least one wave but discontinued their participation in the survey before the end of the referenced longitudinal period. Both the attritive and the intermittent respondents are considered longitudinal nonrespondents.

As we indicated previously, a crucial assumption of the the conventional nonresponse weighting scheme is that within designated weighting cells nonresponse is ignorable – the response mechanism is not related to the study variable. In Table 3.2 we show, for an arbitrary selection of six of the larger nonresponse weight adjustment cells of the 1996 panel, the percentage of sample **longitudinal respondents and nonrespondents** in categories defined by the selected SIPP survey items. The referenced longitudinal period for the table entries is calendar year 1996. The numbers in parenthesis are the number of individuals in the sample that were included in the respective cells. The indicated percentages represent the percentages of the cells' longitudinal respondents (or nonrespondents) who had the specified survey characteristic at **any** time during the calendar year. For the attritive respondents for the calendar year, their inclusion in a given

category is based on the period from the beginning of the calendar year to the time of their last interview. The six cells selected for this table are characterized in Appendix B.4 by race, education, type of income, poverty status, and average monthly income. (See Appendices B.1 - B.3 for a general description of the nonresponse adjustment cells for the 1996 panel.)

 We can observe that in five of the six adjustment cells of the table, there is at least one category where a sizable difference exists between the corresponding percentages for the respondents and nonrespondents. For example, in Cell 1 about 46 percent of the sample respondents were in households below the poverty level, while 56 percent of the nonrespondents were in this category. In addition, about 36 percent of the respondents were employed, but this corresponds to 99 percent for the nonrespondents. Although the table is presented for illustrative purposes, similar results were generally observed for the other nonresponse adjustment cells of the 1996 panel and those of the 1992 and 1993 panels.

All of the differences implied by the highlighted corresponding proportions are statistically significant at a level of significance of ten percent. In the instances where the proportion of nonrespondents in a given category exceeded that of the corresponding respondents, their difference is a lower bound of the difference that would have resulted if data had been obtained for all of the waves of the calendar year from those who attrited. On the other hand, in those cases where the indicated proportions for the respondents exceeded those for the nonrespondents, the actual differences could be less. These results warrant a more definitive examination of the effects of violations of the ignorability assumption for the current SIPP nonresponse adjustment cells.

Table 3.2 - Adjustment Cell Sample Percentages For Selected Items By Response Status - Calendar Year 1996

Percentage who were ...	Cell 1		Cell 3	
	Respondents (1299)	Nonrespondents (219)	Respondents (865)	Nonrespondents (182)
receiving social security	43.50	42.01	52.30	47.30
receiving food stamps	24.63	21.63	3.70	2.20
receiving AFDC	8.01	8.22	0.92	1.01
in poverty	**45.96**	**56.62**	**27.98**	**37.36**
receiving medicaid	**44.65**	**34.70**	13.18	7.69
covered by health insurance	43.88	39.27	63.58	62.26
employed	**35.72**	**99.09**	**37.69**	**100.00**

Percentage who were ...	Cell 30		Cell 45	
	Respondents (1666)	Nonrespondents (246)	Respondents (556)	Nonrespondents (103)
receiving social security	6.24	3.25	4.86	5.82
receiving food stamps	0.12	0.81	3.24	0.97
receiving AFDC	0.00	0.41	0.90	0.00
in poverty	1.08	2.85	**8.81**	**14.71**
receiving medicaid	0.72	0.81	5.40	3.92
covered by health insurance	96.88	95.12	**77.88**	**60.08**
employed	99.34	95.12	96.40	100.00

Percentage who were ...	Cell 100		Cell 125	
	Respondents (560)	Nonrespondents (162)	Respondents (632)	Nonrespondents (129)
receiving social security	6.96	7.41	**12.13**	**3.82**
receiving food stamps	6.79	6.79	3.64	1.55
receiving AFDC	6.07	9.88	1.27	0.78
in poverty	14.82	17.90	0.48	0.00
receiving medicaid	10.36	7.41	7.12	4.65
covered by health insurance	**59.82**	**50.62**	90.34	81.40
employed	99.82	100.00	**84.65**	**100.00**

3.3 Some Indications of Levels of Nonresponse Bias in Selected Estimates.

In our previous work with the 1992-93 SIPP panels we observed results, for some of the selected items, that suggested a strong potential for nonresponse bias in their estimates, even after the application of the related weight modifications.   We extended our investigation to the 1996 panel and discovered that most of the general patterns observed for the 1992-93 panels were also apparent in the more recent panel. In lieu of a complete set of benchmarks for the selected survey items, the evaluations of the effects of longitudinal nonresponse bias in SIPP entailed comparing Wave 1 estimates based on Wave 1 respondents with Wave 1 estimates based on longitudinal respondents from subsequent waves, whose weights have been adjusted for longitudinal nonresponse. For example, for the 1996 panel we derived additional estimates for Wave 1 using longitudinally adjusted respondent data from waves 4 and 12 , denoted by Wave 1/Wave 4 and Wave 1/Wave 12, respectively.   The underlying assumption for the associated comparisons was that the Wave 1-based estimates were "more accurate" than those derived from subsequent waves, and therefore, for the evaluation they could serve as a standard for the estimates from the latter waves.

Tables 3.3 A-C provide comparisons of Wave 1 estimates of totals derived from Wave 1 respondents and the corresponding estimates derived from longitudinal respondents of subsequent waves adjusted for nonresponse. The nonresponse adjustments were estimates of units' response propensities, derived from the application of the current weighting cell adjustment procedure. Relative differences have been computed for the estimates produced from the longitudinal respondents. The major conclusion from the examination of these results is that for several of the SIPP items estimates still include significant bias after the longitudinal nonresponse adjustments are made; moreover, in general the effects of longitudinal nonresponse on SIPP estimates are seemingly exacerbated as time-in-sample is increased. The data shown in these tables are for item totals. The magnitude of the "measures of error", as will be seen in subsequent results, are generally larger for other domains of interest.

Ostensibly we have vivid indications of increasing attrition and a response mechanism that could potentially result in nonresponse bias not accounted for by the current SIPP longitudinal

nonresponse adjustment methodology.

Table 3.3A - 1992 SIPP Estimates and Measures of Error by Selected Item - Wave 1 Totals (In Thousands)

Item	Wave 1 (S.E.)	Wave 1/Wave 4		Wave 1/Wave 7	
		Estimate	Relative Difference (%)	Estimate	Relative Difference(%)
Food Stamps	21,770 (550)	21,653	-0.54	21,539	-1.06
AFDC	11,185 (408)	11,127	-0.52	11,051	-1.20
Medicaid	23,394 (567)	23,324	-0.30	25,572	0.76
Social Security	36,927 (679)	37,005	0.21	36,910	-0.03
Health Ins.	215,530 (518)	216,486	0.44	217,142	0.75
Poverty	37,675 (684)	36,996	-1.80	36,789	-2.35
Employed	119,532 (459)	120,212	0.57	120,710	0.99
Unemployed	9,261 (218)	9,277	0.17	9,058	-2.19
Not in Labor Force	68,126 (472)	67,436	-1.01	67,151	-1.43
Married	110,306 (1066)	110,324	0.02	110,340	0.03
Divorced	16,458 (550)	16,630	1.05	16,605	0.89

Table 3.3B - 1993 SIPP Estimates and Measures of Error by Selected Item - Wave 1 Totals
(In Thousands)

Item	Wave 1 (S.E.)	Wave 1/Wave 5		Wave 1/Wave 9	
		Estimate	Relative Difference (%)	Estimate	Relative Difference (%)
Food Stamps	25,812 (591)	25,821	0.03	25,700	-0.43
AFDC	13,234 (441)	13,232	-0.01	12,937	-2.24
Medicaid	27,079 (603)	27,412	1.23	27,616	1.98
Social Security	37,852 (686)	37,717	0.36	37,616	0.09
Health Insurance	217,570 (710)	219,865	1.05	221,037	1.59
Poverty	41,119 (706)	39,909	-2.94	39,874	-3.03
Employed	120,323 (500)	121,144	0.68	121,656	1.11
Unemployed	9,378 (220)	9,211	-1.78	9,132	-2.62
Not in Labor Force	69,313 (492)	68,709	-0.87	68,326	-1.42
Married	111,474 (1116)	111,498	0.02	111,562	0.08
Divorced	17,262 (564)	17,604	1.99	17,473	1.23

Table 3.3C - 1996 SIPP Estimates and Measures of Error by Selected Item - Wave 1 Totals
(In Thousands)

Item	Wave 1 (S. E.)	Wave 1/Wave 4		Wave 1/Wave 12	
		Estimate	Relative Difference (%)	Estimate	Relative Difference (%)
Food Stamps	25,019 (342)	24,851	-0.65	24,736	-1.13
AFDC	13,310 (257)	13,281	-0.21	12,678	4.75
Medicaid	28,173 (359)	28,331	0.56	28,264	0.33-
Social Security	37,087 (401)	37,106	0.05	37,375	0.78
Health Insurance	194,591 (216)	195,915	0.68	197,299	1.39
Poverty	41,796 (471)	41,096	-1.68	41,141	-1.57
Employed	191,201 (250)	191,665	0.24	191,963	0.40
Unemployed	6,406 (181)	6,182	-3.49	6,046	-5.62
Not in Labor Force	66,647 (488)	66,412	-0.35	66,310	-0.51
Married	114,367 (519)	114,138	-0.20	114,388	0.02
Divorced	18,463 (298)	18,514	-0.28	18,130	-1.80

4. Weight Adjustment Alternatives

Weight adjustment methods designed to cope with nonresponse bias make use of models, either explicitly or implicitly. A variety of nonresponse models have been advanced in the survey literature, ranging from the simplistic uniform response model to the generalized weight calibration in sampling model presented by Singh, Wu and Boyer (1995). The two models that appear most prominently in survey practice have been referred to as the response homogeneity group (RHG) model (Sarndal, Swensson, and Wretman (1992)) and the logistic regression model. The class of RHG weighting schemes, which includes the procedure currently used for SIPP, essentially partitions the survey sample into groups or nonresponse weighting cells assumed to be homogeneous relative to response propensity or the response mechanism applicable to the members of the groups. Members of the same RHG are also expected to have similar values for the variables of interest. The nonresponse adjustment obtained from the procedure is the inverse of the cells'

weighted response rates. The use of the logistic model entails fitting a logistic regression model to the probability of response to the survey. The modeling is based on data available for both the survey respondents and nonrespondents. A unit's nonresponse weight factor for this procedure is the inverse of the estimated response probability.

4.1 Selecting Response Homogeneity Groups

An important factor in the determination of the effectiveness of a weighting cell adjustment procedure is the actual selection of the weighting cells or RHGs. In practice the groups are determined by the availability of data for the predictor variables for the survey nonrespondents, the expert judgment of survey practitioners, and from a variety of plausible and some perhaps less plausible response modeling efforts. Thomsen (1978) provided a strategy for the selection of efficient nonresponse weight adjustment cells for the fixed response model. Hendrick (1996) described the weighting cell selection process for the longitudinal nonresponse weighting currently used for SIPP. However, for the random response model, Dufour et al. (1998) suggest that the study of potential relationships between longitudinal nonresponse bias and measures of the impact of specific longitudinal weight adjustments on survey estimates could yield another useful tool for the development and selection of more efficient nonresponse weighting cells. Presumably this methodology could be applied to SIPP if a definitive relationship between estimates of nonresponse error and derived measures of change between the initial and final survey weight adjustments can be established.

4.2 Modeling Response Propensity.

For this discussion we will assume that unit level data for various auxiliary variables are available. Returning to the notation of equation (2.1), we define the response model as

$$\phi_k = \phi_k(\mathbf{x},\beta),$$

(4.2.1)

where $\mathbf{x}$ is a p-vector of response predictor variables, and β is the p-vector of model parameters. For the two commonly used procedures for modeling ϕ_k, the pseudo maximum likelihood (PML) and the method of moments (MOM), Singh, Wu and Boyer (1995) give the associated estimating equations for β. The PML estimating equations are

$$\Sigma_{k \in s}\pi_k^{-1}(\partial\phi_k/\partial\beta_i)\phi_k^{-1}(1-\phi_k)^{-1}(r_k-\phi_k)=0$$

(4.2.2)

where $i = 1,2, ...,p$ and r_k is the 0-1 response indicator. For the MOM approach the estimating equations for β are

$$\Sigma_{k \in s_r}x_{ki}\pi_k^{-1}\phi_k^{-1}(x_k,\beta)=T_{xi}, \qquad i = 1,2,...,p,$$

(4.2.3)

where T_{xi} is the expansion estimate of the population total for the ith predictor variable. To ensure that $\hat{\phi}_k$ is between 0 and 1, the logistic regression model is often used to model the response propensities. For this model we have $\phi_k^{-1}=1+\exp(-x_k'\beta)$ and the corresponding PML estimating equations are

$$\Sigma_{k \in s}x_{ki}[r_k-\exp(x_k'\beta)/(1+\exp(x_k'\beta))]\pi_k^{-1}=0.$$

(4.2.4)

The estimating equations for the method of moments are

$$\Sigma_{k \in s_r} x_{ki} \pi_k^{-1} \exp(-x_k' \beta) = \Sigma_{k \in (s-s_r)} x_{ki} \pi_k^{-1}.$$

(4.2.5)

For the simplest model in which the predictor variables divide the population into mutually exclusive and exhaustive (MEE) categories, the methods given in (4.2.2) and (4.2.3) lead to the widely used weighting cell nonresponse adjustment method; the cells correspond to the MEE categories. For the ith category (cell), the estimator of the nonresponse adjustment factor (under the ignorable nonresponse assumption within each cell) becomes

$$\hat{\phi}_k^{-1} = T_{xi} / \Sigma_{k \in s_r} x_{ki} \pi_k^{-1} = \Sigma_{k \in s(i)} \pi_k^{-1} / \Sigma_{k \in s_r(i)} \pi_k^{-1},$$

(4.2.6)

where s(i) is the set of sample cases in the ith weighting cell, and $s_r(i)$ is the corresponding set of sample respondents in the cell.

4.3 Deriving Adjustment Cell Imputes from Previous Waves of Longitudinal Surveys

For nonresponse adjustment cell c , c = 1,2, ...H_s, we define the following:

    s(c) - the subset of the survey sample included in the cell ;
    s_r(c) - set of sample respondents;
    s_m(c) - set of sample nonrespondents;
    $\bar{y}_{r(c)}$ - the weighted mean of the sample respondents:
    $\bar{y}_{m(c)}$ - the weighted mean of the sample nonrespondents.

In addition, let y_k denote the value of the survey variable for the kth unit and w_k represents the inverse of its selection probability .

For the specified set of nonresponse adjustment cells the expansion estimator of T_y, the total for y, is

$$\hat{T}_y = \Sigma_{c=1}^{H_s} \Sigma_{k \in s(c)} w_k y_k \qquad\qquad (4.3.1)$$

$$= \Sigma_{c=1}^{H_s} [\bar{y}_{r(c)} \Sigma_{k \in s_r(c)} w_k + \bar{y}_{m(c)} \Sigma_{k \in s_m(c)} w_k] \qquad (4.3.2)$$

Since we don't know $\bar{y}_{m(c)}$ the RHG weighting scheme is used to adjust for the missing data in each nonresponse adjustment cell. The nonresponse adjusted estimator is

$\Sigma_{c=1}^{H_s} \Sigma_{k \in s_r(c)} w_k y_k f_k$, where $f_k = \hat{\phi}_k^{-1}$, the inverse of the estimated response probability for the kth unit.

Now this estimator can be expressed as

$$T_y^* = \Sigma_{c=1}^{H_s} \Sigma_{k \in s_r(c)} w_k y_k [1 + \Sigma_{s_m(c)} w_k / \Sigma_{s_r(c)} w_k]$$

$$= \Sigma_{c=1}^{H_s} [\bar{y}_{r(c)} \Sigma_{k \in s_r(c)} w_k + \bar{y}_{r(c)} \Sigma_{s_m(c)} w_k] \qquad (4.3.3)$$

We see that the sample means for the nonrespondents of the weighting cells, shown in (4.3.2), have been replaced by the sample means for the respondents. Under the assumption that $E(\bar{y}_{r(c)}) = E(\bar{y}_{m(c)}) \quad \forall c, \quad T_y^*$ is an unbiased estimator of T_y, and to the extent that the assumption is violated, nonresponse related bias results from the nonresponse weight adjustments. While we know that for a given longitudinal sample the

$\overline{y}_{m(c)}$ are not known, if longitudinal data are available for response and predictor variables, they could permit "reliable estimates" , which could be imputed for the y_k for the nonrespondents of the cell. Consequently our estimator of the total for variable y derived from the inclusion of the weighting cell imputes becomes

$$T^{**}=\Sigma_{c=1}^{H_s}[\overline{y}_{r(c)}\Sigma_{k\in s_r(c)}w_k+\overline{y}_{m^*(c)}\Sigma_{k\in s_m(c)}w_k],$$

(4.3.4)

where $\overline{y}_{m^*(c)}$ is the weighted mean of the imputes for the nonrespondents of weighting cell c. Empirical results of the implementation of this alternative are given in the next section, in which the weighted mean of the intermittent respondents was imputed for the survey variable (y_k) for the nonrespondents of the established nonresponse weighting cells.

5. Some Empirical Results

Tables 5 A-C present a comparison of SIPP estimates based on the current nonresponse weighting cell adjustment methodology (RHG) with estimates from three other weighting alternatives – logistic regression modeling (LR), a "logistic regression based" weighting cell procedure (LR/RHG), and the imputation scheme suggested in Section 4.3 (CI). The items appearing in the tables are selected items from the 1992, 1993, and 1996 panels. The logistic regression modeling approach resulted in nonresponse weight adjustments derived directly from the estimates of response propensity generated from the selected model, while the weighting cells of the logistic regression-based weight adjustment procedure (LR/RHG) are defined by the prediction variables of the logistic regression analysis. The logistic regression models fitted to the '92, '93, and '96 SIPP panels are presented inAppendix A.

The general form of the estimators from which the estimates of Tables 5 A -C are derived is given in equation 2.1. Differences in the four alternatives estimators essentially result from the different estimators of ϕ_{kt}, the response propensity for the kth unit at Wave t, for the varied response models considered. Equation 2.1 is also the general form of the estimator associated with the Wave 1- based estimates, the standard for the comparisons. However, for the estimator for the population total at Wave 1, denoted by

$$\hat{T}_{y1}=\Sigma_{k\in s_r(1)}Y_{k1}(\pi_k\hat{\phi}_{k1})^{-1}g_{k1}(s),$$

(5.1)

$\hat{\phi}_{kt}^{-1}$ is a Wave 1 household nonresponse adjustment. For Wave t, $t\geq 2$, $\hat{\phi}_{kt}^{-1}$ can be represented as the product of the Wave 1 household nonresponse adjustment and the person-level nonresponse adjustment for the applicable wave.

For the RHG and LR/RHG estimators for population total T_y, the estimator of ϕ_{kt} is the same, but for different sets of weighting cells. From (4.2.6) we can see that $\hat{\phi}_{kt}$ for the RHG and LR/RHG procedures is

$$\hat{\phi}_{kt}(RHG)=\hat{\phi}_{k1}[\Sigma_{k\in s_r(i)}\pi_k^{-1}/\Sigma_{k\in s(i)}\pi_k^{-1}]$$

(5.2)

From the discussion of Section 4.2 we can conclude that the corresponding estimator of ϕ_{kt} for the LR method is

$$\hat{\phi}_{kt}(LR)=\hat{\phi}_{k1}[1+\exp(-x_k'\beta)]^{-1}.$$

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(5.3)

The cell imputaion estimator (CI) of the population total is defined in equation (4.3.4).

Table 5A. Comparison of Nonresponse Weighting Alternatives - 1992 Totals
(In Thousands)

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 4 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	21,770	21,653	-0.54	21,751	-0.09	21,791	-0.09	21,791	0.09
AFDC	11,185	11,127	-0.52	11,214	0.26	11,209	0.22	11,440	2.28
Medicaid	23,394	23,324	-0.30	23,529	0.58	23,527	0.57	23,634	1.02
Social Security	36,927	37,005	0.21	37,132	0.56	37,127	0.54	36,759	-0.46
Health Insurance	215,530	216,486	0.44	216,468	0.44	216,446	0.42	213,066	-0.22
In Poverty	37,675	36,996	-1.80	37,004	-1.78	36,990	-1.82	37,873	0.53
Employed	119,532	120,212	0.57	119,374	-0.13	119,378	-0.13	119,136	-0.33
Unemployed	9,261	9,277	0.19	9,116	-1.56	9,118	-1.54	9,423	1.76
Not in Labor Force	68,126	27,436	-1.01	68,605	0.70	68,602	0.70	68,413	0.42
Married	110,306	110,324	0.02	110,180	-0.11	110,187	-0.11	110,357	0.05
Divorced	16,458	16,630	1.05	16,113	-2.10	16,117	-2.01	16,753	1.80

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 7 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	21,770	21,539	-1.06	21,540	-1.06	21,518	-1.16	21,806	0.16
AFDC	11,185	11,051	-1.20	11,155	-0.27	11,127	-0.52	11,337	1.35
Medicaid	23,394	23,572	0.76	23,661	1.14	23,646	1.07	23,974	2.48
Social Security	36,927	36,918	-0.03	36,848	-0.22	36,873	-0.15	36,730	-0.53
Health Insurance	215,530	217,142	0.75	217,249	0.80	217,240	0.79	215,604	0.03
In Poverty	37,675	36,789	-2.35	36,576	-2.92	36,561	-2.96	37,454	-0.58
Employed	119,532	120,710	0.99	119,710	0.15	119,710	0.15	119,811	0.23
Unemployed	9,261	9,058	-2.19	8,797	-5.00	8,794	-5.04	9,184	-0.83
Not in Labor Force	68,126	67,151	-1.43	68,576	0.66	68,580	0.67	67,921	-0.30
Married	110,306	110,340	0.03	110,127	-0.16	110,129	-0.16	110,171	-0.12
Divorced	16,458	16,605	0.89	15,840	-3.75	15,876	-3.54	16,762	1.85

Table 5B. Comparison of Nonresponse Weighting Alternatives - 1993 Totals
(In Thousands)

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 5 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	25,812	25,821	0.03	25,767	-0.17	25,882	0.27	26,082	1.05
AFDC	13,234	13,232	-0.01	13,315	0.62	13,394	1.21	13,299	0.50
Medicaid	27,079	27,412	1.23	27,313	0.86	27435	1.31	27,375	1.09
Social Security	37,582	37,717	0.36	37,619	0.10	37,628	0.12	37,619	0.10
Health Insurance	217,570	219,865	1.05	219,884	1.06	219,880	1.06	218,992	0.65
In Poverty	41,119	39,909	-2.94	40,832	-0.70	41,065	-0.13	40,760	-0.87
Employed	120,323	121,144	0.68	120,223	-0.08	120,144	-0.15	120,955	0.52
Unemployed	9,378	9,211	-1.78	8,997	-4.07	9,017	-3.86	9,276	-1.09
Not in Labor Force	69,313	68,709	-0.87	69,947	0.91	70,005	1.00	68,880	-0.63
Married	111,474	111,498	0.02	111,265	-0.19	111,266	-0.19	111,244	-0.21
Divorced	17,262	17,604	1.99	16,981	-1.63	16,972	-1.67	17,759	2.88

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 9 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	25,812	25,700	-0.43	25,857	0.18	25,874	0.24	25,806	-1.96
AFDC	13,234	12,937	-2.24	13,240	0.05	13,242	0.06	12,596	-4.82
Medicaid	27,079	27,616	1.98	27,845	2.83	27,852	2.85	26,402	-2.50
Social Security	37,582	37,616	0.09	37,683	0.27	37,653	0.19	37,424	-0.42
Health Insurance	217,570	221,037	1.59	220,981	1.57	220,971	1.56	219,548	0.91
In Poverty	41,119	39,874	-3.03	41,306	0.46	41,393	0.67	40,582	-1.31
Employed	120,323	121,656	1.11	119,988	-0.28	119,941	-0.32	12,108	0.63
Unemployed	9,378	9,132	-2.62	8,806	-6.10	8,846	-5.68	9,074	-3.28
Not in Labor Force	69,313	38,326	-1.42	70,423	1.60	70,428	1.61	68,956	-0.52
Married	111,474	111,562	0.08	111,226	-0.22	111,235	-0.21	111,273	-0.18
Divorced	17,262	17,473	1.23	16,616	-3.74	16,609	-3.78	17,645	2.22

Table 5C. Comparison of Nonresponse Weighting Alternatives - 1996 Totals

| Item | Wave 1 Estimate | Wave 1 Estimation Based on Wave 4 Respondents | | | | | | | |
| | | RHG | | LR | | LR/RHG | | CI | |
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	25,019	24,857	0.65	25,133	0.45	25,091	0.29	25,127	0.44
AFDC	13,310	13,281	-0.21	13,443	1.01	13,421	0.83	13,470	1.20
Medicaid	28,173	28,331	0.56	28,609	1.55	28,570	1.41	28,484	1.10
Social Security	37,087	37,106	0.05	37,114	0.07	37,114	0.07	37,046	-0.11
Health Insurance	194,591	195,918	0.68	195,726	0.58	195,790	0.62	195,787	0.61
In Poverty	41,796	41,096	-1.68	42,188	0.94	42,067	0.65	41,909	0.27
Employed	191,201	191,665	0.24	190,927	0.14	190,974	-0.12	192,601	-0.29
Unemployed	6,406	6,182	-3.49	6,588	2.85	6,539	2.08	6,501	1.48
Not in Labor Force	66,647	66,412	-0.35	66,744	0.15	66,746	0.15	66,807	0.24
Married	114,367	114,138	-0.20	114,107	-0.23	114,110	-0.29	114,584	0.19
Divorced	18,463	18,514	0.28	18,472	0.05	18,476	0.07	18,532	0.32

| Item | Wave 1 Estimate | Wave 1 Estimation Based on Wave 12 Respondents | | | | | | | |
| | | RHG | | LR | | LR/RHG | | CI | |
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	25,019	24,736	-1.13	25,257	0.95	25,079	0.24	25,162	0.57
AFDC	13,310	12,678	-4.75	13,031	-2.09	12,937	-2.80	13,156	-1.16
Medicaid	28,173	28,264	0.33	28,814	2.28	28,698	1.87	27,736	2.00
Social Security	37,087	37,375	0.78	37,451	0.98	37,492	1.09	36,764	-0.87
Health Insurance	194,591	197,299	1.39	196,816	1.14	197,031	1.25	197,140	1.31
In Poverty	41,796	41,141	1.57	42,324	1.26	42,404	1.45	42,155	0.86
Employed	191,201	191,963	0.40	190,109	-0.57	190,442	-0.40	190,837	-0.19
Unemployed	6,406	6,046	-5.62	6,948	8.47	6,386	-0.30	6,357	-0.77
Not in Labor Force	66,647	66,310	-0.51	67,262	0.92	67,490	1.27	66,947	0.45
Married	114,367	114,388	0.02	114,317	-0.04	114,334	-0.03	114,447	0.07
Divorced	18,463	18,130	-1.80	18,083	-2.06	18,096	-1.99	18,792	1.73

In many cases the estimates derived from the current weighting procedure and the corresponding estimates based on the alternative methods are not statistically different from each other nor from the Wave 1 standard. However, the table entries suggest that for at least five of the eleven items selected for this study, there is a greater tendency for the introduction of bias in the estimation through the application of the current RHG

adjustment methodology. The items are AFDC, Poverty, Health Insurance, Unemployed, and Not in Labor Force. Moreover, we have indications that in those instances where relatively larger biases may occur for these items, a weighting alternative will generally perform better than the RHG procedure currently employed for SIPP. For example, for the Wave 5 respondents of the 1993 panel the estimated relative difference for poverty is -2.94% for the RHG procedure This is compared to estimates of -0.70, -0.13, and -0.87 for the weighting alternatives. For the Wave 9 respondents, the RHG's relative difference for poverty is -3.03, which is compared to the 0.46, 0.63, and -1.31 associated with the competing procedures. Note also that for the Wave 12 respondents of the 1996 panel the relative difference for unemployed for the RHG method is -5.62%, for which the corresponding estimate for the LR/RHG approach is -0.30%.

The comparison of estimates resulting from the current longitudinal noresponse adjustment with estimates for the selected adjustment alternative for the race and ethnicity domains are provided in Appendix C. Patterns for the estimates of nonresponse related error are less evident for these groups than those exhibited in the estimates for the item totals. For these estimates there appears to be more items with a potential for significant longitudinal nonresponse bias; moreover the magnitude of these biases are expected to be somewhat larger than those of the item totals. The results are rather mixed and vary by domain and panel. The results of the comparisons for the White and Black subgroups varied considerably among the three panels, while results for the Other Races domain seem to suggest a strong potential for longitudinal nonresponse for almost all of the selected items. The empirical results for the Hispanic subgroup provided more frequent indications of the preference for the current nonresponse reweighting procedure.

The range for the bias of longitudinal estimates for the SIPP principal items can be considerably larger than that of the item totals, and we have no clear indications that the methods appropriate for the effective reduction of the bias for the totals will prove effective for the subgroups of interest.

6. Discussion

The increased rate of wave nonresponse and attrition in the Survey of Income and Program Participation, and the potential for significant related bias in the estimates for the principal survey items, appear to warrant a continued effort to develop and maintain a longitudinal weight adjustment procedure designed to compensate for nonresponse. The results of the study summarized in this paper provide some insight into the possible extent of nonresponse related error in SIPP estimation, and they permitted some comparisons of plausible response modeling, weighting and imputation alternatives.

There is seemingly no single nonresponse model or weighting scheme that is uniformly "better" than the other alternatives considered. However, the results from the application of some of the methodology explored in the study to item totals are encouraging. We recommend extending the empirical study to include the 2001 SIPP panel and the adoption of a model based weighting cell adjustment procedure that takes advantage of the utility of the historical (previous wave) survey data in the definition of the applicable model and consequently the nonresponse weight adjustment cells. Future work in this area could also include proceeding with the study of the effectiveness of a class of distance measures as a tool for comparing alternative weighting strategies and the selection of a highly efficient set of nonresponse weighting cells. It may well be an intractable task to develop and maintain a longitudinal nonresponse adjustment scheme that is consistently effective for both item totals and the other domains of interest for which SIPP data are produced. Consequently we also recommend the consideration of a separate nonresponse adjustment model to be applied in the derivation of estimates other than item totals.

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Appendix A

SIPP Logit Response Models

For 1992 Panel :

$$\log(\frac{\phi}{1-\phi}) = -1.4281 + 0.4970*\text{renter} + 0.6065*\text{single} -0.5259*\text{midwest} +0.3512*\text{hispanic}$$
$$-0.1644*\text{medicare} -0.1412*\text{renter}*\text{single} +0.1826*\text{renter}*\text{midwest}$$
$$-0.1512*\text{renter}*\text{hispanic} -0.3010*\text{renter}*\text{medicare} -0.5638*\text{single}*\text{medicare},$$

where the predictor variables are homeowner status, marital status, geographical region, hispanic origin, and medicare recipiency.

For the 1993 Panel:

$$\log(\frac{\phi}{1-\phi}) = -1.0606 + 0,5221*\text{renter} + 0.5538*\text{single} -0.4807*\text{midwest}$$
$$+0.3688*\text{poverty} - 0.2542*\text{medicare} - 0.1502*\text{renter}*\text{single}$$
$$-0.1954*\text{renter}*\text{poverty} -0.3733*\text{renter}*\text{medicare}$$
$$+0.1004*\text{single}*\text{midwest} +0.2962*\text{midwest}*\text{poverty}$$
$$+0.6450*\text{poverty}*\text{medicare},$$

where the predictor variables are homeowner status, marital status, geographical region, poverty status, and medicare recipiency.

For the 1996 Panel:

$$\log(\frac{\phi}{1-\phi}) = -0.8884 + 0.1232*\text{ref. person} + 0.3417*\text{renter} +0.4792*\text{black}$$
$$+0.644*\text{college} +0.0754*\text{renter}*\text{black} + 0.1104*\text{renter}*\text{college}$$
$$+0.2668*\text{black}*\text{college},$$

where the predictor variables are relationship to reference person, homeowner status, race, and education.

SIPP LONGITUDINAL WEIGHTING OF PERSONS
NONRESPONSE ADJUSTMENT CELLS: LOW INCOME[2]

Race and Education	Unemployed[3]	Type Of Income			
		WELFARE[4]		OTHER	
		Labor Force Status		Labor Force Status	
		In Labor Force	Not in Labor Force	In Labor Force	Not in Labor Force
WNOTSP[5]					
<12 yrs					
12-15 yrs					
16+ yrs					
OTHER					
<12 yrs					
12-15 yrs					
16+ yrs					

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[2] Low Income - Persons residing in HHs with average HH income < $1200.

[3] Unemployed - Persons receiving selected unemployment benefits, and not residing in a receiving welfare income.

[4] WELFARE - Persons residing in HHs in which at least one HH member received selected welfare benefits.

[5] WNOTSP - White, not Spanish.

**SIPP LONGITUDINAL WEIGHTING OF PERSONS
NONRESPONSE ADJUSTMENT CELLS: MIDDLE INCOME[6]**

Race and Education	Self-Employed	Employment Status									
		OTHER									
		ASSETS									
		BONDS				OTHER					
		Type of Income				Type of Income					
		UNEMPLOYED	WELFARE		OTHER		UNEMPLOYED	WELFARE		OTHER	
			Labor Force Status		Labor Force Status			Labor Force Status		Labor Force Status	
			ILF[7]	NILF[8]	ILF	NILF		ILF	NILF	ILF	NILF
WNOTSP											
<12 yrs											
12-15 yrs											
16+ yrs											
OTHER											
<12 yrs											
12-15 yrs											
16+ yrs											

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[6] Middle Income - Persons residing in HHs with an average monthly income between $1200 and $3000.

[7] ILF - In labor force.

[8] NILF - Not in labor force.

SIPP LONGITUDINAL WEIGHTING OF PERSONS
NONRESPONSE ADJUSTMENT CELLS: HIGH INCOME[9]

Race and Education	Self-Employed	Type Of Income			
		WELFARE		OTHER	
		Labor Force Status		Labor Force Status	
		In Labor Force	Not in Labor Force	In Labor Force	Not in Labor Force
WNOTSP					
<12 yrs					
12-15 yrs					
16+ yrs					
OTHER					
<12 yrs					
12-15 yrs					
16+ yrs					

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[9] High Income - Persons residing in Hhs with average monthly income $\geq$ $4000.

CHARACTERISTICS OF SELECTED SIPP NONRESPONSE ADJUSTMENT
CELLS PRESENTED IN TABLE 3.2.

Cell Number	Race	Education	Type of Income	Poverty Status	Average Monthly Household Income
1	WNOTSP	*	*	POVERTY	< $1200
3	WNOTSP	<12	OTHER	NON-POVERTY	< $1200
35	WNOTSP	12-15	OTHER	*	*
40	WNOTSP	12-15	OTHER	POVERTY	*
100	OTHER	*	*	*	*
127	OTHER	<16	*	NON-POVERTY	>$1200

*-- Cell not disaggregated for this variable.

Table C.1.1 Comparison on Nonresponse Weighting Alternatives - 1992 White
(In Thousands)

| Item | Wave 1 Estimate | Wave 1 Estimation Based on Wave 4 Respondents | | | | | | | |
| | | RHG | | LR | | LR/RHG | | CI | |
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	13,445	13,206	-1.78	13,170	-2.05	13,170	-2.05	13,402	-0.35
AFDC	5,848	5,735	-1.93	5,743	-1.80	5,743	1.80	6,027	3.07
Medicaid	14,250	14,122	-0.90	14,172	-0.55	14,174	-0.53	14,412	1.56
Social Security	32,797	32,803	0.02	32,893	0.29	32,886	0.27	32,540	-0.78
Health Insurance	182,352	182,763	0.23	182,940	0.32	182,897	0.30	181,985	-0.20
In Poverty	26,019	25,468	-2.11	25,319	-2.69	25,321	-2.68	26,325	1.18
Employed	102,818	103,443	0.61	103,054	0.23	103,037	0.21	102,838	0.02
Unemployed	6,960	6,981	0.31	6,878	-1.18	6,878	-1.18	7,168	2.99
Not in Labor Force	57,155	56,340	-1.43	57,185	0.65	57,176	0.04	57,101	-0.09
Married	98,172	97,969	-0.21	98,046	-0.13	98,032	-0.14	98,210	0.04
Divorced	13,786	13,984	1.44	13,577	-1.51	13,584	-1.46	14,132	2.51

| Item | Wave 1 Estimate | Wave 1 Estimation Based on Wave 7 Respondents | | | | | | | |
| | | RHG | | LR | | LR/RHG | | CI | |
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	13,445	13,069	-2.80	12,967	-3.56	13,972	-3.52	13,484	0.29
AFDC	5,848	5,660	-3.21	5,686	-2.77	5,687	-2.75	5,936	6.50
Medicaid	14,250	14,299	0.34	14,266	0.11	14,267	0.12	14,793	3.82
Social Security	32,797	32,720	-0.23	32,678	-0.36	32,700	-0.30	32,506	-0.89
Health Insurance	182,352	183,187	0.46	183,420	0.59	183,402	0.57	182,377	0.01
In Poverty	26,019	25,295	-2.78	24,956	-4.08	27,966	-4.05	25,859	0.61
Employed	102,818	103,824	4.98	103,289	0.46	103,276	0.44	103,504	0.67
Unemployed	6,960	3,893	-0.95	6,684	-3.97	6,683	-3.98	6,987	0.40
Not in Labor Force	57,155	55,989	-2.04	57,060	-0.17	57,066	0.16	56,646	-0.89
Married	98,172	97,929	-0.25	97,971	-0.20	97,969	-0.21	98,124	-0.05
Divorced	13,786	13,902	0.84	13,299	-3.53	13,337	-3.25	14,134	2.32

Table C.1.2 Comparison of Nonresponse Weighting Alternatives - 1992 Black
(In Thousands)

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 4 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	7,489	7,641	2.02	764	3.66	7,758	3.58	7,610	1.61
AFDC	4,798	4,909	2.33	4,981	3.81	4,978	3.68	4,914	2.43
Medicaid	8,045	8,162	1.46	8,299	3.15	8,290	3.04	8,120	0.94
Social Security	3,612	3,654	1.16	3,705	2.55	3,703	2.50	3,668	1.55
Health Insurance	25,666	25,901	0.92	25,870	0.80	25,866	0.78	25,548	-0.46
In Poverty	9,701	9,709	0.08	9,746	1.50	9,825	1.28	9,711	0.11
Employed	12,326	1,223	-0.74	11,994	-2.70	11,999	-2.65	12,100	-1.84
Unemployed	1,899	1,902	0.14	1,853	-2.42	1,854	-2.37	1,893	-0.33
Not in Labor Force	8,553	8,629	0.89	8,901	4.08	8,896	4.02	8,732	2.10
Married	7,994	8,000	0.08	7,967	-0.33	7,969	-0.31	7,998	0.05
Divorced	2,264	2,227	-1.64	2,146	-5.23	2,140	-5.45	2,246	-0.80

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 7 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	7,489	7,609	1.59	7,705	2.88	7,676	2.49	7,464	-0.34
AFDC	4,798	4,837	0.81	4,906	2.26	4,877	1.66	4,813	0.33
Medicaid	8,045	8,115	0.88	7,222	2.21	8,205	1.99	7,993	-0.64
Social Security	3,612	3,676	1.77	3,672	1.64	3,689	2.11	3,714	2.83
Health Insurance	25,666	25,866	0.78	25,861	0.76	25,860	0.75	25,529	-0.53
In Poverty	9,701	960	-0.96	9,722	0.22	9,697	-0.04	9,534	-1.72
Employed	12,326	12,277	-0.40	12,010	-2.56	12,011	-2.56	12,116	-1.71
Unemployed	1,899	1,783	-6.14	1,743	-8.24	1,739	-8.42	1,854	-2.37
Not in Labor Force	8,553	8,705	1.78	8,989	5.10	8,992	5.14	8,719	1.94
Married	7,994	8,008	0.19	7,955	-0.49	7,957	-0.51	7,992	-0.01
Divorced	2,264	2,259	-0.21	2,132	-5.81	2,127	-6.05	2,217	-2.06

Table C.1.3   Comparison of Nonresponse Weighting Alternatives - 1992 Other Races
(In Thousands)

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 4 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	836	807	-3.45	818	-2.11	822	-1.61	779	-6.80
AFDC	540	482	-10.67	491	-9.10	492	-8.85	499	-7.62
Medicaid	1,100	1,040	-5.43	1,059	-3.73	1,063	-3.33	1,042	-5.24
Social Security	518	547	5.60	535	3.25	539	3.99	551	6.23
Health Insurance	7,512	7,822	4.13	7,657	1.94	7,683	2.28	7,533	0.28
In Poverty	1,955	1,819	-6.96	1,838	-5.97	1,845	-5.64	1,837	-6.03
Employed	4,387	4,534	3.35	4,326	−1.39	4,342	-1.03	4,198	-4.31
Unemployed	402	394	-1.87	385	-4.08	387	-3.83	362	-9.83
Not in Labor Force	2,412	2,467	2.03	2,518	4.14	2,530	4.62	2,580	6.69
Married	4,141	4,355	5.18	4,167	0.64	4,186	1.10	4,149	0.21
Divorced	408	410	2.75	390	-4.48	392	-3.95	376	-7.97

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 7 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	836	861	3.06	869	3.94	871	4.26	858	2.70
AFDC	540	554	2.62	563	4.26	563	4.26	587	8.89
Medicaid	1,100	1,158	5.30	1,173	6.65	1,174	6.3	1,187	7.97
Social Security	518	522	0.63	498	-3.92	485	-6.44	510	-1.69
Health Insurance	7,512	8,085	7.68	7,968	6.08	7,980	6.24	7,698	2.48
In Poverty	1,955	1,886	-3.51	1,897	-2.94	1,898	-2.94	2,061	5.44
Employed	4,387	4,609	5.06	4,411	0.54	4,424	0.85	4,192	-4.45
Unemployed	402	382	-5.05	371	-7.62	372	-7.40	343	-14.76
Not in Labor Force	2,412	2,457	1.62	2,527	4.51	2,521	4.26	2,556	5.73
Married	4,141	4,402	6.30	4,202	1.47	1,208	1.63	4,055	-2.07
Divorced	408	444	8.71	409	0.24	412	0.84	411	0.71

Table C.1.4 Comparison of Nonresponse Weighting Alternative - 1992 Hispanic
(In Thousands)

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 4 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	4,417	4,320	-2.18	4,405	-0.26	4,398	-0.42	4,536	2.70
AFDC	2,248	2,235	-0.59	2,280	1.42	2,278	1.33	2,510	6.65
Medicaid	4,579	4,577	-0.04	4,676	2.10	4,670	1.99	4,835	5.58
Social Security	1,656	1,666	0.63	1,709	3.20	1,705	2.96	1,643	-0.80
Health Insurance	17,074	17,062	-0.07	17,014	-0.35	17,008	-0.38	16,861	-1.24
In Poverty	7,650	7,498	-1.99	7,600	-0.66	7,588	-0.82	7,799	1.94
Employed	9,778	9,859	0.84	9,601	-1.81	9,596	-1.86	9,567	-2.16
Unemployed	1,524	1,556	2.12	1,534	0.66	1,540	1.02	1,659	8.83
Not in Labor Force	5,953	5,841	-1.88	6,137	3.10	6,138	3.11	6,073	2.01
Married	8,934	8,888	-0.52	8,758	-1.97	8,764	-1.90	8,783	-1.69
Divorced	1,188	1,170	-1.49	1,131	-4.79	1,128	-5.08	1,242	4.54

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 7 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	4,417	4,237	-4.08	4,367	-1.12	4,362	-1.25	4,419	0.05
AFDC	2,248	2,120	-5.70	2,212	-1.63	2,208	-1.79	2,235	-0.61
Medicaid	4,579	4,542	-0.81	4,693	2.48	4,688	2.37	4,534	-1.00
Social Security	1,656	1,597	-3.55	1,620	-2.16	1,619	-2.21	1,533	-7.43
Health Insurance	17,074	17,205	0.77	17,193	0.70	17,192	0.70	16,984	-0.53
In Poverty	7,650	7,388	-3.43	7,503	-1.93	7,499	-1.98	7,484	-2.18
Employed	9,778	8,842	1.79	9,643	-1.37	9,645	-1.36	9,746	-0.32
Unemployed	1,524	1,493	-2.07	1,473	-3.36	1,475	-3.22	1,509	2.97
Not in Labor Force	5,953	5,810	-2.40	6,145	3.23	6,142	3.17	5,967	0.24
Married	8,934	9,007	0.82	8,821	-1.26	8,837	-1.09	8,902	-0.36
Divorced	1,188	1,216	2.38	1,169	-1.63	1,172	-1.39	1,356	14.17

Table C.2.1. Comparison of Nonresponse Weighting Alternatives - 1993 White

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 5 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	16,130	16,000	-0.80	15,993	-0.85	16,006	-0.76	16,212	0.51
AFDC	7,347	7,286	-0.83	7,378	0.43	7,385	0.53	7,238	-1.48
Medicaid	16,962	17,091	0.76	17,031	0.41	17039	0.46	17,022	0.36
Social Security	33,425	33,477	0.16	33,374	-0.15	33,383	-0.12	33,481	0.17
Health Insurance	182,596	184,020	0.78	183,937	0.74	185,967	0.75	183,775	0.65
In Poverty	28,552	27,534	-3.56	28,544	-0.03	28,587	0.12	28,181	-1.30
Employed	103,316	104,104	0.76	103,373	0.06	103,365	0.05	104,070	0.73
Unemployed	6,820	6,703	-1.71	6,602	-3.19	6,614	-3.02	6,753	-0.97
Not in Labor Force	57,761	57,206	-0.96	58,056	0.51	58,087	0.56	57,414	-0.60
Married	98,780	98,701	-0.08	98,555	-0.23	98,578	-0.20	98,606	-0.18
Divorced	14,500	14,685	1.28	14,227	-1.88	14,224	-1.90	14,907	3.02

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 9 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	16,130	16,091	-0.24	16,055	-0.46	16,087	-0.26	16,147	0.11
AFDC	7,347	7,085	-3.56	7,198	-2.02	7,202	-1.97	7,219	-1.73
Medicaid	16,962	17,138	1.04	17,085	0.73	17103	0.83	16,687	-1.62
Social Security	33,425	33,288	-0.41	33,277	-0.44	33,278	-0.44	33,240	-0.55
Health Insurance	182,596	184,622	1.11	184,248	0.90	184,260	0.91	184,534	1.06
In Poverty	28,552	27,370	-4.14	28,507	-0.16	28,636	0.29	28,305	-0.86
Employed	103,316	104,450	1.10	103,059	-0.25	103,026	-0.29	104,061	0.72
Unemployed	6,820	6,599	-3.36	6,821	-6.42	6,408	-6.03	6,394	-3.32
Not in Labor Force	57,761	56,741	-1.77	58,117	0.62	58,170	0.71	57,382	-0.66
Married	98,780	98,610	-0.17	98,278	-0.51	98,297	-0.49	98,669	-0.11
Divorced	14,500	14,534	0.24	13,913	-4.04	13,904	-4.11	14,727	1.57

Table C.2.2 Comparison of Nonresponse Alternatives - 1993 Black

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 3 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	8,386	8,501	1.37	8,450	0.77	8,538	1.81	8,598	2.53
AFDC	4,984	5,032	0.97	5,012	0.59	5,075	1.82	5,147	3.27
Medicaid	8,412	8,527	1.37	8,505	1.11	8609	2.34	8,662	2.97
Social Security	3,548	3,624	2.14	3,633	2.40	3,641	2.62	3,594	1.30
Health Insurance	26,426	27,008	2.20	27,023	2.26	27,024	2.26	26,671	0.93
In Poverty	10,365	10,069	-2.86	9,978	-3.73	10,142	-2.16	10,405	0.38
Employed	12,420	12,468	0.38	12,298	-0.98	12,253	-1.35	12,442	0.18
Unemployed	2,138	2,054	-3.95	1,959	-8.40	1,967	-8.02	2,088	-2.34
Not in Labor Force	8,650	8,684	0.40	8,983	3.86	9,019	4.27	8,748	1.14
Married	8,109	8,082	-0.33	8,036	-0.89	8,035	-0.91	8,136	0.34
Divorced	2,325	2,487	6.97	2,347	0.93	2,342	0.73	2,390	2.81

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 9 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	8,386	8,266	-1.42	8,361	-0.30	8,357	-0.35	7,963	-5.04
AFDC	4,984	4,897	-1.73	4,994	0.20	4,995	0.23	4,534	-9.03
Medicaid	8,412	8,592	2.13	8,751	4.03	8748	3.99	8,044	-4.37
Social Security	3,548	3,707	4.49	3,776	6.42	3,746	5.56	3,626	2.20
Health Insurance	26,426	27,403	3.70	27,430	3.80	27,440	3.84	26,761	1.27
In Poverty	10,365	10,147	-2.10	10,316	-0.47	10,297	-0.66	10,092	-2.64
Employed	12,420	12,477	0.46	12,135	-2.30	12,145	-2.22	12,563	1.15
Unemployed	2,138	2,065	3.43	1,956	-8.52	1,975	-7.66	2,014	-5.79
Not in Labor Force	8,650	8,676	0.31	9,157	5.86	9,127	5.51	8,690	0.46
Married	8,109	8,082	-0.33	8,008	-1.24	8,010	-1.21	8,074	-0.43
Divorced	2,325	2,452	5.46	2,229	-4.12	2,232	-4.01	2,421	4.12

Table C.2.3 Comparison of Nonresponse Weighting Alternatives - 1993 Other Races

| Item | Wave 1 Estimate | Wave 1 Estimation Based on Wave 4 Respondents | | | | | | | |
| | | RHG | | LR | | LR/RHG | | CI | |
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	1,296	1,320	1.79	1,324	2.15	1,338	3.22	1,272	-1.86
AFDC	903	914	1.17	925	2.44	934	3.40	914	1.23
Medicaid	1,705	1,794	5.17	1,776	4.17	1786	4.76	1,691	-0.85
Social Security	610	616	0.96	612	0.32	603	-1.01	543	-10.90
Health Insurance	8,548	8,829	3.28	8,922	-4.38	8,889	3.98	8,546	-0.03
In Poverty	2,202	2,306	4.72	2,310	4.93	2,336	6.10	2,174	-1.26
Employed	4,587	4,573	-0.30	4,552	-0.77	4,526	-1.33	4,442	-3.16
Unemployed	420	454	8.09	436	3.87	436	3.80	434	3.33
Not in Labor Force	2,902	2,519	-2.86	2,908	0.20	2,899	-0.11	2,417	-6.36
Married	4,585	4,715	2.84	4,674	1.93	4,653	1.48	4,502	-1.81
Divorced	437	432	-1.08	407	-6.87	406	-7.06	432	-1.23

| Item | Wave 1 Estimate | Wave 1 Estimation Based on Wave 7 Respondents | | | | | | | |
| | | RHG | | LR | | LR/RHG | | CI | |
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	1,296	1,343	3.58	1,441	11.17	1,430	10.33	1,196	-7.76
AFDC	903	955	5.74	1,049	16.12	1,045	15.65	843	-6.71
Medicaid	1,705	1,886	10.57	2,009	17.81	2000	17.31	1,671	-2.04
Social Security	610	621	1.83	630	3.33	629	3.18	558	-8.54
Health Insurance	8,548	9,012	5.42	9,303	8.83	9,271	8.45	8,252	-3.47
In Poverty	2,202	2,356	7.01	2,483	12.78	2,461	11.76	2,185	-0.78
Employed	4,587	4,728	3.08	4,795	4.53	4,770	3.98	4,462	-2.73
Unemployed	420	477	13.46	468	11.42	463	10.09	463	10.15
Not in Labor Force	2,902	2,909	0.23	3,149	8.52	3,131	7.91	2,884	-0.61
Married	4,585	4,869	6.19	4,940	7.73	4,927	7.46	4,530	-1.21
Divorced	437	487	11.46	474	8.48	474	8.41	497	13.65

Table C.2.4 Comparison of Nonresponse Weighting Alternatives - 1993 Hispanic

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 5 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	5,797	5,960	2.81	6,121	5.59	6,143	5.97	6,091	5.08
AFDC	3,234	3,261	0.83	3,392	4.89	3,406	5.33	3,323	2.75
Medicaid	5,832	5,902	1.20	6,052	3.76	6070	4.08	5,890	1.00
Social Security	1,847	1,853	0.34	1,861	0.77	1,860	0.73	1,772	-4.03
Health Insurance	17,767	17,928	0.91	17,891	0.70	17,888	0.69	17,679	-0.49
In Poverty	8,665	8,569	-1.11	8,947	3.26	8,987	3.73	8,925	3.00
Employed	9,922	10,055	1.35	9,783	-1.40	9,770	-1.53	9,940	0.18
Unemployed	1,342	1,277	-4.86	1,261	-6.09	1,264	-5.82	1,301	-3.01
Not in Labor Force	6,543	6,470	-1.11	6,806	4.02	6,816	4.17	6,619	1.16
Married	8,843	9,043	2.26	8,900	0.64	8,891	0.54	9,026	2.07
Divorced	1,407	1,490	5.96	1,434	1.96	1,432	1.83	1,383	-1.65

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 9 Respondents							
		RHG		LR		LR/RHG		CI	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	5,797	5,990	3.33	6,242	7.69	6,247	7.76	6,319	9.02
AFDC	3,234	3,059	-5.39	3,235	0.04	3,239	0.17	2,983	-7.74
Medicaid	5,832	5,719	-1.95	5,943	1.90	5954	2.09	5,710	-2.09
Social Security	1,847	1,783	-3.45	1,802	-2.44	1,800	-2.52	1,667	-9.75
Health Insurance	17,767	17,967	1.13	17,888	0.68	17,886	0.67	17,642	-0.70
In Poverty	8,665	8,589	-0.87	9,080	4.79	9,106	5.10	9,213	6.33
Employed	9,922	9,980	0.59	9,677	-2.47	9,652	-2.72	9,741	-1.82
Unemployed	1,342	1,345	0.23	1,323	-1.44	1,329	-0.96	1,329	-0.96
Not in Labor Force	6,543	6,481	-0.96	6,841	4.55	6,860	4.84	6,775	3.54
Married	8,843	9,173	3.72	8,992	1.68	8,972	1.45	9,112	3.04
Divorced	1,407	1,418	0.82	1,357	-3.53	1,353	-3.80	1,361	-3.22

Table C.3.1 Comparison of Nonresponse Alternatives - 1996 White

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 4 Respondents					
		RHG		LR		LR/RHG	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	15,325	15,174	-0.99	15,333	0.05	15,308	-0.11
AFDC	7,437	7,363	-0.98	7,461	0.33	7,449	0.17
Medicaid	17,762	17,785	0.13	17,985	1.25	17,958	1.10
Social Security	32,873	32,870	-0.01	32,902	0.09	32,903	0.09
Health Insurance	168,311	169,343	0.61	169,619	0.78	169,671	0.81
In Poverty	29,059	28,558	-1.72	29,357	1.03	29,271	0.73
Employed	158,840	159,304	0.29	159,057	0.14	159,095	0.16
Unemployed	4,441	4,285	-3.50	4,571	2.93	4,542	2.29
Not in Labor Force	54,880	54,520	-0.65	54,897	0.03	54,895	0.03
Married	100,930	100,720	-0.21	100,875	-0.05	100,881	-0..05
Divorce	15,380	15,410	0.19	15,402	0.14	15,405	0.16

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 12 Respondents					
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	15,325	14,961	-2.38	15,242	-0.54	15,218	-0.70
AFDC	7,437	6,879	-7.49	7,103	-4.48	7,075	-4.87
Medicaid	17,762	17,681	-0.46	18,098	1.89	18,084	1.81
Social Security	32,872	33,005	0.40	33,168	0.90	33,170	0.91
Health Insurance	168,311	169,749	0.85	170,647	1.39	170,679	1.41
In Poverty	29,059	28,219	-2.89	29,344	0.98	29,332	0.94
Employed	158,840	159,648	0.51	159,076	0.15	159,287	0.28
Unemployed	4,441	4,217	-5.04	4,848	9.18	4,543	2.30
Not in Labor Force	54,880	53,678	-2.19	54,885	0.01	54,986	0.19
Married	100,930	100,744	-0.18	101,222	0.29	101,230	0.30
Divorced	15,380	15,088	-1.90	15,098	-1.83	15,107	-1.78

Table C.3.2 Comparison of Nonresponse Weighting Alternatives - 1996 Black

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 5 Respondents					
		RHG		LR		LR/RHG	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	8,103	8,120	0.22	8,264	2.00	8,251	1.83
AFDC	4,895	4,949	1.11	5,028	2.71	5,019	2.54
Medicaid	8,301	8,389	1.05	8,504	2.44	8,495	2.34
Social Security	3,476	3,498	0.64	3,497	0.59	3,497	0.60
Health Insurance	18,460	18,687	1.23	18,536	0.41	18,548	0.48
In Poverty	10,230	10,060	-1.66	10,351	1.19	10,324	0.92
Employed	23,636	23,662	0.11	23,521	-0.49	23,531	-0.44
Unemployed	1,598	1,559	-2.50	1,665	4.14	1,649	3.17
Not in Labor Force	8,648	8,668	0.23	8,703	0.64	8,707	0.69
Married	8,332	8,271	-0.73	8,264	-0.81	8,265	-0.80
Divorced	2,559	2,591	1.28	2,572	0.52	2,573	0.57

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 12 Respondents					
		RHG		LR		LR/RHG	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	8,103	8,099	-0.05	8,405	3.73	8,252	1.84
AFDC	4,895	4,788	-2.19	4,933	0.78	4,869	-0.53
Medicaid	8,301	8,360	0.70	8,575	3.30	8,472	2.06
Social Security	3,476	3,545	1.99	3,542	1.90	3,580	2.98
Health Insurance	18,460	19,215	4.09	18,861	2.18	19,044	3.17
In Poverty	10,230	10,203	-0.26	10,354	1.21	10,449	2.14
Employed	23,636	23,378	-1.09	23,145	-2.08	23,254	-1.61
Unemployed	1,598	1,475	-7.70	1,732	8.34	1,505	-5.88
Not in Labor Force	8,648	9,056	4.72	9,039	4.52	9,154	5.86
Married	8,332	8,281	-0.64	8,270	-0.74	8,279	-0.63
Divorced	2,559	2,537	-0.86	2,518	-1.61	2,524	-1.37

Table C.3.3 Comparison of Nonresponse Weighting Alternatives - 1996 Other Races

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 5 Respondents					
		RHG		LR		LR/RHG	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	1,591	1,563	-1.79	1,535	-3.51	1,532	-3.71
AFDC	978	969	-0.94	954	-2.42	952	-2.63
Medicaid	2,109	2,158	2.29	2,120	0.51	2,112	0.36
Social Security	739	738	-0.15	715	-3.25	714	-3.33
Health Insurance	7,821	7,888	0.86	7,571	-3.20	7,571	-3.19
In Poverty	2,508	2,477	-1.20	2,480	-1.11	2,472	-1.42
Employed	8,725	8,699	-0.30	8,349	-4.31	8,348	-4.33
Unemployed	366	339	-7.58	353	-3.74	347	-5.22
Not in Labor Force	3,119	3,224	3.36	3,144	0.80	3,144	0.79
Married	5,105	5,147	0.82	4,969	-2.68	4,964	-2.7
Divorced	524	512	-2.15	498	-4.92	498	-4.96

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 12 Respondents					
		RHG		LR		LR/RHG	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	1,591	1,677	5.38	1,610	1.17	1,609	1.11
AFDC	978	1,011	3.37	995	1.73	994	1.59
Medicaid	2,109	2,224	5.43	2,141	1.50	2,142	1.57
Social Security	739	824	11.61	740	0.24	742	0.48
Health Insurance	7,821	8,335	6.57	7,308	-6.55	7,308	-6.55
In Poverty	2,508	2,719	8.44	2,626	4.74	2,623	4.61
Employed	8,725	8,637	2.42	7,888	-9.59	7,901	-9.45
Unemployed	366	353	-3.58	368	0.55	339	-7.54
Not in Labor Force	3,119	3,576	14.65	3,338	7.03	3,349	7.38
Married	5,105	5,363	5.04	4,825	-5.48	4,825	-5.49
Divorced	524	505	-3.59	467	-10.83	465	−11.17

Table C.3.4 Comparison of Nonresponse Weighting Alternatives - 1996 Hispanic

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 5 Respondents					
		RHG		LR		LR/RHG	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	5,716	5,557	-2.79	5,668	-0.83	5,660	-0.97
AFDC	3,219	3,107	-3.50	3,178	-1.30	3,173	-1.45
Medicaid	5,768	5,716	-0.89	5,823	0.96	5,816	0.84
Social Security	1,657	1,636	-1.28	1,638	-1.17	1,638	-1.17
Health Insurance	13,035	13,057	0.17	12,932	-0.79	12,943	-0.70
In Poverty	8,957	8,899	-0.64	9,162	-2.29	9,137	2.01
Employed	20,892	20,935	0.20	20,793	-0.48	20,806	-0.42
Unemployed	1,060	1,048	-1.12	1,133	6.91	1,119	5.52
Not in Labor Force	6,426	6,396	-0.47	6,453	0.41	6,455	0.44
Married	10,537	10,589	0.49	10,568	0.29	10,569	0.30
Divorced	1,367	1,309	-4.25	1,306	-4.53	1,306	-4.48

Item	Wave 1 Estimate	Wave 1 Estimation Based on Wave 12 Respondents					
		RHG		LR		LR/RHG	
		Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)	Estimate	Relative Diff. (%)
Food Stamps	5,716	5,457	-4.53	5,702	-0.24	5,689	-0.47
AFDC	3,219	2,760	-14.26	2,951	-8.34	2,942	-8.63
Medicaid	5,768	5,607	-2.80	5,906	2.39	5,889	2.11
Social Security	1,657	1,703	2.80	1,695	2.30	1,696	2.35
Health Insurance	13,035	12,889	-1.12	12,444	-4.53	12,478	-4.28
In Poverty	8,957	92,846	3.66	9,799	9.41	9,777	9.16
Employed	20,892	20,957	0.31	20,672	-1.05	20,745	-0.71
Unemployed	1,060	1,053	-0.72	1,243	17.27	1,123	5.92
Not in Labor Force	6,426	6,386	-0.63	5,477	0.79	6,525	1.54
Married	10,537	10,636	0.94	10,574	0.35	10,579	0.40
Divorced	1,367	1,219	-10.87	1,210	-11.48	1,214	-11.20