PERSON-LEVEL SAMPLING WEIGHT CALIBRATION FOR THE 2001 NHSDA

Contract No. 283-98-9008
RTI Project No. 7190
Deliverable No. 28

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Project Director: Thomas G. Virag

Prepared for:

Substance Abuse and Mental Health Services Administration
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Prepared by:

RTI International
Research Triangle Park, North Carolina 27709

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Preface

This report contains a brief review of the sampling weight calibration methodology used for the 2001 National Household Survey on Drug Abuse (NHSDA) and detailed documentation on the implementation steps and evaluation results from its application to the survey data. The constrained exponential modeling method used in NHSDAs prior to 1999 was modified (referred to in this report as GEM or the generalized exponential model) in order to have more flexibility in dealing with the extreme weights internally and to be able to directly set bounds on the weight adjustment factors so that they become suitable for nonresponse and poststratification adjustments. The highlights of the new method are summarized below.

- The inherent two-phase nature of the NHSDA design (viewing the large screener sample as the first phase and the actual questionnaire sample as the second phase) allows the additional step of poststratification of the selected persons to estimated controls from the large first-phase sample of persons. This additional step results in stable controls for the later step of nonresponse adjustment at the respondent-person level. These two steps were combined into one step in NHSDAs prior to 1999, but they have been kept separate from the 1999 NHSDA onward.

- Another poststratification step at the respondent-household level in the first phase of the screening interview was added. This step reduced coverage bias resulting from the first-phase sampling, as well as produced controls for use in poststratification at the selected-person level, respondent person-pair level, and respondent-household level in the second phase of the drug use interview. This step again takes advantage of the inherent two-phase design of the study.

- The built-in control on extreme weights in the GEM was supplemented by a separate step of extreme-weight adjustment after the final poststratification, whenever the extreme-weight proportion in the initial unadjusted weights was considered to be too large. This was accomplished by using the GEM such that the sample demographic distribution was preserved. This method represents an improvement over the trimming method implemented before the nonresponse adjustment used in NHSDAs prior to 1999, and the extreme-weight adjustment before the nonresponse adjustment used for the 1999 NHSDA.

The GEM calibration method provides a unified approach to handling problems of extreme weights, nonresponse, and poststratification, and it uses current state-of-the-art technology. The implementation of GEM under a tight project schedule was a challenge, but it was met successfully by the diligence and perseverance of the members of the weighting team consisting of Patrick Chen, Harper Gordek, Chris Murtha, Matthew Westlake, and Di Yu.

This report consists of several chapters describing the implementation and evaluation of GEM and of appendices comprised mainly of tables. In the interest of reducing the size of the report, detailed domain-specific evaluation results are presented in the supplement to this report, which is available upon request. This work was completed for the Substance Abuse and Mental Health Services Administration

(SAMHSA), Office of Applied Studies (OAS), by RTI International[1], North Carolina, under Contract No. 283-98-9008. The authors are grateful to Art Hughes of SAMHSA and Ralph Folsom of RTI for their useful comments and suggestions.

Avi Singh, Task Leader
Research Triangle Park, NC
May 21, 2003

[1]RTI International is a trade name of Research Triangle Institute.

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List of Terms and Abbreviations

DU Dwelling unit.

ev Extreme value. See Section 4.1 for more detail.

GEM Generalized exponential model. See Chapter 2 for more detail.

half-step This refers to halving the increment in the Newton-Raphson iterative process for fitting GEM.

IQR Interquartile range.

nr Nonresponse.

Outwinsor Signifies the proportion of trimmed weight after extreme-value treatment via winsorization.

ps Poststratification.

res.sdu.nr Respondent screener dwelling unit nonresponse adjustment step. See Section 5.1.2 for more detail.

res.sdu.ps Respondent screener dwelling unit poststratification adjustment step. See Section 5.1.3 for more detail.

res.sdu.ev Respondent screener dwelling unit extreme value adjustment step. See Section 5.1.4 for more detail.

sel.per.ps Selected person poststratification adjustment step. See Section 5.2.2 for more detail.

res.per.nr Respondent person nonresponse adjustment step. See Section 5.2.3 for more detail.

res.per.ps Respondent person poststratification adjustment step. See Section 5.2.4 for more detail.

res.per.ev Respondent person extreme value adjustment step. See Section 5.2.5 for more detail.

sandwich SE Sandwich standard error. See Section 6.5 for more detail.

SE Standard error.

SES Socioeconomic status indicator. See Exhibit 3.1 for more detail.

UWE Unequal weighting effect. It refers to the contribution in the design effect due to unequal selection probability and is defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights, and n is the sample size.

Winsorization A method of extreme value treatment that replaces extreme values with the critical values used for defining low and high extreme values.

Chapter 1. Introduction

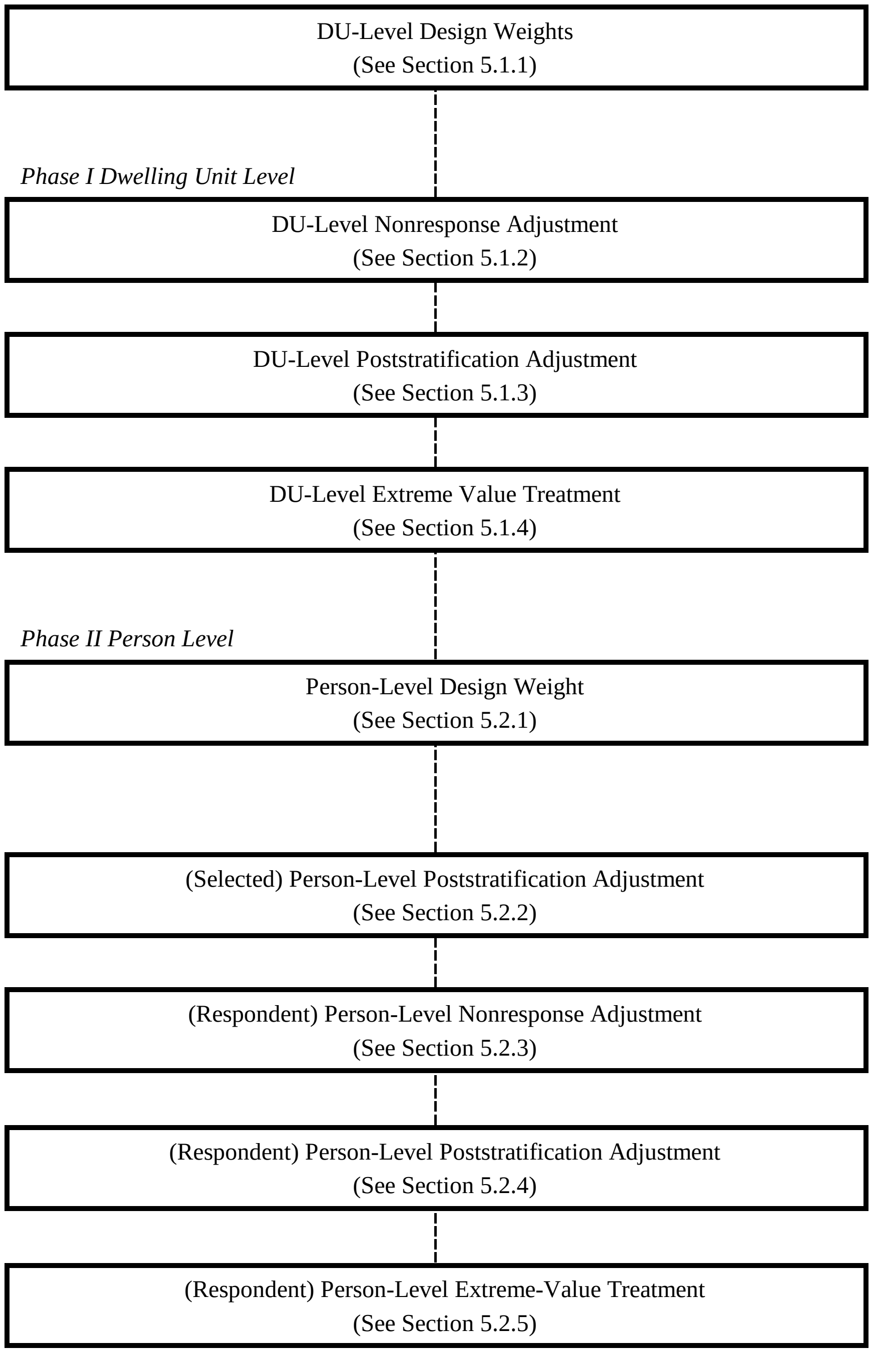
The design for the National Household Survey on Drug Abuse (NHSDA) changed in 1999 from a single national survey (with California and Arizona supplements) to a statewide survey that includes 50 States and the District of Columbia. Henceforth, this will be referred to as the 51-State design. The target population includes civilian, noninstitutionalized persons aged 12 or older. The main reason for the change was to produce more efficient, direct State-level estimates, which could be further improved by using small area estimation (SAE) techniques. To meet the required precision at the State level, the total sample size was increased from 25,500 in 1998 to a planned size of 67,500 beginning in 1999. This large sample size would allow the Substance Abuse and Mental Health Services Administration (SAMHSA) to continue to report drug use estimates for demographic subgroups at the national level with adequate precision and without the need to oversample specially targeted demographic subgroups, as had been required in the past. For the 2001 survey, eight States (California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania, and Texas), referred to as the "large" States, had a sample designed to yield 3,600 respondents per State, while the remaining 43 "small" States had a sample designed to yield 900 respondents per State. In addition to the 2001 sample of 67,500 that was originally planned, an additional sample of 600, 150, and 150 was added in New York, New Jersey, and Connecticut, respectively. This supplement was added in response to the September 11 attacks to allow SAMHSA to measure the impact of the attacks on drug use prevalence and mental health service utilization with greater precision. For the 2001 NHSDA, which followed the 2001 design plan, the total realized sample size was 68,929 persons (corresponding to 53,314 responding dwelling units [DUs] selected at the second phase out of 157,471 DUs screened at the first phase), with a low of 852 for North Carolina to a high of 1,069 for New Jersey among small States, and a low of 3,502 for Florida and a high of 4,023 for New York among large States (see Bowman, Chromy, Odom & Penne, 2003).

In the 2001 NHSDA design, States served as the primary strata, and field interviewer (FI) regions within each State served as the secondary strata. In the small States, 12 FI regions were created, while 48 were formed in the large States. Segments within FI regions formed first-stage sample units, which were drawn with probabilities proportional to composite size measures using Chromy's algorithm (Chromy, 1981; Williams & Chromy, 1980). DUs within segments formed the second-stage units that were drawn according to a random systematic scheme with an equal probability selection method goal (EPSEM). Within each FI region, segments were formed to contain a minimum of 175 DUs. From each FI region, two segments were drawn per quarter for a total of eight segments per year. On average, about 30 DUs were selected per segment with an objective of ten completed person-level interviews. This average of three selected DUs per completed person-interview reflected various levels of attrition, such as DU eligibility, DU-level nonresponse, and person-level nonresponse. The 2001 NHSDA design was a multistage design with deep stratification, which could be viewed as a two-phase design with the second-phase units of persons nested within the first-phase DUs. After the DU was selected, first-phase information (e.g., eligibility, age, race/ethnicity, and gender) was collected for each member of the DU, then age was used to define deep stratification variables for the second-phase sample of persons within eligible DUs. At this phase, either zero, one, or two persons were selected within each DU using an adaptation of Brewer's sampling scheme. The 51-State sample used a computer-assisted interviewing (CAI) methodology.

As in 1999 and 2000, the sample weighting of the 2001 NHSDA posed challenges because of the sheer magnitude of the number of State-specific predictors for use in nonresponse (nr) and poststratification (ps) adjustments. With the 51-State survey, using a single model for each of the adjustments was not practical; however, treating each State separately was not desirable because individual State sample sizes were not large enough to support reliable estimation of a number of parameters. Therefore, the 51 States were grouped into nine model groups corresponding to the nine U.S. Bureau of the Census divisions. This helped to keep a substantial number of predictor variables in each model, while at the same time reducing the computing time that would be associated with fitting a larger model.

As in the 1999 and 2000 NHSDAs, an important feature of the 2001 NHSDA sample weighting was to capitalize on the inherent two-phase nature of the NHSDA design (although the design was primarily viewed as multistage) by adding a step to poststratify the household weights in the first phase of the screening interview (see Exhibit 1.1). This reduced coverage bias resulting from the first phase of sampling and produced estimated controls for use in poststratification of person-pair weights and household weights in the second phase of the drug use interview. No other suitable source was available for obtaining these controls for poststratification. Note also that screener DU weights were poststratified to population counts by adjusting the DU's weighted contribution of person-counts to various demographic domains. The second important feature was to add a step to poststratify selected persons (including respondents and nonrespondents) to estimated controls from the large first-phase sample of persons for various predictor variables at the segment, DU, and person levels. This gave stable controls for the step involving the nonresponse adjustment of respondent weights. Incorporating this important feature would not have been possible without screener data on the sociodemographics of members of the selected households.

Exhibit 1.1 Sampling Weight Calibration Steps



As in the 1999 and 2000 NHSDAs, a modification of the earlier methodology of (scaled) constrained exponential modeling was used in order to meet the new demands on weighting mentioned above (i.e., the two-phase design and large number of available predictors). The modified methodology, the generalized exponential model (GEM), has several features:

- Like constrained exponential modeling, GEM can utilize a large number of predictor variables, such as those obtained from the first-phase screener sample for the 50 States plus the District of Columbia, and some of their interactions.

- GEM allows unit-specific bounds for the weights initially identified as extreme, which provide tight controls on the extreme weights. This built-in control is often adequate, in that the frequency of extreme weights, after the nonresponse and poststratification adjustments, is not usually high. However, if this is not the case, GEM can be used for a separate extreme value adjustment after poststratification. This extra adjustment, which uses tighter bounds, will preserve the demographic population controls used in the poststratification step.

- GEM provides a unified approach to nonresponse, poststratification and extreme value adjustments. The differences are only in terms of the bounds and control totals that are used.

- GEM can be implemented efficiently using software developed at RTI.

- GEM is a generalization of the commonly used raking-ratio method in which a distance function is minimized such that (1) the initial weights are perturbed only a little and lie within certain bounds, and (2) control totals are met. It is also a generalization of Deville and Särndal's (1992) logit method in that bounds on weights are not required to be uniform. Moreover, the lower bound can be set to one, which is desirable for the nonresponse adjustment. Like the above methods, fitting GEM requires iterations (such as Newton-Raphson).

The report is organized as follows. In Chapter 2, GEM is reviewed, and a heuristic description is provided of how GEM provides a unified approach to all three procedures of extreme-value treatment, and adjustments for nonresponse and poststratification. In Chapter 3, potential predictor variables for use with extreme-value, nonresponse, and poststratification are discussed, and the strategy for dealing with many predictors via modeling groups of States is reviewed. In Chapter 4, practical steps for implementing GEM for the 2001 NHSDA are presented, and in Chapter 5 details of the weight calibrations, including all weight components corresponding to Phases I and II, are given. Chapter 6 presents the evaluation measures of calibrated weights and a sensitivity analysis of point estimates and standard errors (adjusted for calibration) of selected drug prevalence estimates. The sensitivity analysis compares the estimates and standard errors from final models to those of the baseline models (which consist of only main effects). Nine appendices also are included. Appendix A presents some technical details about GEM, Appendix B documents the creation and source of the poststratification control totals, and Appendix C contains information on imputation methodology. Appendix D summarizes the modeling, and the remaining five appendices contain various tables.

Chapter 2. Generalized Exponential Model for Weight Calibration

In survey practice, design weights are typically adjusted in three steps via the following methods: (1) winsorization for extreme values, (2) weighting class adjustments for nonresponse, and (3) raking-ratio adjustments for poststratification. If weights are not treated for extreme values, the resulting estimates, although unbiased, will tend to have low precision. The bias introduced by winsorization is alleviated to some extent through poststratification. The nonresponse adjustment is a correction for bias that is introduced when estimates are based only on responding units; poststratification is an adjustment for coverage (typically undercoverage) bias, as well as for variance reduction (which is possible due to correlation between the study and control, usually demographic, variables).

There are limitations in the existing methods of weight adjustment for extreme value, nonresponse, and poststratification. It would be advantageous to adjust for bias introduced in the extreme-value step (such as when extreme weights are treated via winsorization) so that the sample distribution for various demographic characteristics is preserved. For the nonresponse step, there are general raking-type methods, such as the scaled constrained exponential model developed by Folsom and Witt (1994), where the lower and upper bounds can be suitably chosen by using a separate scaling factor. The factor is set as the inverse of the overall response propensity. It would be beneficial to have a model for the nonresponse adjustment factor that incorporates the desired lower and upper bounds on the factor as part of the model. Note that the lower bound on the nonresponse-adjustment factor should be one because it is interpreted as the inverse of the probability of response for a particular unit. For the poststratification step, the general calibration methods of Deville and Särndal (1992), such as the logit method, allow for built-in lower (L) and upper (U) bounds (for poststratification, typically $L<1<U$). However, it would be useful to have nonuniform bounds (L_k, U_k) depending on the unit k, such that the final adjusted weights, w_k, could be controlled within certain limits. An important application of this feature would be weight adjustments to allow the user to have some control on the final adjustment of weights initially identified as extreme values.

A modification of the earlier method of the scaled constrained exponential model of Folsom and Witt (1994), termed the generalized exponential model (GEM) and proposed by Folsom and Singh (2000), provides a unified approach to the three weight adjustments for extreme value, nonresponse, and poststratification, and it has the valuable features mentioned above. The functional form of the GEM adjustment factor is given in Appendix A. It generalizes the logit model of Deville and Särndal (1992), typically used for poststratification, such that the bounds (L, U) may depend on k. Thus, it provides a built-in control on extreme values, during both poststratification and nonresponse adjustments. In addition, the bounds are internal to the model and can be set to chosen values (e.g., $L_k = 1$ in the nonresponse step). If the frequency of extreme values is low after the final poststratification, a separate extreme-value step may not be necessary.

Note that in view of the nonresponse adjustment factor being defined as the inverse of response propensity, GEM requires it to be greater than 1. However, the built-in extreme value control feature of GEM essentially defines extreme value adjustment factors with regard to the critical value under winsorization. Therefore, although the adjustment factor with regard to the cutoff point is always greater than 1, with regard to the original weight it can be less than 1.

In fitting GEM to a particular problem, choosing a large number of predictor variables along with tight bounds will have an impact on the resulting unequal weighting effect (UWE) and the proportion of extreme values. In practice, this leads to somewhat subjective evaluations of trade-offs between the target set of bounds for a given set of factor effects, and the target UWE and the target proportions of extreme values. The proportion of "outwinsors" (a term coined to signify the extent of residual weights after extreme-value treatment via winsorization) is probably a more realistic benchmark in determining the robustness of estimates in the presence of extreme-value weights. Chapter 4 provides details about GEM steps and some practical guidelines about fitting such a model.

A large increase in the number of predictor variables in GEM typically would result in a higher unequal weighting effect, thus indicating a possible loss in precision. A more precise measure of loss (or gain) in precision could be obtained by looking at the Taylor-linearized variance, computed via the sandwich formula for variances, which accounts for the variability in the GEM parameter estimates of selected study variables. This was implemented by Vaish, Gordek, and Singh (2000), and some of their results are presented in Chapter 6.

Chapter 3. Predictor Variables in GEM for the NHSDA

For the 2001 National Household Survey on Drug Abuse (NHSDA), the initial set of predictor variables was identical to the one used for the 1999 and 2000 NHSDAs. Exhibit 3.1 shows the definitions and levels of these predictor variables. Typical predictors used for the screener-DU nonresponse adjustment were State, quarter, group quarters indicator, population density, percentage Hispanic in segment, percentage black in segment, percentage owner-occupied DUs in segment, and socioeconomic status (SES) indicator. The SES indicator used was the variable "Segment-Combined Median Rent and Housing Value," which was a composite measure based on (standardized) median rent, median housing value, and the percentage of dwellings that are owner occupied. Typical predictors for the person-level nonresponse adjustments were, in addition to those stated above, age group, gender, race, Hispanicity, and relation to head of household. For poststratification, predictors typically used were State, age, race, gender, Hispanicity, and quarter; the model consisted of main effects and some interactions of these predictors. For a separate extreme-value treatment with GEM after poststratification, the predictors were the same as those used in the poststratification adjustment.

Generally, it is desirable to include, whenever possible, poststratification predictors (correlated with the outcome variable) as part of nonresponse predictors (correlated with the response variable) because of the potential variance reduction; this works to offset the variance inflation, which is due to the random controls used in the nonresponse adjustment. In general, this is not possible because demographic information (often used for poststratification) is not available for nonrespondents. However, with a two-phase design, such as the one used for the NHSDA, there is no such problem because the screener data contain the necessary information. There is, of course, the cost in time and effort required to edit and impute the screener-based predictors in advance of this nonresponse adjustment. Many times, the need to edit/impute nonresponse predictors for the full sample, which consists of respondents and nonrespondents, is eliminated because the poststratification and nonresponse adjustments are combined into a single poststratification step. However, the processes leading to nonresponse and coverage errors are likely to be different enough to benefit from separate modeling. The nonresponse-adjustment models can also benefit from bias reduction when segment-level variables, such as the percentage of owner-occupied DUs, are included in the model. Population totals for these segment-level variables have not been developed for use as poststratification controls.

Heuristically, the suitable number of State-specific controls should depend on the size of the realized sample in each State; because of this, the nature of the problem of too many controls in nonresponse- and poststratification-adjustment models is State specific. Therefore, for the 2001 NHSDA, the strategy proposed by Singh, Penne, and Gordek (1999) was followed, and is discussed in the following paragraphs. Also using Singh et al. (1999), some general guidelines were used to choose an initial set of State-specific controls, and the initial set was modified iteratively as problems in maintaining them arose. The process began with the baseline model of one-factor effects and then proceeded with the addition of second- and third-order effects; collapsing was performed as necessary, depending on the individual State sample sizes. To obtain more precise State-level estimates, every effort was made to include as many important State-specific covariates as possible in models for nonresponse and poststratification weight adjustments. These covariates were typically defined by sociodemographic domains. However, keeping a multitude of State-specific covariates, especially higher order interactions, was not possible because individual State sample sizes were not large enough to support stable estimation of an adequate number of model parameters. Therefore, a hierarchical order was used for including covariates in the model; the order started with covariates at the national level, followed by covariates at the Census-division level within the Nation, then covariates at the combined-State level within the Census division, and finally, whenever possible, covariates at the State level within the combined States.

When adding certain covariates to the model resulted in parameters that could not be estimated, or were unstable, the hierarchy strategy mentioned above was used to combine States within a Census division so that covariates at the combined level could be included. However, this problem typically arose with State-specific higher order interactions, and States were collapsed only when combining levels of covariates within State was not a reasonable alternative. This was thought to be beneficial in obtaining more reliable State-level estimates using small area estimation (SAE) techniques. The eight large States were not combined with other smaller States, to the extent possible, in order to get direct State-level estimates without relying on the SAE technique.

As an objective check for the suitability of the number of factors, once a satisfactory convergent model was obtained (see Section 6.5 for details), the relative efficiency of a more complex model (with many effects) versus a simpler model (with fewer effects) was measured. In addition to the relative efficiency, the increase in the UWE was checked. For the 2001 NHSDA data, as in 2000, it became apparent that the number of controls could be very high (in excess of 1,000). This many controls would be computationally prohibitive because the implementation of GEM involves iterative steps, and a matrix (whose dimension corresponds to the number of controls) must be inverted in each of these iterations. A solution would be to use separate models within groups of States rather than a single overall model. It can be shown that, if effects (two-factor or higher order) are always collapsed within a group of States, then fitting an overall model of GEM is equivalent to fitting separate models for each group. In this way, the computational problems associated with too many controls could be reduced. Therefore, in 2001, as in 2000, nine model groups corresponding to the nine Census divisions were used.

Exhibit 3.1 Definition of Levels for Variables

Age (years)
1: 12-17, 2: 18-25, 3: 26-34, 4: 35-49, 5: 50+ [1]

Gender
1: Male, 2: Female[1]

Group Quarter Indicator
1: College Dorm, 2: Other Group Quarter, 3: Non-Group Quarter[1]

Hispanicity
1: Hispanic, 2: Non-Hispanic[1]

Percent of Owner-Occupied Dwelling Units in Segment (% Owner)
1: 50% - 100%,[1] 2: 10% - 50%, 3: <10%

Percent of Segments That Are Black (% Black)
1: 50% - 100%, 2: 10% - 50%, 3: <10%[1]

Percent of Segments That Are Hispanic (% Hispanic)
1: 50% - 100%, 2: 10% - 50%, 3: <10%[1]

Population Density
1: MSA 1,000,000 or more, 2: MSA less than 1,000,000, 3: Non-MSA urban, 4: Non-MSA rural[1]

Quarter
1: Quarter 1, 2: Quarter 2, 3: Quarter 3, 4: Quarter 4[1]

Race (3 level)
1: White,[1] 2: Black, 3: Other

Race (4 level)
1: White,[1] 2: Black, 3: American Indian/Alaska Native, 4: Asian

Relation to Householder
1: Householder or Spouse,[1] 2: Child, 3: Other Relative, 4: Non-Relative

Segment-Combined Median Rent and Housing Value (Rent/Housing)[2]
1: First Quintile, 2: Second Quintile, 3: Third Quintile, 4: Fourth Quintile, 5: Fifth Quintile[1]

States[3]

Model Group 1:	1: Connecticut, 2: Maine, 3: New Hampshire, 4: Rhode Island, 5: Vermont, 6: Massachusetts[1]
Model Group 2:	1: New Jersey,[1] 2: New York, 3: Pennsylvania
Model Group 3:	1: Illinois, 2: Indiana,[1] 3: Michigan, 4: Wisconsin, 5: Ohio
Model Group 4:	1: Iowa, 2: Kansas, 3: Minnesota, 4: Missouri,[1] 5: Nebraska, 6: South Dakota, 7: North Dakota
Model Group 5:	1: Delaware, 2: District of Columbia, 3: Georgia,[1] 4: Maryland, 5: North Carolina, 6: South Carolina, 7: Virginia, 8: West Virginia, 9: Florida
Model Group 6:	1: Alabama, 2: Kentucky, 3: Mississippi, 4: Tennessee[1]
Model Group 7:	1: Arkansas,[1] 2: Louisiana, 3: Oklahoma, 4: Texas
Model Group 8:	1: Colorado, 2: Idaho, 3: Montana, 4: Nevada, 5: New Mexico, 6: Utah, 7: Wyoming, 8: Arizona[1]
Model Group 9:	1: Alaska, 2: Hawaii, 3: Oregon, 4: Washington,[1] 5: California

MSA = metropolitan statistical area.

[1]The reference level for this variable. This is the level against which effects of other factor levels are measured.
[2]Segment-Combined Median Rent and Housing Value is a composite measure based on rent, housing value, and percent owner occupied.
[3]The States or district assigned to a particular model are based on Census divisions.

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Chapter 4. Practical Aspects of Implementing GEM for the NHSDA

As explained in Chapter 2, the generalized exponential model (GEM) can be used for extreme-value treatment, nonresponse adjustment, and poststratification (see Exhibit 4.1 for a schematic presentation of the steps). These steps were implemented using the GEM macro developed at RTI. A detailed discussion can be found in Chen, Penne, and Singh (2000).

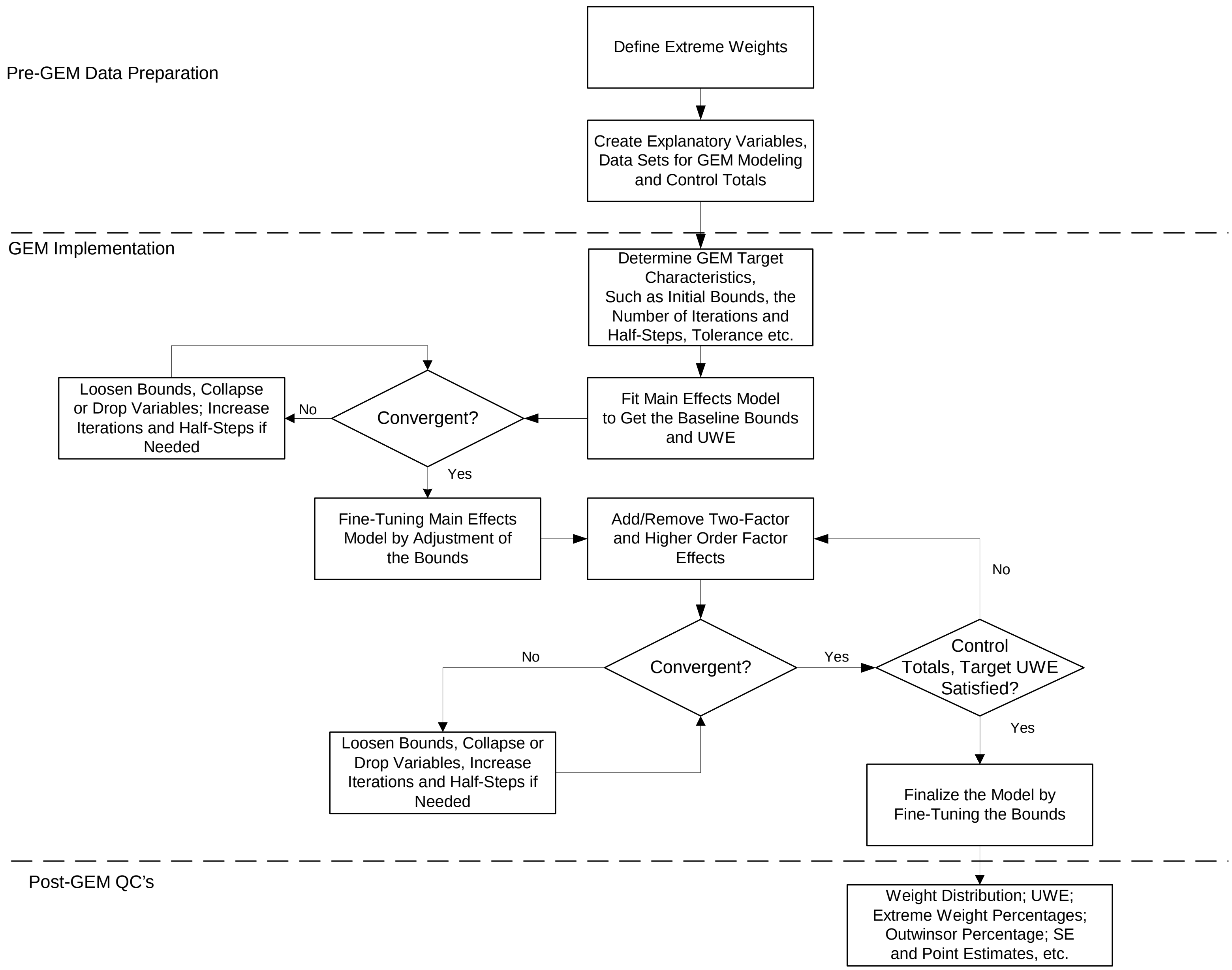
4.1 Definition of Extreme Values of Sampling Weights

An important aspect of GEM is the built-in provision of extreme-value treatment. Sampling weights for the survey were generally classified as extreme (high or low) if they fell outside the commonly used interval defined by the median ±3 × interquartile range (IQR), for some prespecified domains; these domains were usually defined by design strata ,taking into account deep stratification. For example, the DU level weight for the 2001 NHSDA used the FI region as the domain. The person-level weight adjustments used a hierarchy of four domains: (1) FI region × Age group, (2) State × Age group, (3) FI region, and (4) State. A minimum of 30 observations was required for defining the boundaries, or critical values, for extreme weights. If this minimum was not met at the lower level, the next level up in the hierarchy was used. Although the FI region × Age group domain corresponded to a deep stratum, it could be unsuitable for defining extreme-values because of insufficient sample sizes. So, collapsing FI regions within a State gave rise to such domains as State × Age group. Even at this level, sample sizes could be insufficient, so FI regions and, later, States themselves could be used as domains to define extreme values. The critical values for low and high extreme values will be denoted by $b_{k\,(l)}$ and $b_{k\,(u)}$, respectively. The critical points for extreme weights within GEM modeling were defined as the median ±2.5 × the IQR, which was conservative when compared with the commonly used standard of the median ±3 × the IQR. This is because, in order to better prevent the adjusted weights from crossing the standard boundary, in addition to those at or beyond the boundary, weights near but below it (that have the most potential to become extreme) were treated as extreme by GEM as well.

4.2 Definition of Lower and Upper Bounds for Weight Adjustment Factors

For implementing extreme-weight control via GEM, the variable m_k was defined as the minimum of $(b_{k(u)}/w_k)$ and one for high extreme weights, and the maximum of $(b_{k(l)}/w_k)$ and one for low extreme weights, where w_k represents the sampling weight before adjustment, and $(b_{k(u)}, b_{k(l)})$ denote the critical values for the extreme weights. (Note that under this definition, for high extreme weights, the more extreme the weight is, the smaller m_k will be; conversely for low extreme weights, the more extreme the weight is, the bigger m_k will be.) Non-extreme weights had a value of one for m_k. The upper and lower bounds for the adjustment factors were defined, respectively, as the product of m_k and the upper and lower boundary parameters of GEM.

Exhibit 4.1 Generalized Exponential Model Steps



GEM = generalized exponential model; SE = standard error; UWE = unequal weighting effect.

GEM allows inputs of three different upper and lower boundary parameters (L_1 and U_1, L_2 and U_2, L_3 and U_3, respectively) for high, non-, and low extreme weights. By applying a small upper boundary parameter for high extreme weights, and a large lower boundary parameter for low extreme weights, the extreme weights could be controlled in the modeling.

GEM also requires specification of centers (C), such that L < C < U. For nonresponse adjustment, it was constructive to require all adjustments to be greater than one because the adjustments represented the inverse of response propensities. For convenience, all three (L_1, L_2, and L_3) were set to one. The value of C in this case was chosen as the inverse of the overall response propensity. For poststratification, C's were set to one so the adjusted weights would not be too far away from the original design weights. Here, L's were chosen to be less than one and U's greater than one, because the control totals could be larger or smaller than the estimated totals based on the design weights. The extreme-value treatment would be analogous to the poststratification adjustment (see Appendix A). Section 4.7 gives guidelines for the choice of L, C, and U parameters.

4.3 Definition of Control Totals

GEM modeling for extreme-value treatment, nonresponse adjustment, and poststratification involved estimation of parameters of the adjustment factor model, such that specified control totals were satisfied. There were two types of control totals. For nonresponse adjustment, the control totals were from the full sample (i.e., respondents and nonrespondents), while for poststratification, control totals were obtained from external sources, such as the Census Bureau or a large first-phase screener sample. Specifically, for the 2001 NHSDA, the control totals for various domains for the (selected) person-level poststratification adjustment were obtained from the first-phase sample containing roster information, and the control totals for the (respondent) person-level poststratification were obtained from the Census Bureau's Postcensal Population Estimates for various demographic domains. Controls used for extreme-value treatment were the same as those for poststratification because they were based on the poststratified weight. (See Appendix B for more information.)

4.4 Efficient Computation Using Grouped Data

Because adjustment factors remained the same for units (DUs or persons) having common values for all explanatory variables used in the model, the size of the sample data was reduced by grouping units having common values of these variables. Additionally, within the groupings, the units with extreme weights were further grouped such that, in addition to the common values of the explanatory variables, they also had common values of m_k. This significantly saved computation time, especially because the original sample size was large. Modeling GEM with grouped data was implemented by treating each group as a single record, with the associated weight defined as the sum of the individual weights in the group. Note that when using GEM with grouped data, the UWE and *t*-test statistics normally produced in the output would be misleading because the weights in grouped data are sums of the weights for the individual units within each group. Also the definition of variance estimation stratum (VESTR) and replicates (VEREP) required for variance calculation would not be correct. To avoid these misleading results from using the grouped data, the final model was rerun with the full (ungrouped) data.

4.5 Steps in GEM Fitting

Exhibit 4.1 depicts the GEM steps. After specifying the GEM parameters, such as the initial U and L bounds, the number of the Newton-Raphson iterations and half-steps, and the type of weight adjustment (extreme-value treatment, nonresponse adjustment, or poststratification), a forward selection method for modeling was used. The model with only the main effects was first fit to obtain the realized baseline U and L bounds for extreme and non-extreme weights and to calculate a baseline UWE. Without unduly increasing the UWE and the extreme-value proportions, as many higher order interactions as possible were added to the model to help reduce bias. Convergence problems were addressed by loosening L's and U's, and collapsing or dropping variables. In GEM, *t*-tests and *p*-values for significance of various effects could be computed for a previously converged model, which would be helpful in deciding about the collapsing of effects when convergence problems arose with tighter bounds.

For this application, "collapsing" implies combining the "levels" of variables with other levels explicitly present in the model, while "dropping" implies combining with the reference levels, which are not explicitly represented in the model. Collapsing or dropping lower order interactions had a direct impact on the inclusion of the number of higher order interactions. For the 2001 NHSDA, when adding higher order terms, all previously selected explanatory variables were retained in the model. Possible reasons for nonconvergence included explanatory variables corresponding to domains with small sample sizes, or domains with large discrepancies between estimated totals based on the initial weights and the target control totals. The variables causing problems with convergence were identified by the high magnitude of the estimated model parameters. Once the explanatory variables were finalized, finer adjustments of U's and L's could optimize the model by reducing UWE and the extreme-weight proportions.

4.6 Quality Control Checks

The distributions of the weights before and after each adjustment were compared to uncover any unusual impact of the weight adjustment on the initial weights. In addition to the weight distributions, the following also were compared across various domains both before and after each adjustment: the ratios of the maximum weight to the mean weight and the UWEs. The proportions of extreme values were checked after each adjustment to see how effective the modeling was in controlling extreme values. Coverage bias analysis based on the slippage rates was also conducted to check the impact of poststratification on various noncontrolled domains (i.e., those factors that were dropped from the model). To check for overfitting after the final weight adjustment, point estimates for the main drug use variables, as well as their standard errors (SEs), were computed using a sandwich variance formula (see Section 6.5) and were compared with the corresponding estimates and SEs for the baseline (or main effects) model.

4.7 Practical Guidelines in Using GEM

1. Collapsing checks for domains with small sample sizes. The number of observations in various domains defined by levels of the factor effects were examined. If the domain sample size was zero and the control total corresponding to this domain also was zero, the corresponding factor was generally dropped. This automatically collapsed the corresponding factor level with reference level; however, if the control total corresponding to this domain was not zero, the factor cannot be dropped because collapsing the domains together for the sample would also collapse the population domains together. The result would be that control totals could not be met for the reference levels involved.

In general, domains with small sample sizes may cause problems during GEM modeling and prevent the model from converging. For the 2001 NHSDA, if the model did not converge because a domain sample size was small, the corresponding factor effect was collapsed with another effect based on substantive considerations. If State was involved, then it was better, in general, to collapse within States, collapsing with other adjacent States only if unavoidable (see Section 4.8 for more detail). The necessity of collapsing was checked at each stage of model enlargement in the forward selection of factors. If variables were collapsed at a previous stage, the corresponding factor levels were also collapsed under the hierarchy principle, at succeeding stages involving higher order factor effects.

2. **Singularity checks**. As in the case of collapsing checks, singularity checks were performed for the baseline model (i.e., checks for linear dependence of columns of realized values of the predictors); additionally, they were performed at each stage of model enlargement because singularities depend on what other predictors are in the model. Any variable that was a linear combination of other variables was dropped from the model. (Note that although all variables were linearly independent of each other, it was possible for the columns of their realized values to have been linearly dependent.)

3. Finding the initial factor set. After the collapsing and singularity checks, the remaining factor effects at a given stage of model enlargement formed the initial factor set.

4. Baseline model. Starting with the model consisting of all one-factor effects from the initial factor set, a convergent version was found (after some collapsing at times) under no restrictions on the bounds. The model was optimized by trying to reduce the UWE and tighten the bounds. If necessary (to obtain convergence), factors corresponding to large parameter estimates were collapsed. As an option, *p*-values could have been used to determine which factors to collapse.

5. Baseline plus two-factor effects. All the two-factor interactions from the initial factor set were added to the baseline model. A convergent version under no bound restrictions was then found, and Guideline 4 above was followed. The non-State two-factor effects were added first, then in a separate step the State two-factor effects were added.

6. Baseline with three-factor effects. Starting with the optimized model from Guideline 5, the higher order factor effects were added—first the non-State three-factor effects, then in a separate step the State three-factor effects. Guideline 5 was followed to obtain an optimum version.

7. Optimizing a model with respect to the target model characteristics. These are summarized in the following points:

- For each step of model enlargement, the UWE for the initial weights was computed. It was allowed to increase up to 20 percent, or the maximum allowable UWE (generally under six), whichever was lower.

- The following guidelines, based on empirical considerations, were used for setting the bounds. In the case of poststratification and separate extreme-value adjustments, the bounds were set as follows: $L_1 = L_2$, and $U_2 = U_3$, and $C_1 = C_2 = C_3 = 1$. Starting with loose bounds of (0.1, 10) and using the realized bounds (from the GEM modeling output) to make informed decisions about the degree to which the bounds may be tightened, U_1 and L_3 were tightened as close to 1 as possible. (L_2, U_2) generally varied inside (0.3, 4).

- In the case of nonresponse, the bounds were set as $L_1 = L_2 = L_3 = 1$, and $U_2 = U_3$. All the C's were set equal to the common value of the overall inverse response propensity. Starting with the loose bounds of (1, 10), U_1 was tightened as close to C as possible. U_2 generally varied inside (1, 4).

- Targets for the maximum acceptable percentages of extreme values and outwinsors within GEM for nonresponse and poststratification were as follows: 3 percent for the unweighted extreme values, 15 percent for weighted extreme values, and 5 percent for outwinsors. These percentages are liberal and serve as guidelines only. In practice, reducing them by half is preferable. If these guidelines were not met, a separate GEM for treatment of extreme values would be implemented after poststratification.

8. Evaluation Measures. After each stage of model enlargement, various characteristics were examined for large values. These included the UWE, the ratio of the maximum to the mean for adjusted weight, the percentage of extreme-values and outwinsors, the distance between the total sample weighted count and the target population count (i.e., slippage rates for different domains) and other characteristics, such as weight summary statistics. In addition, the distributions of adjustment factors were checked for highly asymmetric tails. With the bounds realized for the final model, the baseline model was rerun, then point estimates and SEs for selected outcome variables for the two models were compared. Generally, the two estimates are likely to be close, but not the SEs. The SE for the final model was expected to be smaller but at times could be larger. Larger SEs were identified and examined because they could be an indication of the instability of the model parameter estimates due to possible overfitting or insufficient sample sizes. In such situations, the final model would be revised to get a more parsimonious model.

4.8 Variable Collapsing Guide

As discussed in Section 4.5, convergence problems in GEM were solved by either loosening bounds or collapsing explanatory variables. Grouping proposed levels into a smaller number of categories could be done in several ways, but care was taken so that they remained meaningful. When constructing the model and attempting to obtain convergence, maintenance of logical groupings was a top priority. Below are some general guidelines that were followed when collapsing variables.

- *Ordinal Variables*. Most of the proposed explanatory variables were ordinal. Thus, collapsing was done in a meaningful way in the sense of the order. For example, the combined rental/house quintile had five levels (i.e., 1st, 2nd , 3rd , 4th, and 5th quintile) with the 5th quintile set for the reference. If the 4th quintile needed to be collapsed, it would be collapsed with either the 3rd or 5th quintile.

- *Age Groups*. Age group had five levels: 12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older. For the main effects, the five levels easily fit in the model. For the interactions, age group was given highest priority, so that collapsing was performed within age group first; collapsing across age group occurred only if the age group could not be maintained separately.

- *Large and Adjacent States*. In the main effects, fitting State separately in the model was not a problem. For the State-specific interactions, collapsing was done within State first, collapsing with other adjacent States only if needed. For the eight States with large sample sizes (NY, PA, FL, TX, CA, OH, IL, MI), every effort was made to preserve all factor levels within States so that direct estimates could be made for the large States.

- *Race*. In the main effects and State-specific two-factor interactions, race had four levels (white, black, American Indian/Alaska Native, and Asian), while in non-State-specific two- and three-factor effects, race had three levels, (white, black, and other). If maintaining all four levels in the State by race interaction was difficult, using the collapsed three-level definition was preferable, because it preserved the existing race definition at the three-factor level. If the three-level race could not be maintained, the levels were collapsed to white and nonwhite.

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Chapter 5. Weight Calibration at Phase I Dwelling Unit and Phase II Person Levels

The 2001National Household Survey on Drug Abuse (NHSDA) was based on probability sampling so that valid inferences could be made from survey findings to the target population. Probability sampling refers to sampling in which every unit on the frame is given a known, nonzero probability for inclusion in the survey. This is required for unbiased estimation of the population total. The assumption of nonzero inclusion probability for every pair of units in the frame also is required for unbiased variance estimation. The basic sampling plan involved three stages of selection across two phases of design (see Exhibit 5.1). The first phase of the design was the dwelling unit (DU) level and the second phase was the person level. The three stages of selection were as follows: within Phase I, (1) the selection of subareas or segments within State FI regions (these subareas are comprised of U.S. Census blocks); (2) the selection of DUs within these subareas; and within Phase II, (3) the selection of eligible individuals within DUs (Table 5.1). Specific details of the sample design and sample selection procedures can be found in the 2001 NHSDA sample design report (Bowman et al., 2003).

As part of the post-survey data-processing activities, analysis weights were calculated for the 2001 NHSDA respondents that reflected the selection probabilities from various stages of the sample design. These sample weights were adjusted at both the DU level (screening sample) and person level (drug questionnaire sample) to account for bias due to extreme values, nonresponse, and undercoverage (via poststratification for the last).

The final Phase I DU-level and Phase II person-level sample weights for the 2001 NHSDA sample are a product of several factors (see Exhibit 5.1), each representing either a probability of selection at some particular stage or some form of extreme-value, nonresponse, or poststratification adjustment. In the following sections, these components are described in greater detail. In summary, the first nine factors are defined for all screener-complete DUs and reflect the fully adjusted DU-sample weight. The latter five components reflect the person-level selection within each screened DU, as well as any additional adjustments for person-level extreme-value, nonresponse, and poststratification error. Note that the unconditional, final person-level weights for the 2001NHSDA sample are the product of all 14 weight components, as illustrated in Exhibit 5.1.

In 2001, as in 2000, the order of the extreme-weight treatment step (extreme value) at both the DU and person level was different from the order used in the 1999 NHSDA (computer-assisted interviewing [CAI]). In the 1999 NHSDA (CAI), the extreme-value step was introduced before nonresponse and poststratification, which was analogous to the traditional trimming step before nonresponse and poststratification. In the 1999 NHSDA, the initially identified extreme weights were held fixed at their winsorized values, and the non-extreme weights were adjusted so that the original sample distribution of the weights for various domains was preserved. As a better alternative for the 2000 and 2001 NHSDAs, GEM was allowed to control extreme weights as much as possible during nonresponse and poststratification steps, and then a separate extreme-value step after poststratification

Exhibit 5.1 Summary of 2001NHSDA Sample Weight Components

Phase I Dwelling Unit Level

Design Weight Components	
#1	Inverse Probability of Selecting Segment
#2	Quarter Segment Weight Adjustment
#3	Subsegmentation Inflation Adjustment
#4	Inverse Probability of Selecting Dwelling Unit
#5	Inverse Probability of Added Dwelling Unit
#6	Dwelling Unit Percent Release Adjustment

#7	Dwelling Unit Nonresponse Adjustment ***(res.sdu.nr)****
#8	Dwelling Unit Poststratification Adjustment ***(res.sdu.ps)****
#9	Dwelling Unit Extreme-Weight Adjustment ***(res.sdu.ev)****

Phase II Person Level

Design Weight Components	
#10	Inverse Probability of Selecting a Person Within a Dwelling Unit

#11	(Selected) Person-Level Poststratification to Rostered Persons Adjustment ***(sel.per.ps)****
#12	Person-Level Nonresponse Adjustment ***(res.per.nr)****
#13	Person-Level Poststratification Adjustment ***(res.per.ps)****
#14	Person-Level Extreme-Weight Adjustment ***(res.per.ev)****

* These adjustments use the generalized exponential model (GEM), which also involves pre- and post-processing in addition to running the GEM macro. See Exhibit 4.1. For computational feasibility, all weight adjustments were done using the nine model groups based on U.S. Census divisions defined in Exhibit 5-2.

Exhibit 5.2 U.S. Census Divisions/Model Groups

Model Group	Census Division
1	**New England (6 States)**
	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
2	**Middle Atlantic (3 States)**
	New Jersey, New York, Pennsylvania
3	**East North Central (5 States)**
	Illinois, Indiana, Michigan, Ohio, Wisconsin
4	**West North Central (7 States)**
	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
5	**South Atlantic (8 States and the District of Columbia)**
	Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
6	**East South Central (4 States)**
	Alabama, Kentucky, Mississippi, Tennessee
7	**West South Central (4 States)**
	Arkansas, Louisiana, Oklahoma, Texas
8	**Mountain (8 States)**
	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
9	**Pacific (5 States)**
	Alaska, California, Hawaii, Oregon, Washington

Table 5.1 Sample Size, by Model Group for Each Stage of Sampling

Model Group	Eligible DU	Completed DU	Eligible Persons	Selected Persons	Completed Persons
1	15,697	14,369	29,262	7,394	5,618
2	24,106	21,233	46,964	11,786	8,826
3	33,359	30,179	61,942	17,455	12,830
4	14,553	13,662	27,808	8,105	6,382
5	29,072	26,627	53,458	13,837	10,721
6	8,933	8,393	16,858	4,559	3,602
7	13,570	12,742	26,382	7,882	6,286
8	15,254	14,476	30,244	9,204	7,306
9	16,975	15,790	33,401	9,523	7,358
Total	171,519	157,471	323,319	89,745	68,929

would be performed if necessary. This separate extreme-value step would be like a repeat poststratification except that the extreme weights identified after poststratification would have tighter bounds, thus preserving the sample distributions in various domains (equivalent to satisfying the poststratification controls). The extreme-value step was not needed at either the DU or person levels.

5.1 Phase I Household-Level Weight Components

5.1.1 Weight Components #1 to #6: Adjustment for the Random Selection of a Dwelling Unit

The first six components in the Phase I sample weights reflect the probability of selecting the DUs. These components were derived from (1) the probability of selecting the geographic segment within each State FI region, (2) a quarter segment weight adjustment, (3) a subsegmentation inflation factor, (4) the probability of selecting a DU from within each counted and listed sampled segment, (5) the probability of inclusion of added DUs, and (6) DU percent release adjustment.

Segments were selected with probabilities representing a full year's sample; therefore, Weight Component #2 was set to one in the 12-month analysis, and to two for the 6-month analysis (because only half of the segments were used in the analysis). Also, when the field staff, who were responsible for counting and listing, traveled to a specified segment, occasionally they may have found the number of potential DUs to be much greater than what the sample frame (constructed from 1990 U.S. Census data adjusted for 1995 Claritas projections) indicated. This happened either because of errors in the frame or, more commonly, because of rapid growth in a particular geographic area. When this occurred, the original segment was partitioned and a subsegment randomly selected. Weight Component #3 (i.e., subsegmentation inflation factor) is an adjustment that accounts for this selection process.

As noted in the 2001 and earlier sample design reports, a lengthy process of determining the optimal DU sample was used during the design of the survey. Weight Component #4 is a result of this process and is equal to the inverse of the DU sample size divided by the total number of DUs counted and listed.

Furthermore, the list of DUs, which includes housing units and group quarters, was constructed by the counting and listing staff during the summer and fall of 2000. Because the listing was done a short time before the 2001 screening and interviewing activities began, no major discrepancies were expected. However, such factors as new construction, demolition, and inaccurate listing were present in some cases. More commonly, DUs may have been "hidden" and therefore overlooked by the counter and lister. For all DUs to be given a chance of being selected, the NHSDA has a procedure for locating and adding missed DUs. The current procedure requires FIs to look both on the property of selected DUs and between that DU and the next listed DU (half-open interval rule). In 2000, the rule was modified such that the half-open interval would be closed on each map page. Therefore, if the selected DU was the last on a page, the "next listed DU" would be the first one listed on the same page. If the number of added DUs linked to any particular DU did not exceed 6, or if the number for the entire segment was less than or equal to 10, the FI was instructed to consider these DUs as part of his or her assignment. However, if either of these limits was exceeded, the FI would contact RTI for subsampling to be considered. Weight Component #5 accounts for any subsampling that occurred due to added DUs.

To account for corrections and/or modifications that occurred during the process of design optimization, an additional sample was included throughout all four quarters. Weight Component #6 is the adjustment for the percentage of the DU sample released to FIs in these quarters.

For more detailed information on Weight Components #1 and #3 through #6, refer to the 2001 NHSDA sample design report (Bowman et al., 2003).

5.1.2 Weight Component #7: Dwelling Unit Nonresponse Adjustment

After DUs were selected, an FI was sent to the DU to screen the residence. Failure to obtain the screening interview from eligible DUs represented the first type of nonresponse encountered in the survey. To account for this nonresponse, as in previous NHSDAs, the (unconditional) sample weights up to this point (equal to the product of Weight Components #1 to #6) were adjusted using a multiplicative adjustment factor derived from modeling response propensity via GEM.

5.1.3 Weight Component #8: Dwelling Unit Poststratification Adjustment

The screener data provided a large sample with information on some demographic variables for the households; therefore, as in two-phase sampling, the screener dwelling unit (SDU) weights were first adjusted for poststratification and nonresponse. Later, estimates for household variables (which were based on screener data) were used as control totals for weight adjustments at the second phase and for person pair-level weights. This was useful because, unlike Census controls that were available for individual persons, no controls were available for person-pairs. Note that for SDU poststratification, Census controls could still be used because each SDU's contribution is computed as the number of persons in the SDU who had certain demographic characteristics multiplied by the SDU weight. It follows that although explanatory variables used for modeling the weight adjustment were counts instead of binary (0/1) as is often the case, person-level Census controls could still be used. For example, age group had five categories (12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older); in SDU poststratification, category 12 to 17 was the number of the persons in this age category within a DU, and so on. The intercept was the total number of persons in the DU, which varied by SDU because SDU size was not constant. Note that when defining interaction control variables for count variables, the corresponding count variables were not simply multiplied, as was done for the binary case; instead, the counts for the category defined by the interaction term (say, age by gender) were used instead.

Additionally, the screening process only required the reporting of age for each person rostered; as a result, some fields of demographic information (e.g., race, Hispanic origin, and gender) were missing. Missing data for race and Hispanic origin were imputed using the newly developed predictive mean neighborhood (PMN) methodology (see Appendix C). The probability of observing race (white, black, American Indian/Alaska Native, Asian) was modeled using PROC MULTILOG in SUDAAN and the probability of observing Hispanic origin was modeled using PROC LOGISTIC in SAS. Those probabilities were used in computing predictive means and delta neighborhoods. The "hot deck" method then was used to randomly pick a donor from the neighborhood to impute a missing value for each case. Missing data for gender were imputed using an unweighted hot-deck methodology (see Appendix C). The data file was sorted by auxiliary variables that were considered relevant to the variable being imputed. The sort order of these auxiliary variables was chosen to reflect the degree of importance of the auxiliary variables in relation to the variable being imputed. Exhibit 5.3 displays the order in which demographic variables were imputed, along with explanatory variables used in the model, or in hot-deck sorting.

Exhibit 5.3 Imputed Demographic Variables and Corresponding Explanatory or Auxiliary Sort Variables

Imputed Variable	Methodology	Explanatory or Auxiliary Sort Variables
Race	Multivariate predictive mean neighborhood (MPMN)	Census region, household type (white, black, Hispanic), percent of segments that are black, percent of segment that are Hispanic, percent of owner-occupied DUs in segment, segment combined median rent and housing value, age group
Hispanic Origin	Univariate predictive mean neighborhood (UPMN)	Census region, imputed race, household type (white, black, Hispanic), percent of segments that are black, percent of segment that are Hispanic, percent of owner-occupied DUs in segment, segment combined median rent and housing value, age group
Gender	Hot deck	Census division, imputation-revised Hispanic origin, imputation-revised race and a random sort number

5.1.4 Weight Component #9: Dwelling Unit Extreme Value Treatment

The product of Weight Components #1 through #8 was checked to see if the extreme-value step was needed. Using the FI region as the domain for the extreme-weight definition, weights were defined as extreme if they were outside the range defined by the median ±3 × IQR. Since the unweighted, weighted, and winsorized extreme-value proportions were not high, the extreme-value treatment was not necessary (see results in Appendix F). Therefore, Weight Component #9 was set to one for every DU for which roster information was collected (i.e., every DU with a completed screener).

After this adjustment was completed, the final DU weight was calculated as the product of Weight Components #1 to #9 described above. This adjusted weight was used to compute household-level estimates from the screener data. It also was used to compute person-level estimates derived from the full roster sample. In addition, these nine weight components became the first nine components of the final interview respondent sample weight. The remaining five weight components discussed in the next section account for the person probability of selection for those persons for which a NHSDA interview was sought; they also account for person-level nonresponse, extreme-value treatment, and coverage errors resulting from the last stages of the sample design.

General information on the final models used for DU nonresponse and poststratification adjustment for each respective model group can be found in Appendix D.

5.2 Phase II Person-Level Weight Components

5.2.1 Weight Component #10: Adjustment for the Random Selection of a Person Within a Dwelling Unit

The rate at which persons were selected within each DU depended on the age group, and it was determined during the design of the 2001 study; this was also done for the probabilities of selecting DUs (i.e., Weight Component #4). Note that, similar to the 1999 and 2000 NHSDAs, all possible pairs of eligible rostered persons were given some nonzero probability of selection in order to facilitate unbiased variance estimation. With the use of the Apple Newton handheld computer used by field interviewers, selection probabilities were adjusted to reflect the total household composition. The survey design restricted the number of interviews to two per DU. With this restriction, a modified Brewer's selection method was used to select either zero, one, or two persons from the DU. (Three ghost units were defined for each DU to allow for the selection of no persons and to avoid division by zero in the Brewer's algorithm.) In short, if the sum of selection probabilities for all eligible DU members was greater than two, then probabilities were ratio-adjusted to sum to two; sums less than two were unadjusted. These adjusted rates were then retained as the final selection probabilities. Weight Component #10 represents the inverse of this probability of selection.

5.2.2 Weight Component #11: (Selected) Person-Level Poststratification Adjustment

The (selected) person-level postratification step was started during the 1999 NHSDA. In NHSDAs prior to 1999, a combined step of person-level nonresponse and poststratification to estimated totals from the screener person data was used as a compromise to this step. As was done for the 1999 and 2000 NHSDAs, the combined step was divided into two separate steps; the first step was poststratification of the selected persons (i.e., respondents and nonrespondents) to estimated control totals from the screener person data; the second step was (respondent) person-level nonresponse adjustment (see Component #12) to reproduce control totals from the selected person data (i.e., the full sample). Using two separate steps takes advantage of the inherent two-phase nature of the NHSDA design (although the design is primarily viewed as multistage). With this step, more stable controls for the nonresponse adjustment were obtained (as compared with the traditional nonresponse adjustment) because of the additional selected-person poststratification. Note that this would not have been possible in the absence of screener data on demographics of members of the selected DUs. See Appendix D for details on the final models.

5.2.3 Weight Component #12: (Respondent) Person-Level Nonresponse Adjustment

The next step was to adjust the sample weights of the interview respondents to the weighted demographic distributions based on the full sample.

Demographic information for the drug questionnaire respondents was available from two sources—screener data and questionnaire data—while only screener data were available for the large first-phase sample of rostered individuals of all the screened DUs. However, to be consistent with respect to the source of the data, screener data for both respondents and nonrespondents were used for the person-level nonresponse adjustment. It may be noted that during screening, the only required demographics were the age of each person who was rostered. Thus, such demographics as race/ethnicity and gender of all the rostered eligible persons were not required, and imputation procedures were needed to replace missing data for race/ethnicity and gender. For race/ethnicity, imputations were created using predictive mean neighborhood methodology, and for gender, imputations were created using hot-deck methodology. It should be noted that answers from the questionnaire respondents could potentially cause discrepancies between screener values of demographics and their final imputed-revised values. Details on the final models used for person nonresponse adjustment for each model group can be found in Appendix D.

5.2.4 Weight Component #13: (Respondent) Person-Level Poststratification Adjustment

The final adjustment was to force weighted respondent-sample data for various demographic domains to equal specified control totals obtained from the Census Bureau's estimates of the civilian, noninstitutionalized population aged 12 or older. See Appendix B for details on the derivation of control totals.

After computing the various control totals that were needed, appropriate poststratification factors were applied to the sample weights using GEM in order to (1) control the resulting unequal weighting effect and thereby reduce the potential variance inflation that could result from this weight adjustment, and (2) control for a larger number of main effect and lower order interaction control variables. Details on the final models used for the person-level poststratification adjustment for each model group can be found in Appendix D.

5.2.5 Weight Component #14: (Respondent) Person-Level Extreme-Value Treatment

The weights for the product of Weight Components #1 to #13 were checked to see if the extreme-value step was needed, with extreme weights defined as described in Section 4.1. As in the case of Weight Component #9, unweighted, weighted, and winsorized extreme-value proportions were acceptably low, so it was decided that the extreme-value treatment was not required at this stage either. (See results in Appendix G.) Therefore, Weight Component #14 (a placeholder) was set to one for each responding person.

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Chapter 6. Evaluation of Calibration Weights

During the weight calibration process, several criteria for quality control were implemented to assess model adequacy. This chapter describes the individual procedures and presents a summary of their results. All tables referred to in this chapter can be found in Appendices E, F, G, H, and I.

6.1 Response Rates

Table E in Appendix E displays the final sample sizes for the categories "selected," "eligible," and "completed" at the DU level, and for "selected" and "respondents" at the person level from the 2001 NHSDA, for both the national and State level. This table also shows the weighted eligibility rates and weighted response rates for DU screeners and person-level interviews. Table E, at the national level, indicates an overall eligibility rate of 84.60 percent as compared to 84.91 percent for 2000. The screening rate at the national level was also similar for the 2 years (91.86 percent for 2001 vs. 92.84 percent for 2000), and the national interview response rate was 73.29 percent, compared with 73.89 percent for 2000. This similarity in overall rates held in nearly all States, with a few notable exceptions: The eligibility rate dropped from 84.38 to 77.77 percent for South Carolina and from 83.61 to 77.46 percent for Mississippi; the screening rate dropped from 93.50 to 86.40 percent in the District of Columbia. The response rates showed the most variability among the states; for example Hawaii had a decrease of 9 percent (from 77.59 percent for 2000 to 68.59 percent for 2001) and Missouri had an increase of 8.22 percent (from 70.72 percent to 78.94 percent). Table 6.1 presents summary statistics of overall response rates across individual States.

Table 6.1 Summary Statistics of Overall Weighted Response Rates Across Individual States

Domain	Minimum	Median	Maximum
DU Level			
Eligibility Rate	72.75% (Vermont)	83.95% (Tennessee)	90.63% (Connecticut)
Screener Response Rate	84.33% (New York)	93.12% (Missouri)	97.07% (New Mexico)
Person Level			
Interview Response Rate	64.12% (Illinois)	75.37% (Arkansas)	84.10% (Maine)

6.2 Proportion of Extreme Value and Outwinsor Weights

During the stages of modeling adjustments (i.e., nonresponse and poststratification), a major factor in deciding the adequacy of a particular model was the extent of resulting extreme values among the weights. As explained in Section 4.1, the percentages of extreme values for the input weight were defined for some domains of interest prior to adjustment. These values were then compared with the resulting percentages of extreme values using the product of weight components that included the new adjustment.

Table F in Appendix F and Tables G.1 and G.2 in Appendix G present percentages of extreme values at both the DU level for the Nation and the person level for the individual States. Unweighted percentages are based on the actual counts of units and are defined as the ratio of extreme values relative to the total sample size. Weighted percentages reflect the percentage of total extreme-value weights relative to the total sample weight, while outwinsor percentages represent the total amount of residual weight (given that the weights are trimmed to the critical values that were used for extreme-value definition) relative to the total sample weight. For evaluation purposes, the outwinsor percentage is considered the most important of the three percentages. This assessment stems from the fact that its value reflects only the actual amount of weight that would be affected if trimming were implemented.

For the 2001NHSDA sample, domains for extreme-value definitions were defined as follows for various weight adjustments via GEM (see Section 4.1):

- DU nonresponse: by FI region;
- DU poststratification: by FI region;
- selected person-level poststratification: by FI region and age, State and age, FI region, State;
- person-level nonresponse: by FI region and age, State and age, FI region, State; and
- person-level poststratification: by FI region and age, State and age, FI region, State.

6.3 Slippage Rates

The slippage rate for a given domain is defined as the percentage difference between the design-based domain population estimate and the Census control total, relative to the Census control, both before and after poststratification. The tables in Appendix H display national and State-level domain-specific weight sums for both before and after poststratification. They also present the control totals to be met through poststratification and the relative percentage difference (or the amount of adjustment necessary [positive or negative] to meet the given totals). The first relative difference was used explicitly during the poststratification modeling procedure to identify potential problems for convergence; this was done because large differences in domains with relatively small sample sizes indicate potentially large adjustment factors, which may cause problems in convergence. The reason is that adjustments required for one domain may have an adverse effect for another domain when a unit belongs to both domains.

Consider Table H.21 for Maine, which indicates a sample size of nine for Hispanics; an Initial Total, also known as the design-based weight, of 3,683; a Census Total of 6,905; and an initial slippage rate of -46.66%. The ratio of the Census Total to the Initial Total gives the value of the weight adjustment, 1.87. Similar to this example, but in the opposite direction, is Table H.50 for West Virginia. The race domain for "Other" contains a sample size of 10 and an initial slippage rate of 102.70%. The Initial Total of 20,609 and the Census Total of 10,167 indicates an adjustment of .49 would be required.

6.4 Weight Adjustment Summary Statistics

Tables I.1 to I.52 in Appendix I display summary statistics on the product of weight components for before, and after, all stages of adjustment, for both the DU and person levels. Note that these tables have "before" and "after" categories for all adjustments except for the DU poststratification (res.du.ps); this is because the "before" and "after" statistics are the same, and are therefore displayed only as the category "after." Note also that there could be changes, although minimal, in person-level specific demographic distributions from screener data to questionnaire data, so the respondent sample UWE prior to poststratification based on the questionnaire data (e.g., see Table I.3, under the heading "After res.per.nr") would only be slightly different from what would be obtained after the nonresponse adjustment (see Table I.4, under the heading "Before res.per.ps") . The sample size (*n*) for the demographic domains from res.per.nr tables also could be different from the res.per.ps tables.

6.5 Sensitivity Analysis of Drug Use Estimates to Baseline Models

In general, there is a trade-off between bias reduction and variance reduction. For instance, with GEM (for nonresponse or poststratification), enlarging a simple model (such as the one with only main effects) has the potential of further reducing the bias. At the same time, this enlargement may be associated with a corresponding increase in the variance of the estimate of the population total. The increased variability comes from estimating the additional parameters included in the model. To check for possible overfitting of the GEM model, a sensitivity analysis was conducted for the poststratification step, where a simple baseline model was fitted with the same bounds and maximum number of iterations as that used for the final, more complex, model. Then point estimates and standard errors (SEs) were examined for substantial changes. If the SE increased only slightly under the complex model, or even better, if it decreased (which is possible because of the correlation between the study and predictor variables), the more complex model was selected.

To account properly for the additional variability due to GEM parameter estimation, the “standard” SE (a ratio-adjusted estimator denoted by SE1) computed under SUDAAN needed modifications. A sandwich formula for the Taylor linearization (see Vaish, et al., 2000) was used to find a modified SE (denoted by SE2). These SEs were calculated, as well as point estimates for a few important drug recency variables (past year marijuana, alcohol, and cigarette use), across four age groups (12 to17, 18 to 25, 26 to 34, and 35 or older), for the eight States with large sample sizes.

As shown in Tables 6.2 to 6.7, the point estimates for the two models (baseline and final) are generally similar to each other; this is also true for the SEs (both SE1 and SE2). Therefore, there is no evidence of instability in estimates obtained by fitting a large number of parameters in GEM. Note that if SE2 were substantially smaller than SE1, it would indicate that the poststratification resulted in both variance reduction (due to correlation between study and predictor variables) and bias reduction (due to meeting control totals corresponding to a number of factor effects).

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Table 6.2 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Lifetime Licit Drug Estimates, Cigarettes and Alcohol: 2001 NHSDA

		U.S.		California		Florida		Illinois		Michigan	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Cigarettes Lifetime											
Total	Point Estimates	67.27	67.20	61.58	61.23	66.32	66.45	66.37	66.40	67.55	67.37
	SE1	0.33	0.33	1.35	1.33	1.42	1.40	1.18	1.17	1.29	1.31
	SE2	0.31	0.31	1.30	1.22	1.35	1.31	1.18	1.19	1.27	1.20
12-17	Point Estimates	33.42	33.58	27.45	27.23	30.24	30.67	32.57	32.62	36.54	36.65
	SE1	0.46	0.46	1.66	1.64	1.51	1.52	1.45	1.45	1.54	1.54
	SE2	0.46	0.46	1.69	1.59	1.52	1.63	1.45	1.43	1.54	1.54
18-25	Point Estimates	69.13	69.03	61.95	60.96	65.20	65.43	72.55	72.43	71.38	71.41
	SE1	0.42	0.43	1.42	1.44	1.21	1.18	1.58	1.60	1.45	1.43
	SE2	0.42	0.41	1.46	1.53	1.22	1.26	1.57	1.55	1.46	1.35
26-34	Point Estimates	70.03	70.17	65.28	66.18	63.46	63.30	73.41	74.07	71.56	71.09
	SE1	0.71	0.71	2.68	2.60	2.78	2.82	2.19	2.21	2.47	2.52
	SE2	0.71	0.66	2.69	2.41	2.73	2.54	2.17	2.08	2.46	2.23
35+	Point Estimates	71.95	71.80	66.43	65.83	72.24	72.38	69.21	69.04	71.32	71.09
	SE1	0.46	0.46	1.86	1.88	1.95	1.91	1.73	1.72	1.90	1.92
	SE2	0.44	0.43	1.81	1.74	1.90	1.87	1.74	1.79	1.89	1.87
Alcohol Lifetime											
Total	Point Estimates	81.79	81.73	79.45	78.93	82.21	82.24	82.79	82.87	83.18	83.06
	SE1	0.24	0.24	0.82	0.83	0.89	0.88	0.89	0.92	0.90	0.95
	SE2	0.23	0.22	0.75	0.75	0.86	0.82	0.88	0.80	0.89	0.89
12-17	Point Estimates	42.91	42.87	39.70	39.43	43.31	43.68	43.72	43.56	41.37	41.44
	SE1	0.44	0.44	1.55	1.60	2.37	2.35	1.63	1.63	1.50	1.48
	SE2	0.44	0.47	1.58	1.56	2.33	2.38	1.65	1.62	1.50	1.51
18-25	Point Estimates	85.00	85.00	80.77	80.08	83.37	83.53	86.01	86.15	87.57	87.47
	SE1	0.34	0.35	1.45	1.58	1.26	1.25	1.10	1.12	0.99	1.02
	SE2	0.34	0.35	1.46	1.61	1.28	1.21	1.10	1.09	1.01	0.97
26-34	Point Estimates	88.82	89.01	84.29	84.57	88.82	89.05	91.11	91.43	91.31	91.28
	SE1	0.49	0.49	2.06	2.00	1.82	1.84	1.31	1.38	1.33	1.29
	SE2	0.49	0.48	2.06	2.01	1.74	1.70	1.35	1.33	1.32	1.12
35+	Point Estimates	86.04	85.89	84.73	83.95	86.36	86.31	86.85	86.83	87.76	87.56
	SE1	0.34	0.35	1.13	1.16	1.14	1.14	1.25	1.28	1.41	1.49
	SE2	0.33	0.32	1.04	1.02	1.13	1.12	1.24	1.16	1.41	1.42

(continued)

Table 6.2 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Lifetime Licit Drug Estimates, Cigarettes and Alcohol: 2001 NHSDA (continued)

		New York		Ohio		Pennsylvania		Texas	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Cigarettes Lifetime									
Total	Point Estimates	64.19	64.05	71.39	71.39	68.44	68.36	64.03	64.21
	SE1	1.33	1.30	1.17	1.16	0.84	0.83	0.97	0.97
	SE2	1.32	1.28	1.18	1.15	0.83	0.84	0.87	0.83
12-17	Point Estimates	31.91	32.41	35.06	35.10	36.38	36.10	32.05	32.40
	SE1	1.56	1.54	1.78	1.77	1.57	1.58	1.81	1.81
	SE2	1.56	1.54	1.79	1.75	1.56	1.55	1.83	1.86
18-25	Point Estimates	67.79	68.19	75.96	75.78	73.38	73.01	65.89	65.80
	SE1	1.56	1.53	1.27	1.27	1.65	1.67	1.51	1.59
	SE2	1.59	1.40	1.26	1.35	1.66	1.66	1.50	1.44
26-34	Point Estimates	68.87	67.99	76.32	75.77	77.83	77.41	63.64	64.03
	SE1	3.06	2.98	2.50	2.51	2.13	2.20	2.54	2.54
	SE2	3.06	3.03	2.53	2.60	2.14	2.26	2.54	2.45
35+	Point Estimates	67.30	67.16	75.47	75.62	70.58	70.64	69.83	69.97
	SE1	1.79	1.76	1.80	1.80	1.27	1.25	1.34	1.35
	SE2	1.77	1.65	1.79	1.69	1.26	1.21	1.21	1.22
Alcohol Lifetime									
Total	Point Estimates	81.05	80.85	84.44	84.46	83.62	83.47	79.21	79.53
	SE1	1.05	1.08	0.95	0.97	0.86	0.86	0.80	0.78
	SE2	1.04	1.03	0.95	0.93	0.87	0.86	0.78	0.77
12-17	Point Estimates	43.29	42.93	44.30	44.50	44.72	44.46	42.83	43.02
	SE1	1.53	1.46	1.47	1.46	1.45	1.49	1.84	1.82
	SE2	1.57	1.47	1.48	1.48	1.45	1.43	1.83	1.82
18-25	Point Estimates	85.88	86.02	89.25	89.00	88.74	88.52	83.23	83.33
	SE1	1.29	1.23	1.22	1.24	1.13	1.13	1.42	1.45
	SE2	1.31	1.28	1.22	1.27	1.15	1.11	1.40	1.46
26-34	Point Estimates	85.71	85.63	92.73	92.54	92.44	92.25	84.54	85.29
	SE1	2.27	2.25	1.31	1.36	1.60	1.56	1.80	1.77
	SE2	2.21	2.11	1.33	1.90	1.61	1.52	1.82	1.73
35+	Point Estimates	84.76	84.52	88.34	88.43	86.93	86.77	83.89	84.16
	SE1	1.46	1.54	1.34	1.35	1.38	1.39	1.33	1.30
	SE2	1.45	1.43	1.33	1.26	1.37	1.30	1.29	1.28

Table 6.3 **Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Lifetime Illicit Drug Estimates, Marijuana and Cocaine: 2001 NHSDA**

		U.S.		California		Florida		Illinois		Michigan	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Marijuana Lifetime											
Total	Point Estimates	36.97	36.91	41.19	40.90	34.57	34.60	38.34	38.46	41.10	41.03
	SE1	0.34	0.34	1.43	1.43	1.31	1.30	1.26	1.28	1.19	1.18
	SE2	0.31	0.31	1.34	1.25	1.24	1.11	1.22	1.19	1.15	0.96
12-17	Point Estimates	19.61	19.67	21.75	21.74	19.08	19.34	20.89	20.97	20.81	20.82
	SE1	0.37	0.37	1.30	1.31	1.99	1.95	1.40	1.41	1.35	1.37
	SE2	0.37	0.39	1.33	1.29	1.99	2.03	1.41	1.37	1.34	1.36
18-25	Point Estimates	50.00	49.98	47.86	47.36	45.65	46.31	53.44	53.51	57.89	57.72
	SE1	0.48	0.48	1.76	1.75	1.60	1.56	1.90	1.89	1.43	1.44
	SE2	0.49	0.48	1.85	1.76	1.63	1.49	1.89	1.92	1.43	1.41
26-34	Point Estimates	47.92	47.92	45.26	45.87	47.42	47.37	50.98	51.69	52.60	52.98
	SE1	0.80	0.82	3.26	3.42	3.03	3.10	3.11	3.14	2.57	2.57
	SE2	0.79	0.75	3.18	2.96	2.88	2.78	3.08	3.02	2.56	2.53
35+	Point Estimates	34.58	34.48	41.90	41.32	32.51	32.45	35.22	35.08	38.46	38.33
	SE1	0.48	0.48	2.01	2.01	1.73	1.69	1.62	1.64	1.70	1.70
	SE2	0.43	0.42	1.88	1.78	1.65	1.56	1.60	1.64	1.65	1.46
Cocaine Lifetime											
Total	Point Estimates	12.29	12.32	17.57	17.63	11.73	11.79	11.21	11.21	10.95	10.88
	SE1	0.24	0.24	1.18	1.18	0.87	0.87	0.77	0.80	0.74	0.74
	SE2	0.23	0.22	1.13	1.09	0.85	0.79	0.76	0.77	0.73	0.70
12-17	Point Estimates	2.26	2.26	3.20	3.11	1.80	1.86	0.58	0.55	1.94	2.06
	SE1	0.14	0.14	0.52	0.51	0.45	0.47	0.23	0.23	0.37	0.39
	SE2	0.14	0.13	0.52	0.50	0.46	0.47	0.23	0.23	0.37	0.38
18-25	Point Estimates	12.85	12.96	14.68	14.72	12.36	12.74	13.66	13.52	10.45	10.36
	SE1	0.32	0.32	1.30	1.29	0.95	0.98	1.21	1.17	0.93	0.90
	SE2	0.32	0.31	1.31	1.27	0.95	1.01	1.21	1.23	0.92	0.87
26-34	Point Estimates	15.88	15.92	19.20	19.94	16.10	15.90	12.68	12.69	14.77	14.55
	SE1	0.59	0.61	2.55	2.67	2.40	2.44	1.92	2.00	1.91	1.88
	SE2	0.58	0.57	2.49	2.41	2.40	2.38	1.92	1.96	1.91	1.83
35+	Point Estimates	13.02	13.03	20.30	20.21	12.22	12.30	12.17	12.18	11.74	11.68
	SE1	0.34	0.34	1.71	1.69	1.41	1.41	1.12	1.16	1.02	1.03
	SE2	0.32	0.32	1.61	1.58	1.37	1.28	1.10	1.09	1.02	0.97

(continued)

Table 6.3 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Lifetime Illicit Drug Estimates, Marijuana and Cocaine: 2001 NHSDA (continued)

		New York		Ohio		Pennsylvania		Texas	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Marijuana Lifetime									
Total	Point Estimates	37.54	37.66	36.48	36.50	33.61	33.39	31.10	31.14
	SE1	1.31	1.34	1.10	1.08	1.25	1.25	1.21	1.23
	SE2	1.29	1.36	1.09	1.07	1.22	1.03	1.07	1.03
12-17	Point Estimates	18.30	18.61	18.20	18.25	18.03	17.81	17.83	17.87
	SE1	1.33	1.31	1.43	1.45	0.95	0.92	1.36	1.38
	SE2	1.34	1.31	1.44	1.48	0.95	0.89	1.37	1.40
18-25	Point Estimates	51.70	51.90	53.14	52.91	50.25	50.15	42.71	42.94
	SE1	1.84	1.81	1.75	1.79	1.80	1.79	1.46	1.46
	SE2	1.93	1.65	1.75	1.96	1.81	1.84	1.42	1.37
26-34	Point Estimates	50.41	50.54	52.16	51.99	48.50	48.48	33.80	33.93
	SE1	2.79	2.90	2.63	2.59	3.00	2.98	2.44	2.50
	SE2	2.77	2.86	2.64	2.58	3.00	3.01	2.46	2.43
35+	Point Estimates	34.74	34.87	32.44	32.63	29.88	29.65	30.08	30.05
	SE1	1.74	1.76	1.53	1.50	1.62	1.61	1.80	1.80
	SE2	1.71	1.74	1.53	1.52	1.58	1.32	1.50	1.37
Cocaine Lifetime									
Total	Point Estimates	12.81	12.76	10.28	10.28	9.59	9.51	11.98	12.09
	SE1	1.02	1.00	0.61	0.61	0.60	0.60	0.80	0.80
	SE2	0.97	0.93	0.61	0.62	0.61	0.60	0.81	0.80
12-17	Point Estimates	1.16	1.13	1.58	1.62	1.95	1.91	3.10	3.20
	SE1	0.35	0.35	0.40	0.41	0.42	0.41	0.50	0.53
	SE2	0.35	0.35	0.40	0.40	0.42	0.41	0.50	0.53
18-25	Point Estimates	11.93	12.07	11.46	11.39	12.16	12.00	16.77	17.03
	SE1	0.85	0.88	0.78	0.77	1.14	1.12	1.31	1.34
	SE2	0.90	0.88	0.77	0.76	1.15	1.12	1.29	1.28
26-34	Point Estimates	14.48	14.03	17.40	17.17	13.71	13.86	17.30	17.45
	SE1	1.81	1.71	1.75	1.75	1.55	1.58	2.37	2.41
	SE2	1.80	1.63	1.75	1.76	1.55	1.54	2.33	2.34
35+	Point Estimates	14.35	14.37	9.85	9.94	9.45	9.33	11.17	11.22
	SE1	1.43	1.43	0.88	0.88	0.85	0.85	1.07	1.07
	SE2	1.37	1.32	0.88	0.90	0.87	0.88	1.11	1.12

Table 6.4 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Past Year Licit Drug Estimates, Cigarettes and Alcohol: 2001 NHSDA

Variables		U.S. Baseline	U.S. Final	California Baseline	California Final	Florida Baseline	Florida Final	Illinois Baseline	Illinois Final	Michigan Baseline	Michigan Final
Cigarettes Past Year											
Total	Point Estimates	29.03	29.06	24.54	24.51	27.80	27.89	31.11	31.34	32.47	32.34
	SE1	0.34	0.34	1.61	1.62	1.35	1.37	1.19	1.21	1.14	1.16
	SE2	0.33	0.33	1.62	1.60	1.34	1.28	1.16	1.09	1.11	0.98
12-17	Point Estimates	19.96	20.05	14.25	14.03	15.86	16.03	20.29	20.36	20.29	20.39
	SE1	0.35	0.35	1.15	1.15	1.61	1.58	0.98	1.00	1.55	1.56
	SE2	0.35	0.35	1.18	1.10	1.60	1.68	0.99	0.97	1.55	1.54
18-25	Point Estimates	46.77	46.83	38.17	37.80	44.55	45.40	49.64	49.51	52.40	52.52
	SE1	0.49	0.49	1.77	1.84	1.40	1.38	1.80	1.84	1.71	1.69
	SE2	0.48	0.48	1.81	1.83	1.39	1.26	1.81	1.91	1.72	1.61
26-34	Point Estimates	36.00	35.88	28.15	28.62	37.78	38.08	40.80	41.17	43.98	43.51
	SE1	0.77	0.77	2.81	2.86	2.65	2.73	2.99	3.02	2.60	2.58
	SE2	0.77	0.73	2.78	2.70	2.57	2.53	2.99	3.00	2.60	2.51
35+	Point Estimates	25.19	25.25	22.13	22.05	24.83	24.78	26.84	27.00	27.73	27.64
	SE1	0.46	0.46	2.03	2.03	1.82	1.83	1.77	1.79	1.66	1.67
	SE2	0.45	0.44	2.06	2.05	1.82	1.83	1.72	1.67	1.63	1.52
Alcohol Past Year											
Total	Point Estimates	63.80	63.66	63.31	63.05	66.09	66.14	65.72	65.88	66.02	65.91
	SE1	0.33	0.33	1.00	1.00	1.05	1.05	1.27	1.28	1.43	1.45
	SE2	0.31	0.31	1.00	1.02	1.05	1.02	1.22	1.09	1.43	1.38
12-17	Point Estimates	33.97	33.92	29.78	29.49	34.59	35.18	34.60	34.45	33.09	33.16
	SE1	0.39	0.39	1.28	1.32	2.06	2.05	1.49	1.48	1.47	1.44
	SE2	0.40	0.39	1.32	1.27	2.05	2.14	1.50	1.46	1.47	1.45
18-25	Point Estimates	75.48	75.41	70.43	69.74	72.30	72.39	77.39	77.40	79.88	79.80
	SE1	0.39	0.40	1.24	1.35	1.66	1.58	1.32	1.33	1.14	1.16
	SE2	0.39	0.44	1.26	1.35	1.66	1.52	1.31	1.28	1.15	1.09
26-34	Point Estimates	76.17	76.46	72.52	73.58	75.03	75.46	83.47	83.79	80.11	79.91
	SE1	0.68	0.69	2.05	2.16	2.39	2.44	1.66	1.74	2.33	2.32
	SE2	0.67	0.66	2.02	2.12	2.35	2.13	1.67	1.56	2.33	2.06
35+	Point Estimates	63.47	63.21	64.94	64.41	67.88	67.82	64.46	64.50	65.61	65.52
	SE1	0.49	0.50	1.56	1.56	1.34	1.35	1.82	1.82	2.38	2.42
	SE2	0.47	0.46	1.54	1.58	1.36	1.35	1.79	1.71	2.37	2.27

(continued)

Table 6.4 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Past Year Licit Drug Estimates, Cigarettes and Alcohol: 2001 NHSDA (continued)

		New York		Ohio		Pennsylvania		Texas	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Cigarettes Past Year									
Total	Point Estimates	27.35	27.40	34.50	34.45	31.65	31.49	28.82	29.09
	SE1	1.11	1.07	1.22	1.21	1.10	1.12	1.12	1.10
	SE2	1.12	1.07	1.20	1.13	1.08	1.03	1.08	1.05
12-17	Point Estimates	20.61	20.90	21.74	21.83	23.10	22.92	20.78	21.19
	SE1	1.22	1.24	1.65	1.65	1.20	1.21	1.31	1.30
	SE2	1.21	1.22	1.65	1.61	1.20	1.20	1.34	1.35
18-25	Point Estimates	47.95	48.24	53.93	53.85	52.17	51.95	43.55	43.44
	SE1	1.84	1.80	1.49	1.48	1.91	1.94	1.40	1.45
	SE2	1.84	1.65	1.48	1.53	1.91	1.87	1.39	1.37
26-34	Point Estimates	36.83	35.54	41.82	41.82	46.51	46.18	33.41	33.65
	SE1	2.92	2.72	2.70	2.61	3.02	3.09	2.54	2.62
	SE2	2.91	2.75	2.70	2.71	3.02	3.12	2.51	2.59
35+	Point Estimates	22.22	22.54	30.90	30.86	26.12	26.10	25.54	25.89
	SE1	1.50	1.50	1.70	1.69	1.47	1.50	1.67	1.65
	SE2	1.52	1.50	1.69	1.66	1.48	1.43	1.66	1.62
Alcohol Past Year									
Total	Point Estimates	64.82	64.69	64.04	64.05	66.78	66.33	60.68	60.83
	SE1	1.15	1.15	1.17	1.20	1.32	1.36	1.52	1.52
	SE2	1.17	1.18	1.16	1.11	1.30	1.27	1.46	1.45
12-17	Point Estimates	36.69	36.20	35.26	35.51	36.99	36.72	33.80	34.04
	SE1	1.55	1.47	1.60	1.60	1.53	1.56	1.64	1.67
	SE2	1.61	1.46	1.61	1.63	1.53	1.54	1.62	1.66
18-25	Point Estimates	77.54	77.65	81.65	81.44	81.25	80.97	73.08	73.08
	SE1	1.53	1.55	1.31	1.31	1.31	1.31	1.65	1.69
	SE2	1.59	1.55	1.31	1.32	1.32	1.27	1.58	1.70
26-34	Point Estimates	74.93	75.11	81.73	81.38	82.57	82.20	68.95	69.50
	SE1	2.42	2.29	2.16	2.19	2.00	1.98	3.39	3.42
	SE2	2.41	2.28	2.17	2.34	2.02	1.81	3.32	3.33
35+	Point Estimates	64.29	64.15	61.13	61.29	65.48	64.98	60.70	60.75
	SE1	1.60	1.61	1.69	1.73	1.99	2.02	2.42	2.40
	SE2	1.62	1.70	1.67	1.57	1.95	1.88	2.30	2.25

Table 6.5 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Past Year Illicit Drug Estimates, Marijuana and Cocaine: 2001 NHSDA

		U.S.		California		Florida		Illinois		Michigan	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Marijuana Past Year											
Total	Point Estimates	9.34	9.35	10.89	10.85	9.15	9.18	9.81	9.93	10.22	10.17
	SE1	0.17	0.17	0.76	0.77	0.91	0.90	0.68	0.71	0.55	0.54
	SE2	0.16	0.15	0.75	0.71	0.87	0.81	0.66	0.64	0.52	0.41
12-17	Point Estimates	15.13	15.17	17.34	17.26	14.89	15.07	16.07	16.21	16.70	16.74
	SE1	0.32	0.32	1.19	1.16	2.10	2.05	1.17	1.15	1.23	1.23
	SE2	0.32	0.32	1.20	1.15	2.07	2.07	1.16	1.15	1.23	1.23
18-25	Point Estimates	26.69	26.70	25.63	25.44	23.96	24.31	30.41	30.29	31.50	31.36
	SE1	0.48	0.48	2.06	2.03	1.79	1.78	2.05	2.10	1.40	1.40
	SE2	0.49	0.47	2.13	2.01	1.79	1.73	2.05	2.09	1.41	1.37
26-34	Point Estimates	11.99	11.94	12.49	12.25	13.24	13.19	10.57	10.65	13.48	13.55
	SE1	0.55	0.55	2.47	2.57	1.97	1.95	1.77	1.82	1.72	1.72
	SE2	0.55	0.52	2.44	2.46	1.94	1.88	1.76	1.72	1.72	1.71
35+	Point Estimates	4.09	4.10	5.87	5.89	5.08	5.06	4.26	4.36	3.86	3.82
	SE1	0.19	0.19	0.78	0.78	1.14	1.13	0.69	0.72	0.62	0.61
	SE2	0.18	0.18	0.79	0.77	1.12	1.07	0.70	0.78	0.61	0.55
Cocaine Past Year											
Total	Point Estimates	1.83	1.86	2.62	2.64	1.19	1.22	2.27	2.33	1.09	1.11
	SE1	0.08	0.08	0.37	0.37	0.22	0.22	0.34	0.36	0.15	0.15
	SE2	0.08	0.07	0.38	0.36	0.21	0.21	0.33	0.35	0.15	0.15
12-17	Point Estimates	1.47	1.48	1.93	1.93	1.23	1.28	0.41	0.41	1.38	1.50
	SE1	0.10	0.10	0.39	0.40	0.39	0.40	0.21	0.21	0.34	0.39
	SE2	0.10	0.10	0.39	0.39	0.39	0.40	0.21	0.21	0.34	0.38
18-25	Point Estimates	5.64	5.70	6.46	6.50	4.29	4.49	6.60	6.50	4.79	4.82
	SE1	0.22	0.22	0.91	0.94	0.65	0.68	0.87	0.84	0.70	0.70
	SE2	0.22	0.22	0.92	0.93	0.65	0.68	0.87	0.83	0.70	0.70
26-34	Point Estimates	2.70	2.66	3.34	3.45	2.00	2.02	2.23	2.28	1.34	1.37
	SE1	0.28	0.28	1.07	1.11	0.89	0.90	0.72	0.74	0.57	0.57
	SE2	0.28	0.28	1.06	1.14	0.88	0.89	0.72	0.71	0.57	0.58
35+	Point Estimates	0.88	0.92	1.64	1.62	0.51	0.51	1.69	1.79	0.21	0.22
	SE1	0.09	0.09	0.47	0.46	0.24	0.24	0.49	0.52	0.16	0.16
	SE2	0.09	0.09	0.47	0.46	0.24	0.23	0.48	0.50	0.16	0.16

(continued)

Table 6.5 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Past Year Illicit Drug Estimates, Marijuana and Cocaine: 2001 NHSDA (continued)

		New York		Ohio		Pennsylvania		Texas	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Marijuana Past Year									
Total	Point Estimates	10.40	10.40	8.94	8.87	8.49	8.37	7.90	7.92
	SE1	0.68	0.67	0.59	0.58	0.58	0.58	0.53	0.53
	SE2	0.64	0.59	0.56	0.51	0.57	0.53	0.48	0.46
12-17	Point Estimates	13.83	14.24	13.71	13.80	14.29	14.08	12.37	12.50
	SE1	1.09	1.08	1.39	1.41	1.07	1.05	1.05	1.11
	SE2	1.11	1.10	1.39	1.44	1.07	1.03	1.05	1.10
18-25	Point Estimates	32.18	32.36	26.70	26.54	28.77	28.65	20.39	20.46
	SE1	1.73	1.76	1.52	1.54	1.46	1.44	1.17	1.21
	SE2	1.77	1.64	1.51	1.51	1.47	1.41	1.15	1.20
26-34	Point Estimates	16.46	16.05	11.88	12.00	9.16	9.29	9.88	9.84
	SE1	2.15	2.08	1.73	1.76	1.78	1.84	1.60	1.59
	SE2	2.15	2.19	1.73	1.82	1.79	1.84	1.58	1.51
35+	Point Estimates	4.31	4.33	3.72	3.64	3.73	3.67	3.43	3.44
	SE1	0.71	0.71	0.53	0.51	0.54	0.53	0.65	0.63
	SE2	0.69	0.67	0.53	0.53	0.55	0.53	0.63	0.62
Cocaine Past Year									
Total	Point Estimates	2.02	1.97	1.35	1.35	1.94	1.91	2.29	2.29
	SE1	0.31	0.31	0.19	0.19	0.31	0.31	0.33	0.33
	SE2	0.31	0.30	0.19	0.19	0.31	0.30	0.33	0.30
12-17	Point Estimates	0.82	0.81	0.83	0.83	1.71	1.68	2.31	2.47
	SE1	0.29	0.29	0.31	0.31	0.38	0.38	0.48	0.53
	SE2	0.29	0.28	0.31	0.31	0.38	0.37	0.48	0.51
18-25	Point Estimates	6.15	6.28	4.76	4.74	6.42	6.32	6.56	6.65
	SE1	0.71	0.71	0.58	0.57	0.83	0.82	0.82	0.84
	SE2	0.74	0.71	0.58	0.56	0.83	0.82	0.81	0.80
26-34	Point Estimates	4.79	4.38	0.88	0.87	3.16	3.15	3.67	3.60
	SE1	1.43	1.38	0.52	0.52	1.07	1.08	1.24	1.24
	SE2	1.43	1.34	0.52	0.51	1.07	1.09	1.24	1.18
35+	Point Estimates	0.76	0.77	0.84	0.84	0.90	0.89	0.87	0.85
	SE1	0.30	0.30	0.28	0.27	0.33	0.32	0.35	0.34
	SE2	0.30	0.29	0.28	0.28	0.33	0.32	0.34	0.33

Table 6.6 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Past Month Licit Drug Estimates, Cigarettes and Alcohol: 2001 NHSDA

		U.S.		California		Florida		Illinois		Michigan	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Cigarettes Past Month											
Total	Point Estimates	24.90	24.95	20.83	20.85	23.95	24.01	26.53	26.66	28.49	28.38
	SE1	0.32	0.33	1.51	1.53	1.24	1.25	0.98	0.99	1.11	1.13
	SE2	0.32	0.31	1.52	1.52	1.22	1.16	0.96	0.90	1.09	0.98
12-17	Point Estimates	12.86	12.96	8.33	8.24	10.06	10.23	14.23	14.30	14.60	14.61
	SE1	0.28	0.28	0.91	0.91	1.12	1.10	1.01	1.03	1.30	1.32
	SE2	0.28	0.29	0.92	0.88	1.13	1.17	1.01	1.00	1.30	1.29
18-25	Point Estimates	39.10	39.14	30.91	30.51	37.40	38.28	42.89	42.89	45.04	45.15
	SE1	0.47	0.48	1.63	1.73	1.44	1.52	1.67	1.67	1.61	1.57
	SE2	0.47	0.47	1.64	1.68	1.44	1.54	1.67	1.68	1.61	1.56
26-34	Point Estimates	30.53	30.50	23.40	24.03	33.29	33.64	33.87	33.91	39.14	38.64
	SE1	0.72	0.73	2.51	2.57	2.55	2.61	2.82	2.87	2.49	2.51
	SE2	0.72	0.68	2.48	2.43	2.50	2.49	2.82	2.86	2.49	2.50
35+	Point Estimates	22.63	22.68	19.93	19.87	21.92	21.82	23.50	23.59	24.97	24.92
	SE1	0.45	0.45	1.97	1.97	1.78	1.78	1.53	1.54	1.58	1.60
	SE2	0.44	0.44	2.00	2.02	1.78	1.77	1.49	1.44	1.55	1.43
Alcohol Past Month											
Total	Point Estimates	48.48	48.32	48.57	48.38	50.58	50.63	50.87	51.00	52.02	51.85
	SE1	0.35	0.36	1.13	1.10	1.45	1.45	1.40	1.40	1.45	1.47
	SE2	0.34	0.34	1.14	1.13	1.45	1.50	1.37	1.27	1.44	1.37
12-17	Point Estimates	17.31	17.27	14.68	14.55	15.95	16.10	19.70	19.64	17.51	17.38
	SE1	0.33	0.33	1.10	1.13	1.59	1.56	1.30	1.29	1.30	1.28
	SE2	0.33	0.33	1.11	1.08	1.57	1.63	1.30	1.28	1.30	1.29
18-25	Point Estimates	58.82	58.79	56.42	55.79	52.94	53.29	60.07	60.12	65.21	65.31
	SE1	0.48	0.49	1.48	1.62	2.22	2.21	1.83	1.82	1.35	1.35
	SE2	0.48	0.51	1.54	1.58	2.20	2.15	1.81	1.77	1.36	1.28
26-34	Point Estimates	59.71	59.86	55.44	56.19	58.39	58.89	66.37	66.86	66.17	65.86
	SE1	0.77	0.78	2.21	2.28	2.72	2.73	2.63	2.73	2.93	2.94
	SE2	0.77	0.72	2.24	2.23	2.63	2.40	2.66	2.65	2.92	2.73
35+	Point Estimates	48.93	48.65	50.75	50.35	53.69	53.63	50.66	50.60	52.02	51.85
	SE1	0.52	0.53	1.67	1.62	1.92	1.92	2.01	2.00	2.25	2.28
	SE2	0.50	0.49	1.68	1.66	1.92	1.95	1.98	1.85	2.24	2.15

(continued)

Table 6.6 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Past Month Licit Drug Estimates, Cigarettes and Alcohol: 2001 NHSDA (continued)

		New York		Ohio		Pennsylvania		Texas	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Cigarettes Past Month									
Total	Point Estimates	22.95	23.09	30.71	30.67	27.27	27.15	24.18	24.44
	SE1	1.03	1.02	1.18	1.17	1.18	1.19	1.08	1.06
	SE2	1.04	1.01	1.17	1.12	1.16	1.11	1.06	1.04
12-17	Point Estimates	12.63	13.00	15.53	15.60	15.40	15.26	12.06	12.34
	SE1	1.00	1.05	1.43	1.43	1.05	1.04	1.03	1.06
	SE2	0.99	1.05	1.43	1.42	1.05	1.04	1.05	1.04
18-25	Point Estimates	40.97	41.07	44.52	44.44	43.58	43.41	36.72	36.80
	SE1	1.87	1.85	1.19	1.20	1.73	1.74	1.45	1.47
	SE2	1.86	1.70	1.18	1.27	1.73	1.70	1.44	1.40
26-34	Point Estimates	29.01	28.36	36.88	36.87	39.89	39.81	28.37	28.44
	SE1	2.25	2.14	2.71	2.63	2.87	2.95	2.67	2.72
	SE2	2.26	2.15	2.72	2.69	2.86	2.96	2.66	2.66
35+	Point Estimates	19.67	19.99	28.97	28.94	23.50	23.44	22.33	22.69
	SE1	1.44	1.45	1.65	1.64	1.61	1.62	1.53	1.53
	SE2	1.46	1.42	1.64	1.60	1.60	1.53	1.52	1.50
Alcohol Past Month									
Total	Point Estimates	48.42	48.27	46.70	46.64	50.66	50.28	44.62	44.72
	SE1	1.07	1.10	1.20	1.19	1.24	1.27	1.61	1.62
	SE2	1.08	1.10	1.17	1.09	1.22	1.21	1.60	1.61
12-17	Point Estimates	18.76	18.65	16.55	16.63	19.13	18.87	16.96	17.15
	SE1	1.32	1.28	0.99	0.98	1.21	1.20	1.16	1.16
	SE2	1.35	1.28	0.98	0.98	1.21	1.21	1.15	1.14
18-25	Point Estimates	62.19	62.44	62.09	61.92	64.14	63.81	56.33	56.53
	SE1	1.77	1.80	1.63	1.65	1.67	1.67	1.78	1.80
	SE2	1.83	1.74	1.62	1.55	1.67	1.59	1.69	1.74
26-34	Point Estimates	56.90	56.66	62.53	62.04	64.78	64.30	51.94	52.24
	SE1	2.89	2.88	2.74	2.72	2.52	2.60	3.23	3.34
	SE2	2.87	2.76	2.73	2.56	2.54	2.41	3.16	3.20
35+	Point Estimates	48.31	48.12	44.92	45.01	50.17	49.79	45.19	45.20
	SE1	1.73	1.76	1.64	1.65	1.80	1.82	2.53	2.52
	SE2	1.75	1.79	1.60	1.52	1.79	1.76	2.47	2.51

Table 6.7 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Past Month Illicit Drug Estimates, Marijuana and Cocaine: 2001 NHSDA

		U.S.		California		Florida		Illinois		Michigan	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Marijuana Past Month											
Total	Point Estimates	5.38	5.37	6.55	6.53	5.17	5.18	6.42	6.50	5.88	5.87
	SE1	0.13	0.13	0.58	0.59	0.58	0.57	0.52	0.54	0.45	0.45
	SE2	0.12	0.12	0.60	0.58	0.56	0.52	0.51	0.53	0.44	0.38
12-17	Point Estimates	8.01	8.00	9.09	8.95	7.46	7.54	8.95	8.99	10.81	10.90
	SE1	0.24	0.24	1.03	1.03	1.38	1.33	0.90	0.89	1.04	1.05
	SE2	0.24	0.25	1.02	1.01	1.36	1.35	0.90	0.89	1.04	1.06
18-25	Point Estimates	15.94	15.98	15.53	15.55	13.57	13.87	20.23	20.19	17.35	17.34
	SE1	0.39	0.39	1.72	1.68	1.00	1.02	1.65	1.67	1.04	1.04
	SE2	0.39	0.38	1.74	1.68	1.00	0.97	1.65	1.65	1.04	1.05
26-34	Point Estimates	6.87	6.78	7.25	7.10	8.32	8.24	6.25	6.16	7.92	7.95
	SE1	0.45	0.45	1.84	1.88	1.74	1.74	1.15	1.15	1.27	1.27
	SE2	0.45	0.42	1.86	1.86	1.72	1.69	1.14	1.09	1.26	1.22
35+	Point Estimates	2.36	2.36	3.80	3.81	2.84	2.82	3.15	3.26	2.13	2.11
	SE1	0.13	0.13	0.59	0.59	0.66	0.65	0.68	0.71	0.47	0.46
	SE2	0.13	0.13	0.58	0.57	0.64	0.62	0.68	0.77	0.46	0.43
Cocaine Past Month											
Total	Point Estimates	0.72	0.74	1.18	1.20	0.44	0.46	0.90	0.94	0.45	0.46
	SE1	0.06	0.06	0.29	0.29	0.13	0.13	0.22	0.23	0.12	0.13
	SE2	0.06	0.05	0.29	0.28	0.13	0.13	0.21	0.21	0.12	0.12
12-17	Point Estimates	0.43	0.45	0.65	0.64	0.37	0.38	0.24	0.23	0.81	0.82
	SE1	0.06	0.06	0.23	0.25	0.20	0.20	0.14	0.14	0.31	0.31
	SE2	0.06	0.06	0.23	0.24	0.20	0.20	0.14	0.14	0.31	0.31
18-25	Point Estimates	1.88	1.92	2.21	2.34	1.27	1.34	2.56	2.58	1.60	1.60
	SE1	0.13	0.13	0.46	0.49	0.39	0.41	0.56	0.57	0.38	0.38
	SE2	0.13	0.13	0.46	0.49	0.40	0.42	0.56	0.57	0.38	0.37
26-34	Point Estimates	1.14	1.10	1.34	1.36	0.27	0.28	0.71	0.72	0.20	0.22
	SE1	0.21	0.21	0.67	0.70	0.27	0.28	0.49	0.50	0.20	0.22
	SE2	0.21	0.20	0.67	0.69	0.27	0.28	0.49	0.49	0.20	0.22
35+	Point Estimates	0.43	0.46	0.99	0.98	0.35	0.35	0.71	0.76	0.21	0.22
	SE1	0.06	0.07	0.38	0.38	0.21	0.21	0.29	0.32	0.16	0.16
	SE2	0.06	0.06	0.39	0.38	0.20	0.20	0.29	0.29	0.16	0.16

(continued)

Table 6.7 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (U.S. and Eight Large States): Past Month Illicit Drug Estimates, Marijuana and Cocaine: 2001 NHSDA (continued)

		New York		Ohio		Pennsylvania		Texas	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Marijuana Past Month									
Total	Point Estimates	6.06	6.06	4.96	4.88	5.17	5.09	4.17	4.21
	SE1	0.51	0.50	0.37	0.36	0.43	0.43	0.40	0.40
	SE2	0.50	0.48	0.36	0.34	0.42	0.41	0.38	0.36
12-17	Point Estimates	7.66	7.88	7.68	7.70	8.80	8.58	6.17	6.28
	SE1	0.73	0.74	1.05	1.06	0.74	0.71	0.77	0.84
	SE2	0.74	0.73	1.05	1.07	0.75	0.70	0.73	0.78
18-25	Point Estimates	19.61	19.87	14.98	14.82	16.62	16.61	10.90	11.02
	SE1	1.50	1.49	1.19	1.17	1.08	1.07	0.96	1.00
	SE2	1.54	1.45	1.18	1.19	1.08	1.04	0.96	1.00
26-34	Point Estimates	8.84	8.55	6.29	6.20	4.47	4.67	5.23	5.30
	SE1	1.66	1.57	1.26	1.25	1.22	1.28	1.34	1.34
	SE2	1.67	1.61	1.26	1.21	1.22	1.25	1.35	1.28
35+	Point Estimates	2.58	2.59	2.08	2.04	2.66	2.58	1.83	1.83
	SE1	0.52	0.52	0.34	0.33	0.48	0.47	0.47	0.47
	SE2	0.51	0.50	0.35	0.35	0.48	0.46	0.47	0.48
Cocaine Past Month									
Total	Point Estimates	0.92	0.86	0.33	0.33	0.74	0.73	0.78	0.79
	SE1	0.30	0.30	0.10	0.10	0.20	0.19	0.21	0.21
	SE2	0.30	0.29	0.10	0.10	0.20	0.19	0.20	0.19
12-17	Point Estimates	0.18	0.18	0.15	0.15	0.22	0.21	0.83	0.91
	SE1	0.13	0.13	0.11	0.11	0.13	0.12	0.36	0.43
	SE2	0.13	0.13	0.11	0.11	0.13	0.12	0.35	0.41
18-25	Point Estimates	2.00	1.99	1.48	1.47	1.97	1.95	2.99	3.04
	SE1	0.36	0.35	0.34	0.34	0.62	0.62	0.60	0.61
	SE2	0.37	0.36	0.34	0.34	0.62	0.62	0.60	0.59
26-34	Point Estimates	2.72	2.39	0.00	0.00	2.01	1.99	0.73	0.73
	SE1	1.60	1.59	0.00	0.00	0.87	0.87	0.54	0.54
	SE2	1.59	1.55	0.00	0.00	0.88	0.85	0.54	0.54
35+	Point Estimates	0.41	0.40	0.20	0.19	0.34	0.33	0.23	0.23
	SE1	0.20	0.20	0.14	0.13	0.25	0.24	0.17	0.17
	SE2	0.21	0.20	0.14	0.14	0.25	0.24	0.16	0.15

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Appendix A

Technical Details About the Generalized Exponential Model

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APPENDIX A
Technical Details About the Generalized Exponential Model (GEM)

A.1 Distance Function

Let $\Delta(w,d)$ denote the distance between the initial weights $d = \{d_k : k \in s\}$ and the adjusted weights *w*, with *k* being the k$^{\text{th}}$ unit in the sample, and *s*, the sample selected. The distance function minimized under the generalized exponential model (GEM), subject to calibration constraints, is given by

$$\Delta(w,d) = \sum_{k\in s} \frac{d_k}{A_k} \left\{ (a_k - \ell_k) \log \frac{a_k - \ell_k}{c_k - \ell_k} + (u_k - a_k) \log \frac{u_k - a_k}{u_k - c_k} \right\} \quad \text{(A1.1)}$$

where, $a_k = w_k / d_k$, $A_k = (u_k - \ell_k)/(u_k - c_k)(c_k - \ell_k)$ and ℓ_k, c_k, u_k are prescribed real numbers. Let T_x denote the *p*-vector of control totals corresponding to predictor variables (x_1, ..., x_p). Then the calibration constraints for the above minimization problem are

$$\sum_{k\in s} x_k d_k a_k = T_x \; ,$$

(A1.2)

The solution of the above minimization problem, if it exists, is given by a GEM with model parameters λ, i.e.,

$$a_k(\lambda) = \frac{\ell_k (u_k - c_k) + u_k (c_k - \ell_k) \exp\{A_k x_k{}' \lambda\}}{(u_k - c_k) + (c_k - \ell_k) \exp\{A_k x_k{}' \lambda\}} \quad \text{(A1.3)}$$

Note that the number of parameters in GEM should be $\le n$, where *n* is the size of the sample *s*. This is also the dimension of vectors *d* and *w*. It follows from Equation A1.3 that

$$\ell_k < a_k < u_k, k = 1, \ldots, n \quad \text{(A1.4)}$$

The usual raking-ratio method (see, e.g., Singh & Mohl, 1996) of weight adjustment is a special case of GEM, such that for $\ell_k = 0, u_k = \infty, c_k = 1,\ k = 1, \ldots, n$, we have

$$\Delta(w,d) = \sum_{k \in s} d_k a_k \log a_k - \sum_{k \in s} d_k \left(a_k - 1\right) \tag{A1.5}$$

and $a_k(\lambda) = \exp\left(x_k{}'\lambda\right)$.

The logit method of Deville and Särndal (1992) is also a special case of GEM by setting $\ell_k = \ell, u_k = u, c_k = 1$ for all *k*.

A.2 GEM Adjustments for Extreme-Value Treatment, Nonresponse, and Poststratification

By choosing the user-specified parameters ℓ_k, c_k, and u_k appropriately, the unified GEM formula (A1.3) can be justified for all three types of adjustment. Denote the winsorized weights by $\{b_k\}$ where $b_k = d_k$ if d_k is not an extreme weight, and = med$\{d_k\} \pm 3*$ Interquartile range (IQR) if d_k is an extreme weight (where the quartiles for the weights are defined with respect to a suitable design-based stratum).

For the nonresponse adjustment, the sample is first divided into two parts: s_*, the non-extreme weight subsample; and s_{**}, the extreme weight subsample. For non-extreme weights, the following are set: $\ell_2 = 1, c_2 = \rho^{-1}, u_2 = u > \rho^{-1}$, where ρ is the overall response propensity; and for extreme weights with high weights, they are $\ell_k = \ell, m_k, c_k = \rho^{-1} m_k, u_k = u_1 m_k$, where, $m_k = b_k / d_k$, and $1 \le \ell_1 < \rho^{-1} = c_1 < u_1$, are prescribed numbers. Similarly, for extreme weights with low weights, $\ell_k = \ell_3 m_k, c_k = \rho^{-1} m_k, u_k = u_3 m_k$, and $1 \le \ell_3 < \rho^{-1} = c_3 < u_3$.

For the poststratification adjustment, for non-extreme weights, $\ell_k = \ell_2$, $c_k = c_2 = 1$, $u_k = u_2$, and for high extreme weights, $\ell_k = \ell_1 m_k, c_k = m_k, u_k = u_1 m_k$, and similarly for low extreme weights, $\ell_k = \ell_3 m_k, c_k = m_k, u_k = u_3 m_k$. The extreme-value adjustment is identical to poststratifcation, except for tighter bounds on extreme weights resulting from the final poststratification.

Notice that GEM allows the flexibility of specifying different bounds for different subsamples; in addition, the lower bound (in the case of nonresponse adjustments) can be made to equal one by choosing the center $c_k > 1$.

A.3 Newton-Raphson Steps

Let X denote the $n \times p$ matrix of predictor values, and for the νth iteration,

$$\Gamma_{\phi\nu} = \text{diag}\left(d_k \phi_k^{(\nu)}\right), \phi_k^{(o)} = 1 ,$$

where

$$\phi_k^{(\nu)} = \left(u_k - a_k^{(\nu)}\right)\left(a_k^{(\nu)} - \ell_k\right) / \left(u_k - c_k\right)\left(c_k - \ell_k\right);$$

then, for Newton-Raphson iteration ν , the value of the *p*-vector λ is adjusted as

$$\lambda^{(\nu)} = \lambda^{(\nu-1)} + \left(X'\Gamma_{\phi,\nu-1} X\right)^{-1} \left(T_x - \hat{T}_x^{(\nu-1)}\right) , \qquad \text{(A3.1)}$$

where $\lambda^{(0)} = 1$.

The convergence criterion is based on the Euclidean distance $\left\| T_x - \hat{T}_x^{(\nu)} \right\|$. At each iteration, it is checked to determine whether it is decreasing or not. If not, a half-step is used in the iteration increment.

A.4 Scaled Constrained Exponential Model

In previous National Household Survey on Drug Abuse (NHSDAs), constrained exponential models were used for poststratification and scaled constrained exponential models for nonresponse adjustments. The term "constrained exponential model" refers to the logit model of Deville and Särndal (1992) in which lower and upper bounds do not vary with *k* (i.e., $\ell_k = \ell, u_k = u$, and $c_k = c = 1$ such that $\ell < 1 < u$. Thus, it is a special case of GEM. For the nonresponse adjustment, Folsom and Witt (1994) modified the constrained exponential models' estimating equations by a scaling factor (ρ^{-1}, the inverse of the overall response propensity) such that $1 < \rho^{-1} a_k < p^{-1} u$. This implies that choosing ℓ in constrained exponential models as ρ ensures that the scaled adjustment factor for nonresponse is at least one.

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Appendix B

Poststratification Control Totals

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APPENDIX B
Poststratification Control Totals

For poststratification, quarterly State-specific totals for the target population (civilian, noninstitutionalized, aged 12 or older) are required for 80 demographic domains defined by age, race, gender, and Hispanicity ($5 \times 4 \times 2 \times 2$). In previous years, these controls had been calculated from a combination of post-Censal national estimates, State-level projections, and the 1990 Census 5 percent public use microdata samples (PUMS). However, these data were not available for 2001 because the 2000 Census data, upon which the controls should naturally be based, required extensive processing and the required controls were not available in time for the 2001 NHSDA data processing. As an alternative, the Population Estimates Branch of the U.S. Bureau of the Census produced, in response to a special request, the necessary population estimates based on monthly State-level estimates of the target population, based on the 1990 Census.

To arrive at quarterly estimates, approximations at the midpoints of the quarters were needed. To get these approximations, the estimates from the last 2 months in each quarter were averaged. For example, to obtain an approximation for the first quarter of 2001, the U.S. Census estimates for February 1 and March 1 were averaged, resulting in a population estimate appropriate for February 15 (i.e., the midpoint of Quarter 1).

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Appendix C

Imputation Methodology

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APPENDIX C
Imputation Methodology

C.1 Unweighted Hot Deck

The adjustments of (1) dwelling unit (DU) poststratification, (2) poststratification of the selected sample to all eligible rostered persons, and (3) person-level nonresponse required the use of demographic information obtained from the 2001 National Household Survey on Drug Abuse (NHSDA) screener interview. However, at the time of screening, the only required information for an individual was age, and thus some demographic information (i.e., gender, Hispanic origin, and race) was missing. Therefore, some form of imputation was required for cases with missing data[1]. This imputation was performed using an unweighted hot-deck methodology. The unweighted hot-deck method of imputing a variable with missing responses (which is called the base variable in this appendix) involved three basic steps.

1. *Forming Imputation Classes.* When a strong logical association existed between the base variable and certain auxiliary variables, the dataset was partitioned by the auxiliary variables, and imputation procedures were implemented independently within classes defined by the cross of the auxiliary variables.

2. *Sorting the File.* Within each imputation class, the file was sorted by auxiliary variables that were relevant to the item being imputed. The sort order of the auxiliary variables was chosen to reflect the degree of importance of the auxiliary variables in relation to the base variable being imputed (i.e., those auxiliary variables that were better predictors for the item being imputed were used as the first sorting variables).

   For the 2001 NHSDA, two types of sorting procedures were used to sort the files prior to imputation:

   (1) Straight Sort. A set of variables was sorted in ascending order by the first variable specified, then within each level of the first variable the file was sorted in ascending order by the second variable specified, and so on. For example:

1	1	1
1	1	2
1	2	1
1	2	2
1	3	1
1	3	2
2	1	1

[1] Because the imputation of these demographic variables was not required for the main NHSDA analysis, it is documented here in the weighting report.

2	1	2
2	2	1
2	2	2
2	3	1
2	3	2

(2) Serpentine Sort. A set of variables was sorted so that the direction of the sort (ascending or descending) changed each time the value of a variable changed. For example:

1	1	1
1	1	2
1	2	2
1	2	1
1	3	1
1	3	2
2	3	2
2	3	1
2	2	1
2	2	2
2	1	2
2	1	1

The serpentine sort has the advantage of minimizing the change in the entire set of auxiliary variables whenever any one of the variables changes its value.

3. *Replace Missing Values.* The file was sorted and then read sequentially. Each time an item respondent was encountered (i.e., the base variable was nonmissing), the base variable response was stored, updating the donor response, and any subsequent nonrespondent encountered received the stored donor response, creating the statistically imputed response. A starting value was needed if an item nonrespondent was the first record on a sorted file. Typically, the response from the first respondent on the sorted file was used as the starting value.

   Note that because the file was sorted by relevant auxiliary variables, the preceding item respondent (donor) closely matched the neighboring item nonrespondent (recipient) with respect to the auxiliary variables.

For more information on the general hot-deck method of item imputation, see Little and Rubin 1987 (pp. 62-67).

With the unweighted sequential hot-deck imputation procedure, for any particular item being imputed, there was the risk of several nonrespondents appearing next to one another on the sorted file. To detect this problem in the NHSDA, for every variable being imputed, a record was kept of the imputation donor. Then, by examining frequencies by imputation donor, if several nonrespondents were lining up next to one another in the sort, the situation could be detected. When this problem occurred, sort variables were added or eliminated, or the order of the sort variables was rearranged.

C.2 Predictive Mean Neighborhood (PMN)

As in 2000, the predictive mean neighborhood (PMN) methodology was used the 2001 NHSDA weighting process to impute "race" and "Hispanic origin" for the screener demographic information, as well as the questionnaire data (Singh, Grau, & Folsom, 2002). Due to the lack of a good set of predictors for predictive mean neighborhood modeling, the unweighted sequential hot-deck method was used to impute gender. Unweighted sequential hot deck is simple and quick to implement, but it has a number of disadvantages.

- The first few sorting covariates almost entirely determine what donor will be used for a particular respondent with missing data, regardless of how many sorting covariates are included.
- There is no mechanism derived from the data to weight the sorting covariates based on their relationship to the response variable.
- Weights are not used to determine the most appropriate donor for a respondent with missing data.
- The correlations across multiple outcome variables imputed to the same record are not accounted for when finding a donor.
- The choice of donor, after the sort has been completed, may be deterministic; this may introduce bias in estimating means and totals and thus make it difficult to determine the variance of the estimator when taking imputation into account.

To address the deficiencies of the unweighted sequential hot deck, the predictive mean neighborhood methodology was developed for the NHSDA. It is a combination of two commonly used imputation methods: a non-model-based hot deck and the model-based predictive mean matching method of Rubin. It enhances the predictive mean matching method in that it can be applied to both discrete and continuous variables either individually or jointly. It also enhances the nearest neighbor hot-deck method in that the distance function used to find neighbors is no longer ad hoc. It is easily applicable to problems of both univariate (UPMN) and multivariate (MPMN) imputations. Univariate imputation is used for imputing a single continuous or dichotomous discrete variable independently, while multivariate imputation arises when values of two or more variables are missing for a single respondent or when a single polytomous variable has missing values. (A polytomous variable is a categorical variable with three or more possible values, such as marital status, which is categorical and has the possible values of married, widowed, divorced, and never married.)

The procedure for implementing univariate and multivariable imputations can be summarized with the following six steps. Steps 2 through 5, and sometimes Step 6, were cycled through each of the variables in the order determined by Step 1. Steps 4 and 5 (Steps 4 to 6 when applicable) could be considered a variant of a random nearest neighbor hot deck.

Step 1: Hierarchy definition. Determine the order in which variables are modeled, so that variables early in the hierarchy may be used for modeling the conditional predictive mean (i.e., variables early in the hierarchy have the potential to be part of the set of covariates for variables later in the hierarchy).

For each variable:

Step 2: Setup for model building and hot-deck assignment. For each model that is fitted, two groups must be created: complete and incomplete data respondents (item respondents and item nonrespondents). Complete data respondents have complete data across the variables of interest, and incomplete data respondents encompass the remainder of respondents.

Step 3: Sequential hierarchical modeling. The model is built using the complete data for respondents only, with weights adjusted for item nonresponse.

Step 4: Computation of predictive means and delta neighborhoods. The predictive means for item respondents and item nonrespondents are calculated using the model coefficients. Then those item respondents whose predictive means are determined to be "close" (based on a distance function taking values within delta) to the item nonrespondents are considered part of the "delta" neighborhood.

Step 5: Assignment of imputed values using a univariate predictive mean. Using a simple random draw from the neighborhood developed in Step 4, a donor is chosen for each item nonrespondent.

If the variables for which Steps 2 to 5 have been completed are part of a complete multivariate set for which multivariate imputation is to be applied, Step 6 is the next step in the process. If the variables for which Steps 2 to 5 are completed are not part of a complete multivariate set, and other variables are still to be imputed, Step 2 is the next step. Otherwise, the process is finished.

Step 6: Determination of multivariate predictive mean neighborhood and assignment of imputed values. With multivariate imputation, the neighborhood is defined based on a vector of predictive means, rather than from a single predictive mean as in the univariate case.

The predictive mean neighborhood methodology addresses all of the shortcomings of the unweighted sequential hot-deck method and was widely used for the imputation of a variety of variables in the NHSDA, including both continuous and categorical variables with one or more levels. The models were fit using standard modeling procedures in SAS and SUDAAN, while SAS macros were used to implement the hot-deck step, including the restrictions on the neighborhoods. Although creating a different neighborhood for each item nonrespondent was computationally intensive, the method was implemented successfully. For more details on predictive mean neighborhood, see Grau et al. (2003).

Appendix D

GEM Modeling Summary

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APPENDIX D
GEM Modeling Summary

This appendix summarizes each model group throughout all stages of modeling the weight calibrations. Unlike much of the other information presented in this report, this appendix provides a model-specific overview of weight calibration, as opposed to a State- or domain-specific one.

The modeling for the 2001 National Household Survey on Drug Abuse (NHSDA) involved taking nine model groups through five adjustment steps: (1) dwelling unit-level nonresponse adjustment, (2) dwelling unit-level poststratification, (3) selected person-level poststratification, (4) person-level nonresponse adjustment, and (5) responding person-level poststratification. The sampling weights after both dwelling unit-level poststratification and responding person-level poststratification for this year were reasonably distributed and did not require the additional treatment of the extreme-value step at either the dwelling-unit level or person level. See Table D for a summary of the distributions of each of the weight components at the National level.

Model-specific summary statistics are shown in Tables D.1a and D1.b to D.9a and D.9b. Included in these tables, for each stage of modeling, are the following: the number of effects that were controlled directly; the high, low, and non-extreme weight bounds set to provide the upper and lower limits for the generalized exponential model (GEM) macro; weighted, unweighted, and winsorized weight proportions; the unequal weighting effect (UWE); and weight distributions. The unequal weighting effect provides an approximate measure of variance and establishes how much impact a particular stage of modeling has on the distribution of the new product of weights. For more details on bounds, see Section 4.2. At each stage in the modeling, these summary statistics were calculated and utilized to evaluate the model that was constructed and its corresponding product of weights.

Such circumstances as small sample sizes and exact linear combinations (i.e., singularities) in the realized data led to situations where finalizing models with the originally proposed set of covariates was not possible. The text and exhibits in Sections D.1 to D.9 summarize the decisions made with regard to final covariates included in each model. For a list of the proposed initial covariates considered at each stage of modeling, see Exhibits D.1 to D.3, and for the list of realized final model covariates, see Exhibits D1.1 to D9.5. The following sections establish a series of guidelines to assist in their interpretation.

D.1 Final Model Explanatory Variables

For brevity, numeric abbreviations for variable levels are established in Exhibit 3.1 in Chapter 3 (included here as Exhibit D.1 for easy reference). There, a complete list is provided of all variables and associated levels used at any stage of modeling. In this report, each level of a variable is referred to as a

Table D Distribution of Weight Adjustment Factors and Weight Products (United States)

	sel.sdu.des [1]	***res.sdu.nr*** [1]		***res.sdu.ps*** [1]		***sel.per.des*** [1]		***sel.per.ps*** [1]		***res.per.nr*** [1]		***res.per.ps*** [1]	
	1-6 [2]	**7** [3]	**1-7** [3]	**8** [4]	**1-8** [4]	**10** [5]	**1-10** [5]	**11** [5]	**1-11** [5]	**12** [6]	**1-12** [6]	**13** [6]	**1-13** [6]
Minimum	8	0.33	48	0.10	13	1.01	17	0.11	6	0.34	11	0.04	1
1%	52	1.00	61	0.36	61	1.01	101	0.48	87	1.00	97	0.16	63
5%	93	1.02	102	0.75	112	1.01	176	0.71	169	1.02	198	0.74	183
10%	147	1.03	157	0.87	160	1.01	282	0.80	279	1.07	330	0.92	305
25%	337	1.05	370	0.98	371	1.07	587	0.90	587	1.15	715	0.98	706
Median	498	1.07	543	1.07	584	1.26	1,127	1.00	1,123	1.25	1,368	1.01	1,367
75%	768	1.11	836	1.19	915	5.76	2,997	1.09	2,990	1.39	3,724	1.05	3,708
90%	1,087	1.16	1,175	1.35	1,307	9.99	6,860	1.22	6,684	1.60	8,834	1.14	8,867
95%	1,222	1.22	1,326	1.50	1,514	12.94	9,701	1.35	9,641	1.77	12,947	1.26	13,131
99%	1,384	1.45	1,547	2.05	1,930	15.57	16,772	1.92	16,565	2.42	23,609	1.74	23,626
Maximum	5,829	10.79	6,396	5.03	9,078	35.69	59,241	11.88	55,806	9.53	66,652	19.99	77,154
n	171,519	157,471	157,471	157,451	157,451	89,745	89,745	89,745	89,745	68,929	68,929	68,929	68,929
Max/Mean	10	-	10	-	13	-	23	-	22	-	20	-	24

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.

Note 2: Under GEM, nonresponse adjustment factors (weight component #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

covariate. Note that (1) not all variables or levels are present in all stages of modeling, (2) the initial set of covariates is the same for all model groups within a stage of modeling, and (3) the initial set of covariates changes across the stages of modeling. Exhibits D.2 through D.4 provide the initial covariates for the stages of modeling, and Exhibits D1.1 through D9.5 provide lists of both the proposed and the final covariates for the nine model groups. This last group of exhibits is grouped by model groups and contains one exhibit for each stage of weight adjustment. The initial variables are found in the "Proposed" column, and the realized covariates are found in the "Final" column.

Section D.3 explains how to create cross-classification tables, which help to illustrate what covariates are controlled for at each stage of the modeling. The general pattern followed is as follows: directions to follow, semicolon, reason for the change. Sections D.2 and D.3 explain how to use various exhibits for selected model variables to construct these tables. For greater detail on why variable levels are collapsed or dropped, see Section 4.7.

Exhibit D.1 Definitions of Levels for Variables

Age (years)
1: 12-17, 2: 18-25, 3: 26-34, 4: 35-49, 5: 50+ [1]
Gender
1: Male, 2: Female[1]
Group Quarter Indicator
1: College Dorm, 2: Other Group Quarter, 3: Non-Group Quarter[1]
Hispanicity
1: Hispanic, 2: Non-Hispanic[1]
Percent of Owner-Occupied Dwelling Units in Segment (% Owner)
1: 50% - 100%,[1] 2: 10% - > 50%, 3: 0 - >10%
Percent of Segments That Are Black (% Black)
1: 50% - 100%, 2: 10% - >50%, 3: 0 - >10%[1]
Percent of Segments That Are Hispanic (% Hispanic)
1: 50% - 100%, 2: 10% - >50%, 3: 0 - >10%[1]
Population Density
1: MSA 1,000,000 or more, 2: MSA less than 1,000,000, 3: Non-MSA urban, 4: Non-MSA rural[1]
Quarter
1: Quarter 1, 2: Quarter 2, 3: Quarter 3, 4: Quarter 4[1]
Race (3 level)
1: White,[1] 2: Black, 3: Other
Race (4 level)
1: White,[1] 2: Black, 3: American Indian/Alaska Native, 4: Asian
Relation to Householder
1: Householder or Spouse,[1] 2: Child, 3: Other Relative, 4: Non-Relative
Segment-Combined Median Rent and Housing Value (Rent/Housing)[2]
1: First Quintile, 2: Second Quintile, 3: Third Quintile, 4: Fourth Quintile, 5: Fifth Quintile[1]
States[3]

Model Group 1:	1: Connecticut, 2: Maine, 3: New Hampshire, 4: Rhode Island, 5: Vermont, 6: Massachusetts[1]
Model Group 2:	1: New Jersey,[1] 2: New York, 3: Pennsylvania
Model Group 3:	1: Illinois, 2: Indiana,[1] 3: Michigan, 4: Wisconsin, 5: Ohio
Model Group 4:	1: Iowa, 2: Kansas, 3: Minnesota, 4: Missouri,[1] 5: Nebraska, 6: South Dakota, 7: North Dakota
Model Group 5:	1: Delaware, 2: District of Columbia, 3: Georgia,[1] 4: Maryland, 5: North Carolina, 6: South Carolina, 7: Virginia, 8: West Virginia, 9: Florida
Model Group 6:	1: Alabama, 2: Kentucky, 3: Mississippi, 4: Tennessee[1]
Model Group 7:	1: Arkansas,[1] 2: Louisiana, 3: Oklahoma, 4: Texas
Model Group 8:	1: Colorado, 2: Idaho, 3: Montana, 4: Nevada, 5: New Mexico, 6: Utah, 7: Wyoming, 8: Arizona[1]
Model Group 9:	1: Alaska, 2: Hawaii, 3: Oregon, 4: Washington,[1] 5: California

MSA = metropolitan statistical area
[1]The reference level for this variable. This is the level against which effects of other factor levels are measured.
[2]Segment-Combined Median Rent and Housing Value is a composite measure based on rent, housing value, and percent owner occupied.
[3]The States or district assigned to a particular model are based on Census divisions.

Source: SAMHSA, Office of Applied Studies, National Household Survey on Drug Abuse, 2001

D.2 Glossary of Terms Used in the Exhibits and Descriptions of the Variables in the Final Model

Factor effects. Another name for covariates, or variables, such as "Age." In addition to one-factor effects, two-, and three-factor effects are also referenced, such as "Age × Race" and "Age × Race × Gender."

Reference/reference set. The reference levels of factor effects (see Exhibit D.1) are not explicitly listed in the set of model variables, but are represented implicitly in the model in the intercept term. These include one-, two-, and three-factor effects.

All levels present. All levels of the variable under consideration were included in the final model.

Coll. Collapse (levels). These levels of the factor effect were collapsed together. Levels that have been collapsed together no longer appear in the model as separate variables, but rather manifest themselves jointly in the model.

Keep *level(s)*. These levels of the factor effect were kept in the model and the remainder into the reference set.

Drop all levels. All levels of a factor effect were completely removed from the model, as well as any combinations involving this factor.

Drop *level(s)*. These levels of a factor effect were collapsed into the reference set. The dropped levels manifest themselves jointly with the appropriate reference levels.

Drop *level(s);* singularity/zero sample. During the modeling process, the levels of factor effect(s) listed were removed from the model due to either singularities or sample sizes of zero.

Hier. Factor effects collapsed/dropped at lower order and the hierarchical effect carries up. This indicates that one or more levels of factor effects were collapsed/dropped in an earlier stage, and that the same action (collapse/drop) was performed on the corresponding levels in all higher-order factor effects containing the dropped/collapsed levels.

Repeat or **Do the same for *(effects)*.** The previous action was repeated for all effect levels listed.

Drop or Collapse using *. The asterisk is used as a wildcard character to indicate all levels of that factor effect.

Note: The above are given as a list of general terms. Certain other specific terms are sometimes used within a particular section.

D.3 How to Interpret Collapsing and Dropping of Factor Effects

To help visualize what effects were directly controlled for in the model, a table that reflects the collapsing scheme employed can be constructed. The following is a complex example from the 1999 modeling, which demonstrates how to use the information found in Exhibits D1.1 through D9.5)

1. Consider the following entry for the factor effect of State × Age × Race (3 Level), for Model Group 9, for the Person-Level Nonresponse Adjustment.

Three-Factor Effects	**Comments**
State × Age × Race (3 Level)	Drop (3,4,2); sing. Coll. (1,4,2) & (1,4,3). Drop (3,*,*). Coll. (4,1,2) & (4,1,3). Do the same for each level of age in that State.

2. Determine the initial range of possible levels for the variables by referring to the variable definitions shown in Exhibit D.1:

- State (for the model group in question, in this case, Model Group 9)

Model Group 9: 1: Alaska, 2: Hawaii, 3: Oregon, 4: Washington,[1] 5: California

- Age (years)

1: 12-17, 2: 18-25, 3: 26-34, 4: 35-49, 5: 50+ [1]

- Race (3 level)

1: White,[1] 2: Black, 3: Other

Note that the superscript number indicates the reference level of the variable for a particular stage of modeling. For the example case, the model stage is "Person Nonresponse Adjustment."

3. Construct the cross-classification table.

For example, Race (4 Level) is defined this way:

Race (4 Level)	White	Black	Asian	American Indian/Alaska Native

Indicates the reference-level set.

This is the cross-classification table for State × Race (4 Level):

State*Race (4 Level)	White	Black	Asian	American Indian/Alaska Native
AK				
HI				
OR				
CA				
WA				

Indicates the reference-level set.

The cross-classification table of interest (State × Age × Race (3-Level)) is as follows:

State*Age * Race (3 Level)	White	Black	Other
AK * 12-17			
18-25			
26-34			
35-49			
50+			
HI * 12-17			
18-25			
26-34			
35-49			
50+			
OR * 12-17			
18-25			
26-34			
35-49			
50+			
CA * 12-17			
18-25			
26-34			
35-49			
50+			
WA * 12-17			
18-25			
26-34			
35-49			
50+			

Indicates the reference-level set.

The number of respondents in that class at this stage of modeling would appear within each cell of the table. Construction of the other cross-classification tables follows the same logic and is only necessary to the point of providing understanding of the final table.

4. Use the information under the “Final” column definition to determine the combination of factors controlled.

Hier. This means the factor effect was collapsed at a lower order. Because this note is present, examine the information on lower-order factor effects that are the components of the interaction term, State × Race(3 Levels) × Age; that is, look at the one-factor and two-factor effects for State, Race(4 Levels) and Age, and their accompanying information:

One-Factor Effects	**Comments**
State	All levels present.
Race (4 Levels)	All levels present.
Age	All levels present.

Two-Factor Effects	Comments
State × Age	All levels present.
State × Race (4 Levels)	Coll. (1,3) & (1,4). Do the same for all other States except (2). Coll. (2,2), (2,3), & (2,4).

Following these directions, the resulting two-factor table is:

<table>
<tr><th>State*Race (4 Level)</th><th>White</th><th>Black</th><th>Asian</th><th>American Indian/Alaska Native</th></tr>
<tr><td>AK</td><td rowspan="5"></td><td></td><td colspan="2"></td></tr>
<tr><td>HI</td><td colspan="3"></td></tr>
<tr><td>OR</td><td></td><td colspan="2"></td></tr>
<tr><td>CA</td><td></td><td colspan="2"></td></tr>
<tr><td>WA</td><td colspan="3"></td></tr>
</table>

Indicates the reference-level set.

Continuing on to the three-factor level for the same example:

Three-Factor Effects	**Comments**
State × Age × Race (3 Level)	Coll. (2,1,2) & (2,1,3); hier. Repeat for all levels of age in State (2); hier. Drop (3,4,2) due to collinearity. Collapse (1,4,2) & (1,4,3). Drop (3,*,*). Collapse (4,1,2) & (4,1,3). Do the same for each level of age in that State.

The reason for the note "Hier" in the three-factor effects is that collapsing was done on the two-factor interaction term State × Race (4 Levels). Because collapsing was done on this term, all three-factor crosses involving State × Race must maintain this same collapsing scheme.

After following the directions, the cross-classification table should appear as follows:

State*Age * Race (3 Level)	White	Black	Other
AK * 12-17			
18-25			
26-34			
35-49			
50+			
HI * 12-17			
18-25			
26-34			
35-49			
50+			
OR * 12-17			
18-25			
26-34			
35-49			
50+			
CA * 12-17			
18-25			
26-34			
35-49			
50+			
WA * 12-17			
18-25			
26-34			
35-49			
50+			

Indicates the reference-level set.

The unshaded cells represent the factors directly controlled for by the model (i.e., those factors which were not collapsed or dropped). The shaded cells represent the composite reference set, whose values may be obtained by utilizing the marginal sums, although when changes to the initially proposed set occur, it can make certain reference cell counts indistinguishable.

Exhibit D.2 Covariates for 2001 NHSDA Person Weights (res.sdu.nr)

Variables	Level	Proposed
One-Factor Effects		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Population density	4	3
Group quarter	3	2
%Black	3	2
%Hispanic	3	2
%Owner-occupied	3	2
Rent/housing value	5	4
Two-Factor Effects		
%Owner × %Black	3 × 3	4
%Owner × %Hispanic	3 × 3	4
%Owner × Rent/housing	3 × 5	8
Rent/housing × %Black	3 × 5	8
Rent/housing × %Hispanic	3 × 5	8
State × Quarter	Model Specific	
State × Pop. density	Model Specific	
State × Group quarter	Model Specific	
State × %Black	Model Specific	
State × %Hispanic	Model Specific	
State × %Owner-occupied	Model Specific	
State × Rent/housing	Model Specific	
Three-Factor Effects		
State × %Owner × %Black	Model Specific	
State × %Owner × %Hispanic	Model Specific	
State × %Owner × Rent/housing	Model Specific	
State × Rent/house × %Black	Model Specific	
State × Rent/house × %Hispanic	Model Specific	

Exhibit D.3 Covariates for 2001 NHSDA Person Weights (res.sdu.ps and res.per.ps)

Variables	Level	Proposed
One-Factor Effects		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Age	5	4
Race (4 level)	4	3
Gender	2	1
Hispanicity	2	1
Two-Factor Effects		
Age × Race (3 level)	5 × 3	8
Age × Hispanicity	5 × 2	4
Age × Gender	5 × 2	4
Race (3 level) × Hispanicity	3 × 2	2
Race (3 level) × Gender	3 × 2	2
Hisp × Gender	2 × 2	1
State × Quarter	Model Specific	
State × Age	Model Specific	
State × Race (4 level)	Model Specific	
State × Hispanicity	Model Specific	
State × Gender	Model Specific	
Three-Factor Effects		
Age × Race (3 level) × Hispanicity	5 × 3 × 2	8
Age × Race (3 level) × Gender	5 × 3 × 2	8
Age × Hispanicity × Gender	5 × 2 × 2	4
Race3 × Hispanicity × Gender	3 × 2 × 2	2
State × Age × Race (3 level)	Model Specific	
State × Age × Hispanicity	Model Specific	
State × Age × Gender	Model Specific	
State × Race (3 level) × Hispanicity	Model Specific	
State × Race(3 level) × Gender	Model Specific	
State × Hispanicity × Gender	Model Specific	

Exhibit D.4 Covariates for 2001 NHSDA Person Weights (sel.per.ps and res.per.nr)

Variables	Levels	Proposed
One-Factor Effects		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Age	5	4
Race (4 level)	4	3
Gender	2	1
Hispanicity	2	1
Relation to Householder	4	3
Population Density	4	3
Group Quarter	3	2
%Black	3	2
%Hispanic	3	2
%Owner-occupied	3	2
Rent/house value	5	4
Two-Factor Effects		
Age × Race (3 level)	5 × 3	8
Age × Hispanicity	5 × 2	4
Age × Gender	5 × 2	4
Race (3 level) × Hispanicity	3 × 2	2
Race (3 level) × Gender	3 × 2	2
Hispanicity × Gender	2 × 2	1
%Owner × %Black	3 × 3	4
%Owner × %Hispanicity	3 × 3	4
%Owner × Rent/housing	3 × 5	8
Rent/housing × %Black	3 × 5	8
Rent/housing × %Hispanic	3 × 5	8
State × Quarter	Model Specific	
State × Age	Model Specific	
State × Race (4 level)	Model Specific	
State × Hispanicity	Model Specific	
State × Gender	Model Specific	
State × %Black	Model Specific	
State × %Hispanic	Model Specific	
State × %Owner-occupied	Model Specific	
State × Rent/housing	Model Specific	
Three-Factor Effects		
Age × Race (3 level) × Hispanicity	5 × 3 × 2	8
Age × Race (3 level) × Gender	5 × 3 × 2	8
Age × Hispanicity × Gender	5 × 2 × 2	4
Race (3 level) × Hispanicity × Gender	3 × 2 × 2	2
State × Age × Race (3 level)	Model Specific	
State × Age × Hispanicity	Model Specific	
State × Age × Gender	Model Specific	
State × Race (3 level) × Hispanicity	Model Specific	
State × Race (3 level) × Gender	Model Specific	
State × Hispanicity × Gender	Model Specific	

Appendix D1

Model Group 1: New England

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Table D.1a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 1: New England)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	3.99%	3.70%	0.32%	1.6870	306	(1.0, 1.5)	(1.04, 1.30)
	4.85%	3.90%	0.32%	1.7111	94	(1.0, 2.0)	(1.00, 1.86)
						(1.0, 2.0)	(1.02, 1.38)
res.sdu.ps	4.85%	3.90%	0.32%	1.71113	226	(0.2, 2.2)	(0.20, 2.20)
	1.83%	2.87%	0.37%	1.78063	203	(0.2, 3.3)	(0.20, 3.30)
						(0.9, 3.3)	(0.90, 3.15)
sel.per.ps	3.71%	7.62%	1.47%	3.80176	326	(0.2, 1.4)	(0.22, 1.40)
	1.58%	3.28%	0.41%	3.76238	251	(0.2, 4.6)	(0.20, 3.30)
						(0.7, 4.6)	(0.70, 4.60)
res.per.nr	1.60%	2.86%	0.36%	3.67115	326	(1.0, 2.0)	(1.00, 2.00)
	1.42%	4.33%	0.64%	4.61648	204	(1.0, 3.9)	(1.00, 3.90)
						(1.0, 3.9)	(1.00, 3.90)
res.per.ps	1.46%	4.51%	0.72%	4.61648	226	(0.14, 1.1)	(0.14, 1.10)
	0.59%	1.10%	0.27%	4.62907	155	(0.14, 4.5)	(0.14, 4.47)
						(0.9, 4.5)	(0.90, 4.50)

1 For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

2 Unequal weighting effect defined as 1+ [(n-1)/n]*CV^2 where CV = coefficient of variation of weights.

3 Number of proposed covariates on top line, and number finalized after modeling.

4 There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum / minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.1b Distribution of Weight Adjustment Factors and Weight Products (Model Group 1: New England)

	sel.sdu.des [1]	*res.sdu.nr* [1]		*res.sdu.ps* [1]		*sel.per.des* [1]		*sel.per.ps* [1]		*res.per.nr* [1]		*res.per.ps* [1]	
	1-6[2]	**7**[3]	**1-7**[3]	**8**[4]	**1-8**[4]	**10**[5]	**1-10**[5]	**11**[5]	**1-11**[5]	**12**[6]	**1-12**[6]	**13**[6]	**1-13**[6]
Minimum	8	0.33	77	0.17	19	1.01	20	0.11	6	0.40	12	0.08	4
1%	88	1.00	94	0.39	71	1.01	79	0.35	55	1.00	72	0.14	29
5%	90	1.04	98	0.77	103	1.01	129	0.65	121	1.00	139	0.43	120
10%	95	1.05	101	0.85	119	1.01	162	0.77	151	1.04	179	0.91	167
25%	154	1.06	166	0.95	171	1.05	236	0.89	243	1.13	300	0.97	299
Median	196	1.09	213	1.03	219	1.24	565	0.99	573	1.23	670	1.02	644
75%	357	1.11	385	1.15	403	6.49	1,519	1.12	1,568	1.41	1,979	1.05	1,959
90%	816	1.14	894	1.32	961	9.05	4,052	1.26	4,035	1.74	4,949	1.16	4,916
95%	921	1.17	1,053	1.44	1,103	15.15	7,210	1.41	6,489	2.02	8,520	1.27	8,588
99%	1,027	1.23	1,135	1.84	1,342	19.12	13,714	2.20	13,309	3.10	19,872	2.34	20,064
Maximum	1,154	10.11	1,725	3.30	2,582	28.76	33,000	5.63	40,578	9.53	59,374	19.99	47,979
n	15,697	14,369	14,369	14,368	14,368	7,394	7,394	7,394	7,394	5,618	5,618	5,618	5,618
Max/Mean	3.50	-	48.00	-	6.90	-	21.00	-	26.00	-	29.40	-	23.80

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.

Note 2: Under GEM, nonresponse adjustment factors (weight components #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Model Group 1 Overview

Dwelling Unit Nonresponse

All of the main effects were maintained in the model. All levels of the interactions between "State" and "quarter," as well as those between "owner-occupied" and "rent/housing," remained intact. The only two-way interaction for which all levels had to dropped was State by "group quarters." For the within-State "population density measures," "MSA 1,000,000 or more" had to be dropped for all States. The within State "10% - 50% owner-occupied" and "<10% owner-occupied" levels were collapsed for Connecticut, Maine, and Vermont. Scattered segment-level rent/housing variables were kept: Connecticut's first through third quintiles, Maine's first, third, and fourth quintiles, New Hampshire and Rhode Island's first quintile, and the third and fourth quintile in Vermont. For the within-State percent "Black" and percent "Hispanic" interactions, only the "10-100%" levels for Connecticut and Rhode Island were kept. The interaction of the segment variables owner-occupied and percent "Hispanic" was left mostly intact, excluding only the "50-100% Hispanic" by "10-50% owner-occupied." Likewise, a "0-50% owner-occupied" by percent "Black" was created. Within rent/housing by percent "Black," interactions of percent "50-100% Black" and first and second quintiles were eliminated, and the interaction between the first quintile of rent/housing and "10-50% Black" was dropped. For rent/housing by percent "Hispanic," "<10% Hispanic" was eliminated for both quintiles 1 and 2 of rent/housing.

No higher order effects were kept in the model.

Dwelling Unit Poststratification

All main effects were included in the model. All two-factor effects were kept in the model except those for race by Hispanicity, which had to be dropped completely.

Within three-factor effects, race by Hispanicity by gender interactions were dropped due to hierarchical concerns. The only other concern is "Black" with "Others" for the "35-49" age level in Vermont. All other higher order effects were kept.

(Selected) Person-Level Poststratification

All main effects were included in the model. In the two-way interactions, drops due to singularities were "10-50%" owner-occupied for "50-100%" Hispanic, and "<10%" owner-occupied for the fourth quintile of rent/housing. Drops because of zeros include all of the first quintile of rent/housing by percent "Black" or by percent "Hispanic," and the second quintile by the "50-100%" level of percent "Black." In the State two-way interactions, all interactions between percent "Black" and percent "Hispanic" in Maine, New Hampshire, and Vermont were lost. Also, the "50-100%" level for percent

"Hispanic" was lost for all the States. A "Black/Other" level was created in Vermont and Maine. Because of singularities the "50-100%" owner-occupied level for Connecticut, and the "<10%" owner-occupied for Maine and Vermont were dropped. Also the first through third quintiles were dropped for Connecticut, the second through fourth for Maine, the first and fourth for New Hampshire, the first for Rhode Island, and the entire State of Vermont.

In higher order interactions the "Black/Other" level was created for the race interactions with age and Hispanicity, age and gender, and State and Hispanicity. In addition, in the age by Hispanicity interaction, only Connecticut and Maine were kept due to convergence problems. For similar reasons, in the State by Hispanicity interaction, only Connecticut and Rhode Island were in the model. For other race interactions, collapsing was necessary to control convergence problems. For race by Hispanicity by gender, all variables were dropped. For State by race by gender, the "Black/Other" level was created for Maine and Vermont. For State by age by race the "Black" level for race was combined with the "Others" level for Maine, New Hampshire, and Vermont. In addition age levels "26-34" and "35-49" were lost for Maine, just age "35-49" dropped for Connecticut and New Hampshire. In Vermont, a "18-49" level had to be created for this interaction. Similar age maneuvering can be seen in the State by age by Hispanicity interaction as "26-34" and "35-49" were lost for Maine and New Hampshire and just "35-49" for Rhode Island.

(Respondent) Person-Level Nonresponse

All one-factor effects were included in the model. In two-factor effects, race-level "Other" was crossed with an age reference redefined as "26 or older." Variables that were dropped from the model due to exact linear combinations, zero counts, singularities, or nonconvergence include the following: "10-50% owner-occupied" by "50-100%" Hispanicity, "<10% owner-occupied" by rent/value quintile 4; rent/value quintiles 1 through 3 by "50-100% Black"; rent/value quintiles 1 and 2 by "10-50% Black"; rent/value quintile 1 by "50-100% Hispanic" and "10-50% Hispanic," Hispanicity by Maine and Vermont; percent "Black" and percent "Hispanic" by Maine, New Hampshire, Vermont; rent/value first quintile by Connecticut, Vermont, New Hampshire, and Rhode Island; rent/value quintiles 2 and 3 by Connecticut, Vermont, and Maine; and rent/value fourth quintile by Maine, New Hampshire, and Vermont. Some variables also had to be collapsed. Levels of race "American Indian/Alaska Native" and "Asian" were collapsed for all States. Levels of race "Black," "American Indian/Alaska Native," and "Asian" were collapsed for New Hampshire. Owner-occupied levels "10-50%" and "<10%" were collapsed for all States but Rhode Island.

In three-factor effects, many interactions had to be dropped or collapsed in order to preserve the hierarchy of the model or to eliminate convergence problems. In the State by age by Hispanicity interaction, Maine, New Hampshire, and Vermont were completely dropped, along with the "35-49" level for Connecticut and Rhode Island. All other Hispanicity interactions were dropped. Age group "35-49" levels were dropped for age by race by gender, along with the "26-34" for the "Others" specifically.

For State by age by race, all age group “35-49” levels were dropped as well. The “Black” level was collapsed with the “Other” level for every interaction except the “18-25” level in Connecticut. The “26-34” level was dropped in New Hampshire and Vermont. For State by race by gender, Maine and New Hampshire were dropped, while for Vermont the “Black” level was collapsed with the “Other” level.

(Respondent) Person-Level Poststratification

For this final step, all main effects were included in the New England model. Two-factor interactions were limited by combining “Black” and “Other” from the interaction of race with Hispanicity, and collapsing “American Indian/Alaska Native” and “Asian” in all States and “Black” with the above two levels for the Vermont sample.

A large number of higher order three-factor effects had collapsing in them in order to deal with hierarchical and convergence matters. In all interactions, the “Black” level was collapsed with the “Other” level except for Connecticut by race by gender. Also in that interaction, the interactions were dropped for Maine. In State by race by Hispanicity, all States but Connecticut were dropped. In the State by age by race, Maine and Vermont interactions were dropped, Connecticut was collapsed with Rhode Island; and age “35-49 ” was dropped for this collapsed level. Dropping was necessary to deal with convergence problems. For State by Hispanicity and gender, the Maine interaction was dropped. For State by age by Hispanicity, the “35-49 ” level was dropped for Connecticut, Maine, Rhode Island, and Vermont, and the “26-34 ” for Maine, Rhode Island, and Vermont.

Exhibit D1.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 1: New England

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**24**	**24**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner-occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
Two-Factor Effects		**122**	**70**	
State × Quarter	6*4	15	15	All levels present.
State × Pop. Density	6*4	15	10	Drop (2,1), (3,1), (4,1), (5,1); zero cnts., drop (1,1); ref. zero
State × Group Quarter	6*3	10	0	None.
State × %Black	6*3	10	2	Coll. (1,1) & (1,2), (4,1) & (4,2); conv. Drop all others; zero cnts.
State × %Hispanic	6*3	10	2	Coll. (1,1) & (1,2), (4,1) & (4,2); conv. Drop all others; zero cnts.
State × %Owner-occupied	6*3	10	7	Keep (1,*), (2,*), (3,1), (3,2), (4,2), (4,3) & (5, *).
State × Rent/housing	6*5	20	10	Drop (1,1), (1,2), (1,3), (2,3), (2,4), (3,1), (4,1), (5,3), (5,4); zero cnts., drop (2,1); ref. zero
%Owner × %Black	3*3	4	2	Coll. (2,1) & (3,1), (2,2) & (3,2); conv.
%Owner × %Hispanic	3*3	4	3	Drop (2,1); ref. zero
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	5	Drop (1,1), (1,2), (2,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	6	Drop (1,1), (1,2); zero cnts.
Three-Factor Effects		**160**	**0**	
State × %Owner × %Black	6*3*3	20	0	Drop all; zero cnts.
State × %Owner × %Hispanic	6*3*3	20	0	Drop all; zero cnts.
State × %Owner × Rent/house	6*3*5	40	0	Drop all; zero cnts. conv.
State × Rent/house × %Black	6*3*5	40	0	Drop all; zero cnts.
State × Rent/house × %Hispanic	6*3*5	40	0	Drop all; zero cnts.
Total		**310**	**94**	

Exhibit D1.2 Covariates for 2001 NHSDA Person Weights (res.sdu.ps), Model Group 1: New England

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**81**	**79**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	0	Drop all; conv.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	6*4	15	15	All levels present.
State × Age	6*5	20	20	All levels present.
State × Race(4 level)	6*4	15	15	All levels present.
State × Hispanicity	6*2	5	5	All levels present.
State × Gender	6*2	5	5	All levels present.
Three-Factor Effects		**127**	**106**	
Age × Race(3) × Hispanicity	5*3*2	8	0	Drop all conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	0	Drop all conv.
State × Age × Race(3 level)	6*5*3	40	39	Coll. (5,4,2) & (5,4,3); conv.
State × Age × Hispanic	6*5*2	20	20	All levels present.
State × Age × Gender	6*5*2	20	20	All levels present.
State × Race(3 level) × Hispanicity	6*3*2	10	0	Drop all conv.
State × Race(3 level) × Gender	6*3*2	10	10	All levels present.
State × Hispanicity × Gender	6*2*2	5	5	All levels present.
Total		**226**	**203**	

Exhibit D1.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 1: New England

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner-occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**163**	**124**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	3	Drop (2,1) sing
%Owner × Rent/housing	3*5	8	7	Drop (3,4) sing
Rent/housing × %Black	3*5	8	5	Drop (1,*), (2,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	6	Drop (1,*); zero cnts.
State × Quarter	6*4	15	15	All levels present.
State × Age	6*5	20	20	All levels present.
State × Race(4 level)	6*4	15	13	Coll. (5,3) & (5,4), (2,3) & (2,4); conv.
State × Hispanicity	6*2	5	5	All levels present.
State × Gender	6*2	5	5	All levels present.
State × %Black	6*3	10	4	Drop (2,*), (3,*), (5,*); zero cnts.
State × %Hispanic	6*3	10	2	Drop (2,*), (3,*), (5,*); zero cnts. (1,1), (4,1); sing.
State × %Owner-occupied	6*3	10	7	Drop (1,1), (2,3), (5,3); sing.
State × Rent/housing	6*5	20	7	Drop (1,1,3), (2,3), (2,4), (3,1), (4,1), (5,3), (5,4); zero cnts. (2,2), (3,4), (5,1), (5,2); sing.
Three-Factor Effects		**127**	**83**	
Age × Race(3) × Hispanicity	5*3*2	8	2	Drop (3,3,1); zero cnts. Drop (3,*,*), (4,*,*); conv. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	4	Coll. (*,2,1) & (*,3,1); conv.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	0	Drop (3,1,1); sing. (2,1,1); conv.
State × Age × Race(3 level)	6*5*3	40	23	Drop (2,3,2), (5,3,2), (5,4,2); zero cnts. Drop (1,4,3), (2,4,2), (3,4,2), (5,2,2); sing. Coll. (5,1,2) & (5,1,3); conv. Repeat for age (2), (3) & (4). Coll. (3,*,2) & (3,*,3), (2,*,2) & (2,*,3), (5,1,2) & (5,1,3); conv.
State × Age × Hispanicity	6*5*2	20	15	Drop (2,4,1), (3,4,1); sing. Drop (2,3,1), (3,3,1), (4,4,1); conv.
State × Age × Gender	6*5*2	20	20	All levels present.
State × Race(3 level) × Hispanicity	6*3*2	10	2	Drop (2,2,1), (5,*,1); zero cnts. Drop (2,3,1), (4,3,1); sing. Drop (3,1,1); conv. Coll. (1,2,1) & (1,3,1), (4,2,1) & (4,3,1); conv.
State × Race(3 level) × Gender	6*3*2	10	8	Coll. (2,2,1) & (2,3,1), (5,2,1) & (5,3,1); conv.
State × Hispanicity × Gender	6*2*2	5	5	All levels present.
Total		**326**	**243**	

Exhibit D1.4 Covariates for 2001 NHSDA Person Weights (res.per.nr), Model Group 1: New England

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner-occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**163**	**117**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	3	Drop (2,1), sing.
%Owner × Rent/housing	3*5	8	7	Drop (3,4), sing.
Rent/housing × %Black	3*5	8	5	Drop (1,1), (1,2), (2,1); zero cnts. Drop (1,*), (2,1), & (3,1) due to zero counts. Drop (2,2).
Rent/housing × %Hispanic	3*5	8	6	Drop (1,1), (1,2); zero cnts.
State × Quarter	6*4	15	15	All levels present.
State × Age	6*5	20	20	All levels present.
State × Race(4 level)	6*4	15	9	Coll.(*,3) & (*,4) for all states; conv. Coll.(5,2) & (5,3/4); conv.
State × Hispanicity	6*2	5	3	Drop (2,1) & (5,1); conv.
State × Gender	6*2	5	5	All levels present.
State × %Black	6*3	10	4	Drop (2,*), (3,*), (5,*); zero cnts.
State × %Hispanic	6*3	10	2	Drop (2,*), (3,*), (5,*); zero cnts.
State × %Owner-occupied	6*3	10	6	Coll. (1,2)& (1,3), sing. Do the same for states (2) & (5). Coll. (3,2)& (3,3).
State × Rent/housing	6*5	20	7	Drop (1,1), (1,2), (1,3), (2,3), (2,4), (3,1), (4,1), (5,3), (5,4); zero cnts. Drop (2,2), (3,4), (5,1), (5,2), sing.
Three-Factor Effects		**127**	**51**	
Age × Race(3) × Hispanicity	5*3*2	8	0	Drop All conv.
Age × Race(3) × Gender	5*3*2	8	6	Drop (3,3,1); zero; Coll.(4,2,1) & (4,3,1).
Age × Hispanicity × Gender	5*2*2	4	0	Drop All
Race3 × Hispanicity × Gender	3*2*2	2	0	Drop All
State × Age × Race(3 level)	6*5*3	40	14	Coll. (*,*,2) & (*,*,3), except (1,2); drop (*,4,2/3) Drop (3,3,*), (5,3,*)Coll. (*,*,2) & (*,*,3), except (1,2); drop (*,4,2/3) Drop (3,3,*), (5,3,*)
State × Age × Hispanicity	6*5*2	20	6	Drop (2,*,1), (3,*,1), (5,*,1); conv. Drop (1,4,1), (4,4,1) conv
State × Age × Gender	6*5*2	20	20	All levels present.
State × Race(3 level) × Hispanicity	6*3*2	10	0	Drop All; zero cnts. conv.
State × Race(3 level) × Gender	6*3*2	10	5	Coll.(5,2,1) & (5,3,1). Drop (2,*,1), (3,*,1). conv.
State × Hispanicity × Gender	6*2*2	5	0	Drop All conv.
Total		**326**	**204**	

Exhibit D1.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 1: New England

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**81**	**74**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	1	Coll.(2,1) & (3,1); conv.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	6*4	15	15	All levels present.
State × Age	6*5	20	20	All levels present.
State × Race(4 level)	6*4	15	9	Coll. (*,3) & (*,4) for all states Coll. (5,2), (5,3) & (5,4); conv.
State × Hispanicity	6*2	5	5	All levels present.
State × Gender	6*2	5	5	All levels present.
Three-Factor Effects		**127**	**63**	
Age × Race(3) × Hispanicity	5*3*2	8	4	Coll.(*,2,1) & (*,3,1); hier.
Age × Race(3) × Gender	5*3*2	8	4	Coll.(*,2,1) & (*,3,1); heir
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll.(2,1,1) & (3,1,1); hier.
State × Age × Race(3 level)	6*5*3	40	7	Drop states (2) and (5) Coll. (1,*,*) & (4,*,*) Drop (1,4,*) & (4,4,*) Coll. (3,*,2) & (3,*,3), due to sing. zero cnts. conv.
State × Age × Hispanicity	6*5*2	20	13	Drop (2,3,1), (2,4,1), (5,4,1); zero cnts. Drop (1,4,1), (4,3,1), (4,4,1), (5,3,1); conv.
State × Age × Gender	6*5*2	20	20	All levels present.
State × Race(3 level) × Hispanicity	6*3*2	10	1	Coll (1,2,1) & (1,3,1) heir. Drop rest; zero cnts. conv
State × Race(3 level) × Gender	6*3*2	10	5	Drop state (2,*,*); conv. Coll. (3,2,1) & (3,3,1), (4,2,1) & (4,3,1), (5,2,1) & (5,3,1); conv.
State × Hispanicity × Gender	6*2*2	5	4	Drop (2,1,1); conv.
Total		**226**	**155**	

Appendix D2

Model Group 2: Middle Atlantic

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Table D.2a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 2: Middle Atlantic)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	2.25%	1.99%	0.02%	1.1341	153	(1.00, 1.20)	(1.00, 1.20)
	0.75%	0.58%	0.02%	1.1459	79	(1.00, 1.50)	(1.00, 1.50)
						(1.00, 1.50)	(1.00, 1.38)
res.sdu.ps	0.75%	0.58%	0.02%	1.1459	124	(0.40, 1.10)	(0.74, 1.09)
	0.85%	1.95%	0.56%	1.2106	124	(0.40, 5.00)	(0.40, 5.00)
						(0.70, 5.00)	(0.71, 4.75)
sel.per.ps	3.62%	5.46%	1.40%	2.6823	194	(0.60, 2.00)	(0.62, 2.00)
	1.19%	3.34%	0.74%	2.7091	177	(0.60, 3.50)	(0.61, 3.50)
						(0.90, 3.50)	(0.90, 3.00)
res.per.nr	1.70%	4.18%	0.95%	2.7489	194	(1.00, 2.30)	(1.00, 2.30)
	1.69%	4.42%	0.70%	3.0689	177	(1.00, 5.00)	(1.00, 3.86)
						(1.00, 5.00)	(1.00, 2.14)
res.per.ps	1.70%	4.37%	0.74%	3.0689	124	(0.14, 1.10)	(0.14, 1.10)
	0.45%	1.19%	0.07%	3.0384	124	(0.14, 2.40)	(0.14, 2.34)
						(0.90, 2.40)	(0.98, 1.79)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

[3] Number of proposed covariates on top line, and number finalized after modeling.

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum / minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.2b Distribution of Weight Adjustment Factors and Weight Products (Model Group 2: Middle Atlantic)

	sel.sdu.des [1]	*res.sdu.nr* [1]		*res.sdu.ps* [1]		*sel.per.des* [1]		*sel.per.ps* [1]		*res.per.nr* [1]		*res.per.ps* [1]	
	1-6[2]	**7**[3]	**1-7**[3]	**8**[4]	**1-8**[4]	**10**[5]	**1-10**[5]	**11**[5]	**1-11**[5]	**12**[6]	**1-12**[6]	**13**[6]	**1-13**[6]
Minimum	154	0.88	326	0.40	161	1.01	199	0.23	153	0.51	178	0.09	34
1%	328	1.00	367	0.71	337	1.01	354	0.64	310	1.00	354	0.14	137
5%	332	1.03	412	0.86	417	1.01	488	0.76	462	1.08	559	0.73	538
10%	337	1.03	427	0.95	448	1.01	544	0.83	526	1.12	645	0.92	651
25%	470	1.06	491	1.02	527	1.05	647	0.93	661	1.19	822	0.99	833
Median	522	1.11	569	1.07	622	1.15	997	0.99	1,006	1.28	1,279	1.01	1,302
75%	639	1.19	720	1.15	778	5.80	3,596	1.06	3,631	1.42	4,643	1.07	4,672
90%	664	1.28	918	1.26	1,028	10.26	7,193	1.18	7,035	1.63	9,316	1.14	9,347
95%	1120	1.35	1,262	1.36	1,338	14.50	9,576	1.33	9,580	1.82	12,933	1.29	13,255
99%	1209	1.50	1,421	1.83	1,794	15.57	15,991	1.90	16,949	2.26	23,820	1.63	23,825
Maximum	1782	3.58	1,985	5.03	7,677	35.69	50,900	4.62	43,114	3.86	60,775	2.62	62,720
n	24,106	21,233	21,233	21,231	21,231	11,786	11,786	11,786	11,786	8,826	8,826	8,826	8,826
Max/Mean	3.20	-	3.10	-	10.90	-	18.90	-	16.00	-	16.00	-	17.40

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.

Note 2: Under GEM, nonresponse adjustment factors (weight components #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Model Group 2 Overview

Dwelling Unit Nonresponse

All proposed main effects were included.

Group quarter level “college dorm” was collapsed with “other group quarters” in New York and Pennsylvania. For New York, population densities of “MSA less than 1,000,000 ” and “Non-MSA urban” were combined with the reference cell “Non-MSA rural,” and rent/housing value quintiles 1 and 2 were dropped. State segment percent “Hispanic 10-50%” and “50-100%” were combined in Pennsylvania and New York. Pennsylvania percent owner-occupied levels “<10%” and “10-50%” were dropped. Pennsylvania rent/housing quintiles 1, 2, and 4 also were dropped. Rent/housing quintile 1 by “10-50%” and “50-100%” segment “Hispanic” were combined.

State by percent owner-occupied by percent “Hispanic” combined New York “<10% owner-occupied” by “10-50% Black” with New York “<10% owner-occupied” by “50-100% Black” and kept New York “10-50% owner-occupied” by “10-50% Black” and “50-100% Black.” The only effect in the State level percent owner-occupied by percent “Hispanic” interaction was New York “10-100% owner-occupied” by “10-100% Hispanic.” All other proposed three-factor effects were removed from the model.

Dwelling Unit Poststratification

All proposed effects were included in the model.

(Selected) Person-Level Poststratification

All main effects and non-State two-factor effects were included as proposed. In Pennsylvania “Asian” and “Native American/Alaska Native” categories were combined, and the segment variables “50-100% Black,” “<10% Hispanic,” and “10-50% Hispanic” were dropped. Pennsylvania rent/housing value quintiles 1, 2, and 3 and New York quintile 1 were removed.

Race by Hispanicity by gender collapsed race categories “Black” and “Other.” Race also was collapsed to “Black plus Other” in New York for the only State by race by Hispanicity effect kept. The interaction of age, race, and Hispanicity was reduced by removing age “26-34,” “35-49” race “Other” and collapsing “12-17” “Black” and “Other.” All other three-factor effects were kept in the model as proposed.

(Respondent) Person-Level Nonresponse

No main effects were removed from the initial set. The only non-State two-factor effect that was compromised was race by Hispanicity, where “Black” and “Other” were combined. Pennsylvania segment variables “50-100% Black,” “<10% owner-occupied,” “10-50% owner-occupied” were dropped due to singularity. State rent/housing quintiles 1 and 2 were dropped for New York, and quintiles 1, 2, and 4 were dropped for Pennsylvania. The only three-factor effects altered were those affected by the hierarchical effect of collapsing “Black” and “Other” in the race by Hispanicity interaction. In addition to the compromise implied by that, age by race by Hispanicity also was modified by dropping age “35-49” into the reference.

(Respondent) Person-Level Poststratification

All proposed effects were included in the model.

Exhibit D2.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**21**	**21**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner-occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
Two-Factor Effects		**68**	**54**	
State × Quarter	3*4	6	6	All levels present.
State × Pop. Density	3*4	6	4	Drop (2,3); ref. zero; drop (2,2); sing.
State × Group Quarter	3*3	4	2	Coll. (2,1) & (2,2), (3,1) & (3,2); conv.
State × %Black	3*3	4	4	All levels present.
State × %Hispanic	3*3	4	2	Coll. (2,1) & (2,2), (3,1) & (3,2); conv.
State × %Owner-occupied	3*3	4	2	Drop (3,2), (3,3); sing.
State × Rent/housing	3*5	8	3	Drop (2,1), (3,4); zero cnts. Drop (3,1), (3,2); ref. zero; drop (2,2); sing.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	7	Coll. (1,1) & (1,2); conv.
Three-Factor Effects		**64**	**4**	
State × %Owner × %Black	3*3*3	8	3	Keep (2,2,1), (2,2,2); Coll. (2,3,1) & (2,3,2); conv. Drop all others, zero cnts., conv.
State × %Owner × %Hispanic	3*3*3	8	1	Coll. (1,2,1) & (1,3,1) & (1,2,2) & (1,3,2); conv. Drop all others, zero cnts., conv.
State × %Owner × Rent/house	3*3*5	16	0	Drop all.
State × Rent/house × %Black	3*3*5	16	0	Drop all.
State × Rent/house × %Hispanic	3*3*5	16	0	Drop all.
Total		**153**	**79**	

Exhibit D2.2 Covariates for 2001 NHSDA Person Weights (res.sdu.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**15**	**15**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**45**	**45**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	3*4	6	6	All levels present.
State × Age	3*5	8	8	All levels present.
State × Race(4 level)	3*4	6	6	All levels present.
State × Hispanicity	3*2	2	2	All levels present.
State × Gender	3*2	2	2	All levels present.
Three-Factor Effects		**64**	**64**	
Age × Race(3) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	3*5*3	16	16	All levels present.
State × Age × Hispanicity	3*5*2	8	8	All levels present.
State × Age × Gender	3*5*2	8	8	All levels present.
State × Race(3 level) × Hispanicity	3*3*2	4	4	All levels present.
State × Race(3 level) × Gender	3*3*2	4	4	All levels present.
State × Hispanicity × Gender	3*2*2	2	2	All levels present.
Total		**124**	**124**	

Exhibit D2.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**33**	**33**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner-occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**97**	**88**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	3*4	6	6	All levels present.
State × Age	3*5	8	8	All levels present.
State × Race(4 level)	3*4	6	5	Coll. (3,3) & (3,4); conv.
State × Hispanicity	3*2	2	2	All levels present.
State × Gender	3*2	2	2	All levels present.
State × %Black	3*3	4	3	Drop (3,1); sing.
State × %Hispanic	3*3	4	4	All levels present.
State × %Owner-occupied	3*3	4	2	Drop (3,2), (3,3); sing.
State × Rent/housing	3*5	8	4	Drop (1,1), (3,4); zero cnts. Drop (3,1), (3,2), ref zero
Three-Factor Effects		**64**	**56**	
Age × Race(3) × Hispanicity	5*3*2	8	4	Drop (4,3,1); zero cnts. Drop (3,3,1); ref. zero; Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	3*5*3	16	8	All levels present.
State × Age × Hispanicity	3*5*2	8	8	All levels present.
State × Age × Gender	3*5*2	8	8	All levels present.
State × Race(3 level) × Hispanicity	3*3*2	4	1	Coll. (2,2,1) & (2,3,1); conv. Drop all others; zero cnts./conv.
State × Race(3 level) × Gender	3*3*2	4	4	All levels present.
State × Hispanicity × Gender	3*2*2	2	2	All levels present.
Total		**194**	**177**	

Exhibit D2.4 Covariates for 2001 NHSDA Person Weights (res.per.nr), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**33**	**33**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner-occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**97**	**88**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1)
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	3*4	6	6	All levels present.
State × Age	3*5	8	8	All levels present.
State × Race(4 level)	3*4	6	6	All levels present.
State × Hispanicity	3*2	2	2	All levels present.
State × Gender	3*2	2	2	All levels present.
State × %Black	3*3	4	3	Drop (3,1), sing.
State × %Hispanic	3*3	4	2	All levels present.
State × %Owner-occupied	3*3	4	2	Drop (3,2), (3,3), sing.
State × Rent/housing	3*5	8	3	Drop (2,1), (3,4); zero cnts. Drop (3,1), (3,2); ref. zero; drop (2,2); sing.
Three-Factor Effects		**64**	**56**	
Age × Race(3) × Hispanicity	5*3*2	8	3	Coll. (*,2,1) & (*,3,1) heir. Drop (4,2,1) & (4,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1) heir.
State × Age × Race(3 level)	3*5*3	16	16	All levels present.
State × Age × Hispanicity	3*5*2	8	8	All levels present.
State × Age × Gender	3*5*2	8	8	All levels present.
State × Race(3 level) × Hispanicity	3*3*2	4	2	Coll. (*,2,1) & (*,3,1) heir.
State × Race(3 level) × Gender	3*3*2	4	4	All levels present.
State × Hispanicity × Gender	3*2*2	2	2	All levels present.
Total		**194**	**177**	

Exhibit D2.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**15**	**15**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**45**	**45**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	3*4	6	6	All levels present.
State × Age	3*5	8	8	All levels present.
State × Race(4 level)	3*4	6	6	All levels present.
State × Hispanicity	3*2	2	2	All levels present.
State × Gender	3*2	2	2	All levels present.
Three-Factor Effects		**64**	**64**	
Age × Race(3) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	3*5*3	16	16	All levels present.
State × Age × Hispanicity	3*5*2	8	8	All levels present.
State × Age × Gender	3*5*2	8	8	All levels present.
State × Race(3 level) × Hispanicity	3*3*2	4	4	All levels present.
State × Race(3 level) × Gender	3*3*2	4	4	All levels present.
State × Hispanicity × Gender	3*2*2	2	2	All levels present.
Total		**124**	**124**	

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Appendix D3

Model Group 3: East North Central

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Table D.3a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 3: East North Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	#XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	3.85%	3.54%	0.03%	1.1129	255	(1.00, 1.20)	(1.03, 1.16)
	2.03%	2.01%	0.11%	1.1081	126	(1.00, 3.40)	(1.00, 3.40)
						(1.00, 3.40)	(1.00, 1.30)
res.sdu.ps	2.03%	2.01%	0.11%	1.1081	192	(0.30, 1.40)	(0.31, 1.40)
	2.18%	3.10%	0.37%	1.1572	188	(0.30, 3.20)	(0.30, 3.20)
						(0.65, 3.20)	(0.65, 2.87)
sel.per.ps	4.55%	6.37%	1.24%	2.3226	282	(0.40, 1.90)	(0.45, 1.90)
	1.27%	2.62%	0.51%	2.3258	250	(0.40, 4.00)	(0.40, 4.00)
						(0.42, 4.00)	(0.42, 3.13)
res.per.nr	1.76%	2.75%	0.50%	2.3519	282	(1.00, 2.50)	(1.01, 2.50)
	1.47%	2.39%	0.50%	2.5060	228	(1.00, 4.30)	(1.00, 4.06)
						(1.00, 4.30)	(1.00, 2.35)
res.per.ps	1.54%	3.45%	0.55%	2.5061	192	(0.24, 1.30)	(0.24, 1.20)
	0.60%	1.65%	0.16%	2.5075	155	(0.24, 2.40)	(0.24, 2.50)
						(0.80, 2.40)	(0.80, 1.67)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

[3] Number of proposed covariates on top line, and number finalized after modeling.

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum / minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.3b Distribution of Weight Adjustment Factors and Weight Products (Model Group 3: East North Central)

	sel.sdu.des [1]	***res.sdu.nr*** [1]		***res.sdu.ps*** [1]		***sel.per.des*** [1]		***sel.per.ps*** [1]		***res.per.nr*** [1]		***res.per.ps*** [1]	
	1-6 [2]	**7** [3]	**1-7** [3]	**8** [4]	**1-8** [4]	**10** [5]	**1-10** [5]	**11** [5]	**1-11** [5]	**12** [6]	**1-12** [6]	**13** [6]	**1-13** [6]
Minimum	33	0.37	147	0.28	104	1.01	108	0.25	67	0.63	71	0.13	33
1%	316	1.01	337	0.43	224	1.01	243	0.58	220	1.01	286	0.36	219
5%	322	1.04	349	0.86	342	1.01	418	0.77	402	1.09	503	0.93	501
10%	344	1.05	374	0.94	378	1.01	481	0.85	479	1.14	596	0.96	598
25%	393	1.06	414	0.98	449	1.05	586	0.94	601	1.22	767	0.98	779
Median	453	1.08	507	1.05	522	1.18	885	1.01	904	1.31	1,172	1.01	1,182
75%	488	1.12	543	1.16	612	5.97	2,982	1.07	3,013	1.46	3,992	1.03	3,976
90%	737	1.17	793	1.31	902	11.35	5,735	1.15	5,313	1.64	7,200	1.05	7,284
95%	922	1.24	989	1.44	1,052	13.04	6,784	1.26	6,556	1.78	9,656	1.20	9,708
99%	978	1.46	1,048	1.81	1,417	14.18	11,522	1.74	11,012	2.28	17,177	1.45	16,895
Maximum	1,943	10.79	1,884	3.20	3,128	28.58	42,904	5.60	28,425	4.76	34,178	5.51	59,047
n	33,359	30,179	30,179	30,173	30,173	17,455	17,455	17,455	17,455	12,830	12,830	12,830	12,830
Max/Mean	4.00	-	3.50	-	5.41	-	20.30	-	13.54	-	11.97	-	20.67

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.

Note 2: Under GEM, nonresponse adjustment factors (weight components #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Model Group 3 Overview

Dwelling Unit Nonresponse

All the main effects were left intact. Among two-factor effects, all the non-State two-ways were kept except the dropping of "second quintile of rent/housing by 50-100% of Hispanic." State by group quarter, group quarter level "college dorm," was collapsed with "other group quarters" for Illinois, and interactions involving Michigan, Ohio, and Wisconsin were dropped. For State by percent of "Hispanic," the "50-100% of Hispanic" was dropped for all States due to the zero sample. The fourth quintile of rent/housing was dropped for all States in the State by rent/housing interactions. Moving on to three-factor effects, State by percent owner-occupied by percent "Black," only a few variables were kept because of the zero sample, singularity, and convergent problem. For State by rent/housing by percent "Black," only seven variables were kept. None of the State by percent owner-occupied by percent "Hispanic," State by percent owner-occupied by rent/housing, and State by rent/housing by percent "Black" were maintained in the model because the majority of the variables had zero sample.

Dwelling Unit Poststratification

All proposed effects were included in the model. However, in the State three-way interactions of State by race by Hispanicity, "Black Hispanics" were combined with "Other Hispanics" for Illinois, Michigan and Wisconsin.

(Selected) Person-Level Poststratification

All one-factor effects were included in the model. Two-factor effects for rent/housing by percent "Hispanic" and the second quintile of rent/housing by "50-100% Hispanic" were dropped due to the zero sample. Percent "Hispanic" level of "50-100%" was collapsed with level of "10-50%" for Illinois and Wisconsin. Singularities removed the first quintile of rent housing for Michigan and Ohio. In the non-State three-way factors, none of the age by race by Hispanicity were kept due to the convergent problem. "Male Black Hispanic" and "Male Other Hispanic" were combined for the race by Hispanicity by gender. In the State three-ways, "Black" was combined with "Others" for all the race-involved factors except in the State by race by gender for Illinois, Michigan, and Ohio.

(Respondent) Person-Level Nonresponse

Same variables were kept in the model for the main effects and two-way factors as for the selected person poststratification adjustment. For the non-State three-way factors, none of the age by race by Hispanicity and race by Hispanicity by gender were kept due to the majority variables with small sample size or zero sample. In State by age by race, “Black” and “Others” were combined for all the factors. The factors for Illinois and Wisconsin were not kept, and “Hispanic aged 35-49 ” for Michigan was dropped for the State by age by Hispanicity. For State by race by Hispanicity, none of the factors for Wisconsin were kept, and “Black Hispanic” was combined with “Other Hispanic” for Illinois and Ohio. For State by race by gender, none of the factors for Wisconsin were kept, and “Black Male” was combined with “Other Male” for Illinois. “Male Hispanic” was dropped for Wisconsin.

(Respondent) Person-Level Poststratification

All main effects were included in the East North Central model. “Black Hispanics” were combined with “Other Hispanics” in the two-way interactions, the “Native Indian” and “Asian” were combined for the State of Illinois and Wisconsin. For the non-State three-way factors, none of the race by Hispanicity by gender and age by race by Hispanicity except “combined Black and Other Hispanic aged 12-17.” In the State three-way factors, except for the State by age by gender, the factors related to Wisconsin had to be dropped or collapsed. There was some collapsing for the factors for other States due to convergence problems.

Exhibit D3.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 3: East North Central

Variable	Levels	Proposed	Final	Comments
One-Factor Effects		**23**	**23**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
Two-Factor Effects		**104**	**91**	
State × Quarter	5*4	12	12	All levels present.
State × Pop. Density	5*4	12	12	All levels present.
State × Group Quarter	5*3	8	4	Coll. (1,1) &(1,2), (3,1) & (3,2), (5,1) & (5,2); conv. Drop (4,2); zero cnts.
State × %Black	5*3	8	8	All levels present.
State × %Hispanic	5*3	8	4	Drop (1,1), (3,1), (4,1), (5,1); zero cnts.
State × %Owner Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	12	Coll. (1,4) & (1,5), (3,4) & (3,5), (4,4) & (4,5), (5,4) & (5,5); conv.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	7	Drop (2,1); conv.
Three-Factor Effects		**128**	**12**	
State × %Owner × %Black	5*3*3	16	5	Coll.(1,2,1) & (1,2,2), (1,3,1) & (1,3,2), (5,2,1) & (5,2,2), (5,3,2) & (5,3,2), (3,2,1) & (3,2,2); drop others, sing/zero/conv/hier.
State × %Owner × %Hispanic	5*3*3	16	0	Drop all
State × %Owner × Rent/house	5*3*5	32	0	Drop all
State × Rent/house × %Black	5*3*5	32	7	Coll. (1,3,1) & (1,3,2), (3,1,1) & (3,1,2), (3,2,1)& (3,2,2), (5,1,1) & (5,1,2), (5,2,1) & (5,2,2), (5,3,1) & (5,3,2); conv. Keep (1,1,2); drop others, conv./sing/zero/hier
State × Rent/house × %Hispanic	5*3*5	32	0	Drop all
Total		**255**	**126**	

Exhibit D3.2 Covariates for 2001 NHSDA Person Weights (res.sdu.ps), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**69**	**68**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race(4 level)	5*4	12	11	Coll. (4,3) & (4,4); conv.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
Three-Factor Effects		**106**	**103**	
Age × Race(3) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	5*5*3	32	32	All levels present.
State × Age × Hispanicity	5*5*2	16	16	All levels present.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race(3 level) × Hispanicity	5*3*2	8	5	Coll. (3,2,1) & (3,3,1), (4,2,1), (4,3,1), (1,2,1) & (1,3,1), Conv.
State × Race(3 level) × Gender	5*3*2	8	8	All levels present.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
Total		**192**	**188**	

Exhibit D3.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**141**	**132**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	7	Drop (2,1); zero cnts.
State × Quarter	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race(4 level)	5*4	12	12	All levels present.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
State × %Black	5*3	8	8	All levels present.
State × %Hispanic	5*3	8	4	Coll. (1,1) & (1,2), (4,1), (4,2), sing. Drop (3,1), (5,1); zero cnts.
State × %Owner Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	12	Drop (1,4), (3,4), (4,4), (5,4); sing.
Three-Factor Effects		**106**	**83**	
Age × Race(3) × Hispanicity	5*3*2	8	0	Drop (1,2,1), (1,3,1), (2,2,1), (2,3,1), (3,2,1), (3,3,1), (4,2,1), (4,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	5*5*3	32	24	Coll. (4,1,2) & (4,1,3), (4,2,2) & (4,2,3), (4,3,2) & (4,3,3), (4,4,2) & (4,4,3), (5,1,2) & (5,1,3), (5,2,2) & (5,2,3), (5,3,2) & (5,3,3), (5,4,2) & (5,4,3); conv.
State × Age × Hispanicity	5*5*2	16	16	All levels present.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race(3 level) × Hispanicity	5*3*2	8	3	Coll. (1,2,1) & (1,3,1), (3,2,1) & (3,3,1), 5,2,1) & (5,3,1); conv. Drop (4,2,1), (4,3,1); conv.
State × Race(3 level) × Gender	5*3*2	8	7	Coll. (4,2,1) & (4,3,1); conv.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
Total		**282**	**250**	

Exhibit D3.4 Covariates for 2001 NHSDA Person Weights (res.per.nr), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**141**	**132**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	7	Drop (2,1); zero cnts.
State × Quarter	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race(4 level)	5*4	12	12	All levels present.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
State × %Black	5*3	8	8	All levels present.
State × %Hispanic	5*3	8	4	Drop (3,1) , (5,1); zero cnts. Coll. (1,1) & (1,2), (4,1) & (4,2), sing.
State × %Owner Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	12	Drop (1,4), (3,4), (4,4), (5,4), sing.
Three-Factor Effects		**106**	**63**	
Age × Race(3) × Hispanicity	5*3*2	8	0	Drop all; conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	0	Drop all; conv.
State × Age × Race(3 level)	5*5*3	32	16	Drop (4,1,2), (4,1,3), (4,2,2), (4,2,3), (4,3,2), (4,3,3), (4,4,2), (4,4,3); conv. Coll. (1,1,2) & (1,1,3), (1,2,2) & (1,2,3), (1,3,2) & (1,3,3), (1,4,2)& (1,4,3), (5,1,2) & (5,1,3), (5,2,2)& (5,2,3), (5,3,2) & (5,3,3), (5,4,2) & (5,4,3); conv.
State × Age × Hispanicity	5*5*2	16	7	Drop (4,*,1), (1,*,1), (3,4,1); conv.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race(3 level) × Hispanicity	5*3*2	8	4	Drop (3,3,1); sing. Drop (3,2,1); conv. Coll. (1,2,1) & (1,3,1), (5,2,1) & (5,3,1); conv.
State × Race(3 level) × Gender	5*3*2	8	5	Drop (4,2,1) & (4,3,1); conv. Coll. (1,2,1) & (1,3,1)conv.
State × Hispanicity × Gender	5*2*2	4	3	Drop (4,1,1)
Total		**282**	**230**	

Exhibit D3.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 3: East North Central

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**69**	**66**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race(4 level)	5*4	12	10	Coll. (1,3) & (1,4), (4,3) & (4,4); conv.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
Three-Factor Effects		**106**	**72**	
Age × Race(3) × Hispanicity	5*3*2	8	1	Coll. (1,2,1) & (1,3,1); drop the rest; conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	0	Drop all.
State × Age × Race(3 level)	5*5*3	32	20	Drop (4,*,*), Coll. (5,*,2) & (5,*,3); conv.
State × Age × Hispanicity	5*5*2	16	10	Drop (4,*,1); conv. Coll. (3,1,1) & (3,2,1); conv. Drop (3,4,1); ref. zero
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race(3 level) × Hispanicity	5*3*2	8	3	Coll (1,2,1) & (1,3,1), (3,2,1) & (3,3,1), (5,2,1) & (5,3,1); drop (4,2,1), (4,3,1), conv.
State × Race(3 level) × Gender	5*3*2	8	7	Coll. (4,2,1), (4,3,1); conv.
State × Hispanicity × Gender	5*2*2	4	3	Drop (4,1,1)
Total		**192**	**155**	

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Appendix D4

Model Group 4: West North Central

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Table D.4a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 4: West North Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	3.47%	5.96%	0.22%	1.39764	357	(1.0, 1.4)	(1.00, 1.35)
	3.12%	6.08%	0.32%	1.41019	142	(1.0, 1.7)	(1.00, 1.68)
						(1.0, 1.7)	(1.00, 1.19)
res.sdu.ps	3.12%	6.08%	0.32%	1.41012	260	(0.2, 1.3)	(0.20, 1.30)
	2.48%	2.44%	0.22%	1.49031	247	(0.2, 3.9)	(0.20, 3.90)
						(0.9, 3.9)	(0.90, 3.51)
sel.per.ps	3.36%	6.09%	1.02%	3.42996	370	(0.3, 2.2)	(0.31, 2.36)
	1.70%	2.25%	0.37%	3.21823	300	(0.3, 4.4)	(0.30, 4.06)
						(0.7, 4.4)	(0.70, 4.40)
res.per.nr	2.04%	2.43%	0.35%	3.25280	370	(1.0, 1.8)	(1.00, 1.80)
	1.30%	2.94%	0.52%	3.30308	245	(1.0, 4.1)	(1.00, 4.10)
						(1.0, 4.1)	(1.00, 4.07)
res.per.ps	1.41%	3.13%	0.58%	3.30308	260	(0.3, 1.9)	(0.30, 1.90)
	0.91%	1.82%	0.45%	3.27037	180	(0.3, 4.2)	(0.30, 4.20)
						(0.9, 4.2)	(0.94, 4.20)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

[3] Number of proposed covariates on top line, and number finalized after modeling.

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum / minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.4b Distribution of Weight Adjustment Factors and Weight Products (Model Group 4: West North Central)

	sel.sdu.des [1]	*res.sdu.nr* [1]		*res.sdu.ps* [1]		*sel.per.des* [1]		*sel.per.ps* [1]		*res.per.nr* [1]		*res.per.ps* [1]	
	1-6 [2]	**7** [3]	**1-7** [3]	**8** [4]	**1-8** [4]	**10** [5]	**1-10** [5]	**11** [5]	**1-11** [5]	**12** [6]	**1-12** [6]	**13** [6]	**1-13** [6]
Minimum	39	0.90	101	0.19	21	1.01	23	0.22	11	0.55	23	0.20	11
1%	103	1.00	107	0.25	98	1.01	112	0.36	93	1.00	111	0.30	75
5%	106	1.02	112	0.68	117	1.01	148	0.66	141	1.01	170	0.77	167
10%	118	1.02	128	0.83	126	1.01	174	0.74	174	1.04	220	0.92	212
25%	142	1.04	156	0.93	163	1.11	418	0.87	415	1.15	519	0.97	511
Median	447	1.06	474	1.05	490	1.39	834	0.99	855	1.23	1067	1.00	1,075
75%	758	1.08	812	1.16	846	5.25	1,872	1.11	1,895	1.34	2390	1.04	2,373
90%	876	1.11	926	1.31	1,063	7.72	5,888	1.28	5,323	1.50	6643	1.11	6,770
95%	919	1.14	1,004	1.43	1,224	12.86	8,068	1.49	7,609	1.66	9804	1.19	9,875
99%	1,360	1.23	1,536	1.88	1,597	16.21	15,245	2.27	14,181	2.77	17945	2.72	18,172
Maximum	1,415	2.93	1,636	3.90	3,165	27.37	52,942	6.74	28,713	7.67	46959	5.82	30,825
n	14,553	13,662	13,662	13,661	13,661	8,105	8,105	8,105	8,105	6,382	6,382	6,382	6,382
Max/Mean	2.93	-	3.17	-	6.00	-	27.00	-	15.00	-	19.00	-	13.00

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.
Note 2: Under GEM, nonresponse adjustment factors (weight component #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.
[2] Based on eligible dwelling units.
[3] Based on screener-complete dwelling units.
[4] Based on screener-complete dwelling units, occupants verified eligible.
[5] Based on selected persons.
[6] Based on questionnaire-complete persons.

Model Group 4 Overview

Dwelling Unit Nonresponse

All the one-factor effects were included in this model. Due to zero counts, interactions involving State and population density were simplified by dropping “MSA 1,000,000 or more” for Iowa, Nebraska, North and South Dakota. Also due to zero counts, the group quarters level “college dorm” was dropped for Nebraska and South Dakota and level “other group quarters” was dropped for Kansas and North Dakota. The “other group quarters” level for South Dakota was dropped due to singularities. The “50-100% Black” level was dropped from Nebraska, South Dakota, and North Dakota, while “10-50% Black” also was dropped from North Dakota. The “10-50% Hispanic” level was kept for Iowa, Kansas, and Nebraska only. All other percent Hispanic combinations were lost. For rent/housing indicators, the third and fourth quintiles for Iowa and South Dakota, the fourth quintile for Nebraska, the second quintile for North Dakota, and the entire State of Minnesota were dropped. Within two-factor interactions involving non-State effects, percent “Black” levels “50-100%” for the first quintile of the rent/housing variable was dropped. The “50-100% Hispanic” was dropped for all levels of percent owner-occupied, and rent/housing.

For three-factors effects, all levels of State by percent owner-occupied by percent “Hispanic” were dropped. In State by rent/housing interactions, “0-50% Hispanic” was only kept for Kansas and the first quintile, and “10-50% Black” was only kept for the first quintile of Kansas and Iowa. For State by owner-occupied by percent “Black,” a “0-50%” level was created for “10-50% Black” in Kansas. This was kept along with the “0-10% Black” level of the “10-50%” owner-occupied level for Kansas and Nebraska, and the “10-50% Black” level for the “10-50%” and “50-100%” owner-occupied level of Minnesota. Kansas and North Dakota kept the “10-50%” level of owner-occupied for the first, third and fourth quintiles of rent/housing. Also kept was this owner-occupied level for the first quintile in Iowa and the second quintile in Nebraska.

Dwelling Unit Poststratification

All one-factor variables were included in the model. All two-factor effects were present except that race level “Asian” was collapsed with “American Indian/Alaska Native” for the State of Iowa. Moving on to three-factor effects, the interaction of State by race by gender, the race level “Other” was collapsed with “Black” for South Dakota. All levels of South Dakota were collapsed with North Dakota for State by age by Hispanicity. In State by race by Hispanicity, all levels for Minnesota were kept, and the race level “Other” was collapsed with “Black” for North Dakota, Nebraska, and Kansas.

(Selected) Person-Level Poststratification

None of the main effects were compromised. Singularities and zero counts removed "50-100% Hispanic" by both "10-50%" and "50-100%" owner-occupied and all quintiles of rent/housing. Zero counts removed the "50-100% Black" from the first quintile of rent/housing. Also due to singularities, "50-100% Hispanic" was dropped from all States, and "10-50% Hispanic" was dropped from Minnesota, North and South Dakota. All quintiles of rent/housing were excluded for Minnesota, the second for North Dakota, and the third for South Dakota and Iowa, but the fourth was combined with the reference level for South Dakota and Nebraska. Due to convergence issues, "Asian" was collapsed with "American Indian/Alaska Native" for Iowa. Also due to convergence problems, a "0-50% owner-occupied" was created for Minnesota, Nebraska, and North Dakota. The "50-100% Black" level was dropped for North and South Dakota. A "10-100% Black" level was created for Iowa, while North and South Dakota were combined for "10-50% Black."

Higher order effects were greatly reduced. Because of singularities and zero counts, no age by race by Hispanicity levels above age level "18-25" were kept. North Dakota by Hispanicity by gender also was lost due to singularities. Because of zero counts and convergence problems, Kansas, Minnesota, and South Dakota samples of "Black" and "Other" race respondents were all pooled into one category, and all levels for Iowa, Nebraska, and North Dakota were dropped for the State, race interaction with Hispanicity. South Dakota was dropped from the State, race interaction with gender. Both North and South Dakota, age "35-49 Hispanic" levels were dropped to fix zero counts in the reference level. Kansas age "26-34 Hispanics" were dropped due to convergence problems. Lack of respondents led to the combining "Black" with "Others" in the interaction between State, age, and race. The levels that were combined were age "12-17" for all States but Kansas, "18-25" for Minnesota, North and South Dakota, and the remainder of age levels for the Dakotas. Dropped to fix zeros in the reference State of Missouri were the age "35-49" level for Iowa and North Dakota "Blacks," Kansas "Others," and all races in Minnesota. Three-factor interactions involving race, Hispanicity, and gender were removed from the model due to convergence problems.

(Respondent) Person-Level Nonresponse

The West North Central model group kept all main effects except for a collapsing of "college dorm" and "other group quarter." In two-factor interactions, age by race combined "Others" with "Black." The cross of the segment-level characteristics percent owner-occupied and percent Hispanic did not support a "Hispanic range of 50-100%." Rent/housing value's first quintile was dropped when interactions with percent "Hispanic" yielded no respondents. Also dropped was the fourth quintile level of "10-50% Hispanic." Because of no respondents, the first quintile for "50-100% Black" was dropped as well.

State-specific versions of many effects were proposed, but singularities and convergence problems led to some work needing to be done. Singularities led to the dropping of “50-100% Black” for North and South Dakota and the creation of a “0-100% Black” level for Nebraska. All levels of “50-100% Hispanics” were dropped regardless of State, while “10-50% Hispanic” was dropped as well for North and South Dakota, Iowa, and Minnesota. Original proposed levels of State rent/housing value quintiles were compromised by dropping various empty levels from States. The second quintile from North Dakota, the fourth quintile from Iowa and South Dakota, and all quintiles from Minnesota were dropped. Singularity removed the fourth quintile of Nebraska’s rent/housing value, along with the third quintile for Iowa and South Dakota. Convergence issues caused the creation of an “Other” level of race for Nebraska.

Moving on to higher order effects, only a combined level of age “12-25,” race “Black and Others,” was able to be kept for Hispanicity. Age level “35-49” was lost for the race by gender and Hispanicity by gender interactions. Age level “26-34” also was lost for the interaction with race by gender. “Black” being collapsed with “Other” was necessary due to convergence problems with Hispanicity and gender. State-involved three-level interactions faced major compromises due to convergence problems. State, race, and Hispanicity were dropped completely, and only Iowa combined with Minnesota was kept for Hispanicity and gender. North and South Dakota were lost in the interaction with age and Hispanicity, along with the “35-49” age group. The “26-34” age group was also lost for all other States, except Kansas. In the State by age by race interaction, the “35-49” age level was lost, “Black” was collapsed with “Other” for all States, and samples for North and South Dakota, Iowa and Minnesota, and Kansas and Nebraska were combined. In State by race by gender, “Black” and “Others” were collapsed for all States.

(Respondent) Person-Level Poststratification

All one-factor variables were included in the model but among two-factor effects, State by race, “American Indian/Alaska Native” was combined with “Asian” in Iowa. In higher order effects, convergence caused many problems. All levels of Hispanicity interactions for age by race and State by age are dropped. “Black” was collapsed with “Other” for all levels of State by race by Hispanicity and State by race by gender. In addition, Iowa and Minnesota, and North Dakota and South Dakota were collapsed into pairs for the race by Hispanicity interaction. All other States were dropped in this interaction. In the State by age by race interaction, age levels “26-34” and “35-49” were dropped, “Black” was collapsed with “Others” for Iowa, and North and South Dakota were collapsed together.

Exhibit D4.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**25**	**25**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarters	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
Two-Factor Effects		**140**	**101**	
State × Quarter	7*4	18	18	All levels present.
State × Pop. Density	7*4	18	14	Drop (1,1), (5,1), (6,1), (7,1), zero cnts.
State × Group Quarter	7*3	12	7	Drop (2,2), (7,2), (5,1), (6,1), zero cnts, (6,2); sing.
State × %Black	7*3	12	8	Drop (6,1), (7,1), zero cnts, (5,1); sing. (7,2); conv.
State × %Hispanic	7*3	12	3	Drop (1,1), (3,1), (5,1), (6,1), (7,1), (6,2), (7,2), zero cnts. Drop (2,1), (3,2); sing.
State × %Owner Occupied	7*3	12	12	All levels present.
State × Rent/housing	7*5	24	14	Drop (1,4), (6,4), (3,*), (7,2), zero cnts. Drop (1,3), (6,3), (5,4); sing.
%Owner Occupied × %Black	3*3	4	4	All levels present.
%Owner Occupied × %Hispanic	3*3	4	2	Drop (3,1); zero cnts, (2,1); conv.
%Owner Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	7	Drop (1,1); zero cnts
Rent/housing × %Hispanic	3*5	8	4	Drop (1,1), (3,1), (4,1); zero cnts, (2,1); conv.
Three-Factor Effects		**192**	**16**	
State × %Owner × %Black	7*3*3	24	5	Coll. (2,2,2) & (2,3,2); conv. Kept: (2,2,1), (3,3,2), (3,2,2), (5,2,1) Drop rest; conv. heir. (5)
State × %Owner × %Hispanic	7*3*3	24	0	Dropped all conv. heir.
State × %Owner × Rent/housing	7*3*5	48	8	Kept: (1,2,1), (2,2,1), (2,2,3), (2,2,4), (7,2,1), (7,2,3), (7,2,4), (5,2,2). Drop rest conv. heir.
State × Rent/house × %Black	7*3*5	48	2	Kept: (1,1,2), (2,1,2). Drop rest conv. heir.
State × Rent/house × %Hispanic	7*3*5	48	1	Kept: (2,1,2) Drop rest conv. heir.
Total		**357**	**142**	

Exhibit D4.2 Covariates for 2001 NHSDA Person Weights (res.sdu.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**19**	**19**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**93**	**92**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	7*4	18	18	All levels present.
State × Age	7*5	24	24	All levels present.
State × Race(4 level)	7*4	18	18	Coll (1,3) & (1,4); conv.
State × Hispanicity	7*2	6	6	All levels present.
State × Gender	7*2	6	6	All levels present.
Three-Factor Effects		**148**	**136**	
Age × Race(3) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	5	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	7*5*3	48	48	All levels present.
State × Age × Hispanicity	7*5*2	24	20	Coll. (7, *, 1) with (6,*,1); conv.
State × Age × Gender	7*5*2	24	24	All levels present.
State × Race(3 level) × Hispanicity	7*3*2	12	5	Drop (1,3,1), (6,2,1), zero cnts.Drop (1,2,1), (6,3,1) Coll.(7,3,1) & (7,2,1), (5,3,1) & (5,2,1), (2,3,1) & (2,2,1); conv.
State × Race(3 level) × Gender	7*3*2	12	11	Coll. (6,2,1) with (6,3,1); conv.
State × Hispanicity × Gender	7*2*2	6	6	All levels present.
Total		**260**	**247**	

Exhibit D4.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**37**	**37**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**185**	**151**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner Occupied × %Black	3*3	4	4	All levels present.
%Owner Occupied × %Hispanic	3*3	4	2	Drop (3,1); zero cnts. (2,1); sing.
%Owner Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	7	Drop (1,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	4	Drop (1,1), (3,1) & (4,1); zero cnts. Drop (2,1); sing.
State × Quarter	7*4	18	18	All levels present.
State × Age	7*5	24	24	All levels present.
State × Race(4 level)	7*4	18	17	Coll. (1,3) & (1,4); conv.
State × Hispanicity	7*2	6	6	All levels present.
State × Gender	7*2	6	6	All levels present.
State × %Black	7*3	12	8	Drop (6,1) & (7,1); zero cnts. Coll. (6,2) & (7,2), (1,1) & (1,2); conv.
State × %Hispanic	7*3	12	3	Drop(1,1), (3,1), (5,1), (6,*) & (7,*); zero cnts. (2,1), (3,2); sing.
State × %Owner Occupied	7*3	12	9	Coll. (5,2) & (5,3), (7,2) & (7,3), (3,2) & (3,3); conv.
State × Rent/housing	7*5	24	14	Drop (6,4), (3,*), (7,2); zero cnts. Drop (1,3), (6,3), (5,4); sing.
Three-Factor Effects		**148**	**112**	
Age × Race(3) × Hispanicity	5*3*2	8	4	Drop (3,2,1); zero cnts. (4,2,1), (4,3,1); sing. (3,3,1); ref. zero
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	0	Drop all conv.
State × Age × Race(3 level)	7*5*3	48	33	Drop (1,4,2), (7,4,2), (2,4,3), (3,4,*) Coll. (7,3,2) & (7,3,3), (6,3,2) & (6,3,3); ref. zero. Coll. (1,1,2) & (1,1,3), (3,1,2) & (3,1,3), (3,2,2) & (3,2,3), (5,1,2) & (5,1,3), (7,2,2) & (7,2,3), (6,1,2) & (6,1,3), (7,4,2) & (7,4,3), (6,4,2) & (6,4,3), (6,2,2) & (6,2,3); conv.
State × Age × Hispanicity	7*5*2	24	21	Drop (7,4,1), (6,4,1); ref. zero Drop (2,3,1); conv.
State × Age × Gender	7*5*2	24	24	All levels present.
State × Race(3 level) × Hispanicity	7*3*2	12	3	Drop (1,*,1); ref. zero (6,2,1); zero cnts. Coll. (2,2,1) & (2,3,1), (6,2,1) & (6,3,1), (3,2,1) & (3,3,1) Drop (7,*,1), (5,*,1); conv.
State × Race(3 level) × Gender	7*3*2	12	10	Drop (6,*,1); conv.
State × Hispanicity × Gender	7*2*2	6	5	Drop (7,1,1); sing.
Total		**370**	**300**	

Exhibit D4.4 Covariates for 2001 NHSDA Person Weights (res.per.nr), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**37**	**36**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll. (1) & (2); conv.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**185**	**152**	
Age × Race(3)	5*3	8	7	Coll. (4,2) & (4,3); conv.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner Occupied × %Black	3*3	4	4	All levels present.
%Owner Occupied × %Hispanic	3*3	4	2	Drop (3,1); zero cnts. Drop (2,1); sing.
%Owner Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	7	Drop (1,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	3	Drop (1,*); zero cnts. sing. Drop (4,2)
State × Quarter	7*4	18	18	All levels present.
State × Age	7*5	24	24	All levels present.
State × Race(4 level)	7*4	18	17	Coll. (5,3) & (5,4); conv.
State × Hispanicity	7*2	6	6	All levels present.
State × Gender	7*2	6	6	All levels present.
State × %Black	7*3	12	9	Drop (7,1), (6,1); sing. Coll. (5,1) & (5,2); sing.
State × %Hispanicity	7*3	12	2	Drop (*,1); sing. Drop (6,2) & (7,2); sing. Drop (1,2), (3,2)
State × %Owner Occupied	7*3	12	2	All levels present.
State × Rent/housing	7*5	24	14	Drop (1,4), (3,*), (7,2), (6,4); zero cnts. Drop (1,3), (5,4), (6,3); sing.
Three-Factor Effects		**148**	**57**	
Age × Race(3) × Hispanicity	5*3*2	4	1	Keep (1,*,1) & (2,*,1). Drop rest conv. heir.
Age × Race(3) × Gender	5*3*2	8	4	Drop (3,*,1), (4,*,1); conv.
Age × Hispanicity × Gender	5*2*2	4	3	Drop (4,1,1); conv.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	7*5*3	48	7	Drop (*,4,*) Coll. (*,*,3) & (*,*,2), sing./conv. Coll. (6,*,*) & (7,*,*); sing. Coll. (1,*,*) & (3,*,*), (2,*,*) & (5,*,*); conv. Drop rest conv. heir.
State × Age × Hispanicity	7*5*2	24	9	Drop (*,4,1), sing. zero cnts. Drop (*,3,1) for all states except (2); conv. Drop (6,*,*), (7,*,*); conv.
State × Age × Gender	7*5*2	24	24	All levels present.
State × Race(3 level) × Hispanicity	7*3*2	12	0	Drop all levels conv. heir.
State × Race(3 level) × Gender	7*3*2	12	7	Coll. (*,2,1) & (*,3,1) for all states except (3); conv.
State × Hispanicity × Gender	7*2*2	6	1	Keep (1,1,1) & (3,1,1). Drop rest conv. heir.
Total		**370**	**245**	

Exhibit D4.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**19**	**19**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**93**	**90**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	7*4	18	18	All levels present.
State × Age	7*5	24	24	All levels present.
State × Race(4 level)	7*4	18	15	Coll. (7,3) & (7,4). Do the same for States (2) & (6).
State × Hispanicity	7*2	6	6	All levels present.
State × Gender	7*2	6	6	All levels present.
Three-Factor Effects		**148**	**71**	
Age × Race(3) × Hispanicity	5*3*2	8	3	Drop age (4) to zeros. Coll. (1,2,1) & (1,3,1); conv. Do the same for all levels of age.
Age × Race(3) × Gender	5*3*2	8	6	Drop (4,*,*); conv.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race(3 level) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	7*5*3	48	12	Drop (1,4,*). Coll. (1,1,2) & (1,1,3). Do the same for all States. Drop States (6) (7).
State × Age × Hispanicity	7*5*2	24	8	Drop (1,3,1) & (1,4,1). Do the same for all states. Drop (6,2,1) (7,2,1). Coll. (1,1,1) & (3,1,1) (6,1,1) & (7,1,1).
State × Age × Gender	7*5*2	24	24	All levels present.
State × Race(3 level) × Hispanicity	7*3*2	12	0	Drop all levels; conv/sing./zero cnts.
State × Race(3 level) × Gender	7*3*2	12	9	Coll. (1,2,1) (1,3,1). Do the same for states (6) & (7).
State × Hispanicity × Gender	7*2*2	6	4	Coll. (1,1,1) & (3,1,1), (6,1,1) & (7,1,1); conv.
Total		**260**	**180**	

Appendix D5

Model Group 5: South Atlantic

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Table D.5a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 5: South Atlantic)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	2.08%	2.94%	0.23%	1.45139	459	(1.00, 1.30)	(1.02, 1.30)
	2.60%	3.21%	0.22%	1.46003	207	(1.00, 4.40)	(1.00, 4.40)
						(1.00, 4.40)	(1.00, 2.96)
res.sdu.ps	2.60%	3.21%	0.22%	1.45994	328	(0.20, 1.10)	(0.20, 1.10)
	1.89%	3.15%	0.41%	1.51511	316	(0.20, 3.50)	(0.20, 3.50)
						(0.90, 3.50)	(0.90, 3.50)
sel.per.ps	2.93%	5.85%	1.38%	2.91380	458	(0.50, 3.00)	(0.50, 3.00)
	1.44%	2.70%	0.51%	2.88080	395	(0.50, 4.00)	(0.50, 4.00)
						(0.50, 4.00)	(0.50, 4.00)
res.per.nr	1.21%	2.16%	0.42%	2.96383	458	(1.00, 2.70)	(1.00, 2.70)
	1.59%	3.27%	0.62%	3.18506	339	(1.00, 5.00)	(1.00, 5.00)
						(1.00, 5.00)	(1.00, 3.24)
res.per.ps	1.72%	3.83%	0.82%	3.18506	328	(0.14, 2.20)	(0.14, 2.12)
	0.99%	2.49%	0.34%	3.18291	281	(0.14, 3.40)	(0.14, 3.40)
						(0.90, 3.40)	(0.90, 3.40)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

[3] Number of proposed covariates on top line, and number finalized after modeling.

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum / minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.5b Distribution of Weight Adjustment Factors and Weight Products (Model Group 5: South Atlantic)

	sel.sdu.des [1]	*res.sdu.nr* [1]		*res.sdu.ps* [1]		*sel.per.des* [1]		*sel.per.ps* [1]		*res.per.nr* [1]		*res.per.ps* [1]	
	1-6 [2]	**7** [3]	**1-7** [3]	**8** [4]	**1-8** [4]	**10** [5]	**1-10** [5]	**11** [5]	**1-11** [5]	**12** [6]	**1-12** [6]	**13** [6]	**1-13** [6]
Minimum	46	0.53	48	0.10	13	1.01	17	0.24	21	0.47	31	0.07	6
1%	48	1.00	53	0.27	41	1.01	62	0.53	59	1.00	67	0.16	53
5%	51	1.01	59	0.66	62	1.01	137	0.72	136	1.02	140	0.80	125
10%	58	1.03	74	0.80	76	1.01	214	0.80	216	1.05	232	0.91	235
25%	252	1.05	269	0.93	259	1.09	669	0.89	663	1.12	750	0.97	728
Median	616	1.08	660	1.06	722	1.25	1,236	0.99	1,232	1.23	1,480	1.01	1476
75%	969	1.11	1,034	1.21	1,089	6.04	3,626	1.10	3,564	1.38	4,101	1.05	4060
90%	1,262	1.16	1,350	1.38	1,428	10.76	8,650	1.25	8,618	1.60	11,492	1.14	11523
95%	1,373	1.21	1,473	1.51	1,617	12.35	11,483	1.37	12,021	1.80	16,377	1.20	16299
99%	1,503	1.46	1,880	1.99	2,332	16.01	19,404	1.94	18,847	2.58	26,867	1.89	26320
Maximum	4,552	9.02	6,396	4.67	5,468	29.39	59,241	6.24	39,706	5.08	58,466	5.37	77154
n	29,072	26,627	26,627	26,622	26,622	13,837	13,837	13,837	13,837	10,721	10,721	10,721	10,721
Max/Mean	7.05	-	9.11	-	7.29	-	19.70	-	13.24	-	15.11	-	19.94

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.
Note 2: Under GEM, nonresponse adjustment factors (weight components #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.
[2] Based on eligible dwelling units.
[3] Based on screener-complete dwelling units.
[4] Based on screener-complete dwelling units, occupants verified eligible.
[5] Based on selected persons.
[6] Based on questionnaire-complete persons.

Model Group 5 Overview

Dwelling Unit Nonresponse

All the one-factor effects were included in the final model for the South Atlantic States. All the proposed non-State two-factor effects remained intact in the model intact for the first and second quartiles of rent/housing value, which were combined due to singularity in the interaction with segment-level percentage of Hispanics. A zero sample led to the removal of effects corresponding to “MSA 1,000,000 or more” in Delaware and West Virginia, and “MSA less than 1,000,000” in the District of Columbia; singularities removed all but “Non-MSA, rural” in the District of Columbia. Group quarters at the State level combined “college dorm” with “other group quarters” in Delaware and was reduced by the removal of all effects for both Virginia and the “other group quarter” level for South Carolina. The lack of sample and singularities forced the removal of State segment characteristic “50-100% Hispanic” crosses in all States, and “10-50% Hispanic” in West Virginia as well. All State levels of the segment characteristic variable percentage of owner-occupied dwelling units, except “0-10%” in West Virginia (due to singularity) were kept in the model. Nearly half of the proposed factors for State-specific rent/housing value quintiles were excluded because of zero sample and exact linear combinations, excluding the effect specific to Maryland. All other State two-factor interactions remained intact.

Singularities, exact linear combinations, prior collapses, and low counts removed the vast majority of three-factor effects. A little better than half of the percent owner-occupied by percent segment “Black” effects were retained, but all other higher order interactions retained fewer than a quarter of the proposed levels.

Dwelling Unit Poststratification

The poststratification model at the dwelling unit level retained a set of variables much more like the proposed list than the nonresponse. All proposed one- and two-factor effects were fit into the final model.

A small number of compromises were required at the three-factor interaction level, mostly within West Virginia. The only effect compromised outside of those specific to West Virginia was South Carolina’s age by Hispanicity interaction, where the reference effect was redefined as “12-25” due to zero “12-17” sample. Within West Virginia the same interaction, due to insufficient sample, required combining “non-White” respondents for respondents in each age category. Similarly, a “non-White” category was constructed for the gender, race interaction. Race and Hispanicity interactions in West Virginia were removed completely.

(Selected) Person-Level Poststratification

The majority of initially proposed effects were successfully included in this model. All the proposed one-factor effects were included in the final model and most two-factor effects. Two-factor effects deviating from the initial list were all State specific except for the rent/housing, percent segment "Hispanic" quintile 1 by "50-100%" level, which was removed due to zero sample.

Within the District of Columbia, "American Indian/Alaska Native" and "Asian" were combined. Zero sample removed the "10-50%" and "50-100% Black" segment factors in West Virginia. Insufficient and zero sample led to the removal of "50-100% Hispanic" segment variables in Delaware, Maryland, and North and South Carolina. Virginia and Florida each retained a collapsed "10-100% Hispanic" level. No levels of this variable were retained in West Virginia. Also a West Virginia "0-50% owner-occupied" was created due to exact linear combinations. Around half of the State level rent/housing variables were removed due to zero sample or exact linear combinations.

Non-State three-factor effects were left largely intact, except for occasional collapsing of "non-White" respondents into a single category. This occurred for race by Hispanicity by gender, and for the "12-17, 26-34, and 35-49" age categories in the age, race, Hispanicity interaction.

A similar strategy was employed for three-factor effects involving State. Age by race, race by Hispanicity, and race by gender were all simplified through creation of a "non-White" category for effects where the sample sizes were insufficient. Additional State-related three-factor effects were removed due to singularities, and a zero sample in order to obtain a convergent model with the desired adjustment factor characteristics.

(Respondent) Person-Level Nonresponse

Main effects were left as proposed initially, and all non-State two-factor effects except for the first quintile of rent/housing by "50-100% Hispanic" and the fourth quintile of rent/housing by "10-50% Hispanic." Virginia and West Virginia each combined "American Indian/Alaska Native" and "Asian," but other State, race interactions were left intact. West Virginia also removed the "50-100% Black" effect due to singularity. State segment percent "Hispanic" effects in the District of Columbia, Virginia, and Florida were combined to produce State-specific "10-100%" levels. Of the remaining States, all but Maryland removed the "50-100% Hispanic" effect. West Virginia did not support the ">10% owner-occupied" effect due to zero sample. More than half of the State-specific rent/housing interaction effects were removed due to either zero sample or exact linear combinations.

All levels of the three-factor interactions age by race by gender, age by Hispanicity by gender, and State by age by gender were kept. Race by Hispanicity by gender was simplified to "White" and "non-White." No effects from the State by Hispanicity by gender interaction were retained due to nonconvergence. For each State in the State, race, gender interaction, race was collapsed to “White” and “non-White.” The same was done for Maryland, Virginia, and Florida in the State, race, Hispanicity interaction, but zero sample, singularities, and convergence problems eliminated the “Other” race category in the District of Columbia, and all effects in North and South Carolina and West Virginia. State by age by race used the “White” and “non-White” race collapsing for each age category except for Delaware’s “35-49” “Other” category and Virginia’s “26-34” “Other” category which, were removed due to singularity. It was further reduced by removing nearly all West Virginia specific effects. Many of the State age by Hispanicity effects were removed, in particular all effects for North and South Carolina and Virginia.

(Respondent) Person-Level Poststratification

No collapsing was required for main effects. “American Indian/Alaska Native” and “Asian” were combined in the State race for West Virginia. No other compromise was required for the two-factor effects.

Non-State three-factor effects were left intact except for the age by race by Hispanicity interaction, which was reduced by combining race into “White” and “non-White” for the “26-34” age category and collapsing the “35-49” category with the reference level of “50+.”

Moving on to the State three-factor interactions, race was again simplified into “White” and “non-White” for the State by age by race interaction within North and South Carolina and Virginia. All levels were dropped for West Virginia except for age “12-17,” which remained with the combined race category described above. Delaware’s interaction for this effect also was reduced by removal of its “35-49” category due to an exact linear combination. The combined race category also was used for State by race by gender, and the State by race by Hispanicity interactions. State by Hispanicity by gender was present at all proposed levels except for the West Virginia specific effect, which was removed due to singularity.

Exhibit D5.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**27**	**27**	
Intercept	1	1	1	All levels present
State	9	8	8	All levels present
Quarter	4	3	3	All levels present
Population Density	4	3	3	All levels present
Group Quarter	3	2	2	All levels present
%Black	3	2	2	All levels present
%Hispanic	3	2	2	All levels present
%Owner Occupied	3	2	2	All levels present
Rent/housing Value	5	4	4	All levels present
Two-Factor Effects		**176**	**144**	
%Owner Occupied × %Black	3*3	4	4	All levels present
%Owner Occupied × %Hisp	3*3	4	4	All levels present
%Owner Occupied × Rent/housing	3*5	8	8	All levels present
Rent/housing × %Black	5*3	8	8	All levels present
Rent/housing × %Hispanic	3*5	8	7	Drop (1,1) to sing.
State × Quarter	9*4	24	24	All levels present
State × Pop. Density	9*4	24	19	Drop (1,1), (2,2), & (8,1); zero cnts. Drop (2,1) & (2,3); sing.
State × Group Quarter	9*3	16	10	Coll. (1,1) & (1,2). Drop (7,1); conv. Drop (6,2) & (8,*); zero cnts. Drop (7,2); sing.
State × %Black	9*3	16	16	All levels present
State × %Hispanic	9*3	16	8	Drop (1,1), (4,1), (5,1), (6,1), (8,*); zero cnts. Drop (7,1) & (9,1); sing.
State × %Owner Occupied	9*3	16	15	Drop (8,3); sing.
State × Rent/housing	9*5	32	15	Drop (1,1), (2,1), (2,2), (2,3), (5,3), (5,4), (6,3), (6,4), (8,3), & (8,4); zero cnts. Drop (1,4), (5,2), (6,2), (7,3), (7,4), (8,2) & (9,4); sing.
Three-Factor Effects		**256**	**42**	
State × %Owner Occupied× %Black	9*3*3	32	18	Coll. (1,2,1) & (1,2,2), (1,3,1) & (1,3,2), (2,3,1) & (2,3,2), (6,3,1) & (6,3,2), (7,2,1) & (7,2,2). Drop (5,3,*); conv. Drop (4,3,2), (7,3,*), & (8,2,2) & (8,3,1); sing. Drop (8,2,1) & (8,3,2); zero cnts.
State × %Owner Occupied × %Hispanic	9*3*3	32	8	Coll. (5,2,2) & (5,3,2), (9,3,1) & (9,*,2). Drop (1,*,1), (4,*,1), (5,*,1), (6,*,1), (7,3,1), & (8,*,*); zero cnts. Drop (2,*,1), (6,2,2), (7,2,*), (7,3,2) & (9,2,1); sing. Drop (6,3,2); conv.
State × %Owner Occupied × Rent/housing	9*3*5	64	5	Coll. (9,*,2), & (9,*,3); conv. Drop (5,2,1), (5,3,1), (6,*,2), & (6,3,1); conv. Drop (1,*,2), (1,*,4), (2,2,4), (4,2,1), (5,*,2), (6,3,2), (7,*,3), (7,*,4), (8,*,1), (9,3,1) & (9,*,4); sing. Drop (1,*,1), (1,3,1), (2,*,1), (2,*,2), (2,3,*), (4,3,1), (4,*,2), (4,*,3), (5,*,3), (5,*,4), (6,*,3), (6,*,4), (7,*,1), (7,*,2), (8,*,2), (8,*,3), (8,*,4) & (9,2,1); zero cnts.
State × Rent/house × %Black	9*3*5	64	11	Drop (6,1,2) & (9,3,*); conv. Drop (1,2,2), (4,3,2), (5,2,*), (6,2,*), (7,1,2), (7,3,*), (7,4,*), (8,1,*) & (9,1,2); sing. Drop (1,1,*), (1,3,1) (1,4,*), (2,*,2), (2,1,1), (2,2,1), (2,3,1), (4,1,*), (4,2,*), (4,3,1), (5,3,*), (5,4,*), (6,3,*), (6,4,*), (7,1,1), (7,2,*), (8,2,*), (8,3,*), (8,4,*), (9,1,1) & (9,4,*); zero cnts. 0 - Drop (9,3,2); conv. Drop (1,4,2), (5,1,2), (5,2,2), (6,2,2), (7,3,2) & (7,4,2); sing. Drop (1,1,*), (1,2,*), (1,3,*), (1,4,1), (2,*,*), (4,*,*), (5,1,1), (5,2,1), (5,3,*), (5,4,*), (6,1,1), (6,2,1), (6,3,*), (6,4,*), (7,1,*), (7,2,*), (7,3,1), (7,4,1) & (8,*,*); zero cnts.
Total		**459**	**207**	

Exhibit D5.2 Covariates for 2001 NHSDA Person Weights (res.sdu.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**21**	**21**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**117**	**117**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	9*4	24	24	All levels present.
State × Age	9*5	32	32	All levels present.
State × Race(4 level)	9*4	24	24	All levels present.
State × Hispanicity	9*2	8	8	All levels present.
State × Gender	9*2	8	8	All levels present.
Three-Factor Effects		**190**	**178**	
Age × Race(3) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	9*5*3	64	60	Coll. (8,1,2) & (8,1,3), do the same for all levels of Age within that State; conv.
State × Age × Hispanicity	9*5*2	32	27	Drop (8,*,1); conv. Drop (6,2,1), ref zero.
State × Age × Gender	9*5*2	32	32	All levels present.
State × Race(3 level) × Hispanicity	9*3*2	16	14	Drop (8,2,1); conv. Drop (8,3,1); zero cnts.
State × Race(3 level) × Gender	9*3*2	16	15	Coll. (8,2,1) & (8,3,1)
State × Hispanicity × Gender	9*2*2	8	8	All levels present.
Total		**328**	**316**	

Exhibit D5.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**39**	**39**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**229**	**199**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	7	Drop (1,1); zero cnts.
State × Quarter	9*4	24	24	All levels present.
State × Age	9*5	32	32	All levels present.
State × Race(4 level)	9*4	24	23	Coll. (2,3) & (2,4)
State × Hispanicity	9*2	8	8	All levels present.
State × Gender	9*2	8	8	All levels present.
State × %Black	9*3	16	15	Coll. (8,1) & (8,2); zero cnts.
State × %Hispanic	9*3	16	8	Drop (1,1), (4,1), (5,1), (6,1), (8,*); zero cnts. Coll. (7,1) & (7,2), (9,1) & (9,2), sing.
State × %Owner Occupied	9*3	16	15	Coll. (8,2) & (8,3), sing.
State × Rent/housing	9*5	32	14	Drop (1,4), (5,2), (6,2), (7,3), (7,4), (8,2), (9,4), sing. Drop (1,1), (2,1), (2,2), (2,3), (5,3), (5,4), (6,3), (6,4), (8,1), (8,3), (8,4); zero cnts.
Three-Factor Effects		**190**	**157**	
Age × Race(3) × Hispanicity	5*3*2	8	5	Coll. (1,2,1) & (1,3,1), (3,2,1) & (3,3,1); conv. Coll. (4,2,1) & (4,3,1), sing.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	9*5*3	64	54	Coll (6,1,2) & (6,1,3); conv. Do the same for all levels of Age in State (6); Coll. (7,3,2) & (7,3,3), (8,1,2) & (8,1,3); conv. Drop (8,2,2), (8,3,3); zero cnts. Drop (8,4,1), ref conv. Drop (8,4,3), sing.
State × Age × Hispanicity	9*5*2	32	26	Drop (1,4,1), sing. Drop (6,*,1), ref conv. Drop (8,4,1); zero cnts.
State × Age × Gender	9*5*2	32	32	All levels present.
State × Race(3 level) × Hispanicity	9*3*2	16	6	Coll. (2,2,1) & (2,3,1); zero cnts. Coll. (4,2,1) & (4,3,1; conv. Drop (5,*,1), (6,2,1), (7,*,1); conv. Drop (6,3,1), (8,*;1); zero cnts. Drop (1,3,1), sing.
State × Race(3 level) × Gender	9*3*2	16	15	Coll. (8,2,1) & (8,3,1); conv.
State × Hispanicity × Gender	9*2*2	8	6	Drop (6,1,1); conv. Drop (8,1,1), sing.
Total		**458**	**395**	

Exhibit D5.4 Covariates for 2001 NHSDA Person Weights (res.per.nr), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**39**	**39**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**229**	**197**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	6	Drop (1,1); zero cnts. Drop (4,2) to Coll with ref.
State × Quarter	9*4	24	24	All levels present.
State × Age	9*5	32	32	All levels present.
State × Race(4 level)	9*4	24	22	Coll (7,3) & (7,4), (8,3) & (8,4); conv.
State × Hispanicity	9*2	8	8	All levels present.
State × Gender	9*2	8	8	All levels present.
State × %Black	9*3	16	15	Drop (8,1), sing.
State × %Hispanic	9*3	16	7	Coll (2,1) & (2,2), (9,1) & (9,2), Coll (7,1) & (7,2), sing. Drop (1,1), (3,1), (5,1), (6,1), & (8,*,); zero cnts.
State × %Owner Occupied	9*3	16	15	Drop (8,3); zero cnts.
State × Rent/housing	9*5	32	15	Drop (1,1), (2,1), (2,2), (2,3), (5,3), (5,4), (6,3), (6,4), (8,3), & (8,4); zero cnts. Drop (1,4), (5,2), (6,2), (7,3), (7,4), (8,2), & (9,4), sing.
Three-Factor Effects		**190**	**103**	
Age × Race(3) × Hispanicity	5*3*2	8	3	Coll (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1), drop (4,2,1); conv. Drop (4,3,1), sing.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll (2,1,1) & (3,1,1)
State × Age × Race(3 level)	9*5*3	64	28	Coll (1,1,2) & (1,1,3). Do the same for each State * Age combination, except for State (8); conv. Drop (8,3,*), & (8,4,2); zero cnts. Drop (1,4,3), (7,3,3), (8,4,3), sing. Drop (8,1,*), (8,2,*); conv.
State × Age × Hispanicity	9*5*2	32	14	Drop (1,4,1), (3,4,1), (8,2,1), sing. Drop (8,3,1), (8,4,1); zero cnts. Drop (5,*,1), (6,*,1), (7,*,1), (8,1,1), conv.
State × Age × Gender	9*5*2	32	32	All levels present.
State × Race(3 level) × Hispanicity	9*3*2	16	5	Coll (1,2,1) & (1,3,1). Do the same for States (3), (7), & (9); conv. Drop (2,3,1), (6,3,1), (8,*,1); zero cnts. Drop (6,2,1), sing. Drop (5,*,1); conv.
State × Race(3 level) × Gender	9*3*2	16	8	Coll (1,2,1) & (1,3,1). Do the same for all other States; conv.
State × Hispanicity × Gender	9*2*2	8	0	Drop (8,1,1), sing. Drop remainder; conv.
Total		**458**	**339**	

Exhibit D5.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**21**	**21**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**117**	**116**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	9*4	24	24	All levels present.
State × Age	9*5	32	32	All levels present.
State × Race(4 level)	9*4	24	23	Coll (8,3) & (8,4); conv.
State × Hispanicity	9*2	8	8	All levels present.
State × Gender	9*2	8	8	All levels present.
Three-Factor Effects		**190**	**144**	
Age × Race(3) × Hispanicity	5*3*2	8	5	Coll (3,2,1) & (3,3,1); conv. Drop (4,*,1), ref zero
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race(3 level)*Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	9*5*3	64	44	Coll (5,1,2) & (5,1,3); conv. Do the same for all other levels of State × Age; repeat for States (6) and (7), except for (6,4,3), drop; sing. Coll (8,1,2) & (8,1,3); conv. Drop (1,4,3); sing. Drop (8,3,*), (8,4,2); zero cnts. Drop (8,2,*), (8,4,3); conv.
State × Age × Hispanicity	9*5*2	32	22	Drop (1,4,1), (4,4,1), (6,4,1), sing. Drop (6,3,1), (8,3,1), (8,4,1); zero cnts. Drop (6,1,1), (6,1,2), (7,4,1), (8,2,1); conv.
State × Age × Gender	9*5*2	32	32	All levels present.
State × Race(3 level) × Hispanicity	9*3*2	16	5	Coll (1,2,1) & (1,3,1). Do the same for States (2), (4), (7), & (9); drop (5,2,1), (8,*,1); zero cnts. Drop (5,3,1), (6,*,1); conv.
State × Race(3 level) × Gender	9*3*2	16	15	Coll (8,2,1) & (8,3,1); conv.
State × Hispanicity × Gender	9*2*2	8	7	Drop (8,1,1); sing.
Total		**328**	**247**	

Appendix D6

Model Group 6: East South Central

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Table D.6a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 6: East South Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	2.67%	2.75%	0.05%	1.52518	204	(1.00, 1.10)	(1.01, 1.10)
	0.00%	0.00%	0.00%	1.49276	94	(1.00, 1.60)	(1.00, 1.42)
						(1.00, 1.60)	(1.00, 1.54)
res.sdu.ps	0.00%	0.00%	0.00%	1.49276	158	(0.20, 1.10)	(0.32, 1.10)
	2.44%	3.90%	0.43%	1.20682	138	(0.20, 3.10)	(0.20, 3.10)
						(0.90, 3.10)	(1.02, 3.04)
sel.per.ps	4.41%	5.60%	0.80%	2.24480	238	(0.25, 3.00)	(0.43, 2.98)
	1.93%	5.02%	1.57%	2.38846	165	(0.25, 4.50)	(0.25, 3.33)
						(0.70, 4.50)	(0.70, 4.50)
res.per.nr	1.67%	4.47%	1.59%	2.50577	238	(1.00, 3.00)	(1.00, 3.00)
	1.75%	4.28%	1.20%	2.57701	157	(1.00, 3.50)	(1.00, 3.50)
						(1.00, 3.50)	(1.00, 1.86)
res.per.ps	1.75%	4.34%	1.19%	2.57701	158	(0.20, 1.10)	(0.20, 1.10)
	1.03%	2.02%	0.46%	2.53809	95	(0.20, 4.80)	(0.20, 4.80)
						(0.90, 4.80)	(0.92, 4.80)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

[3] Number of proposed covariates on top line, and number finalized after modeling.

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum / minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.6b Distribution of Weight Adjustment Factors and Weight Products (Model Group 6: East South Central)

	sel.sdu.des [1]	*res.sdu.nr* [1]		*res.sdu.ps* [1]		*sel.per.des* [1]		*sel.per.ps* [1]		*res.per.nr* [1]		*res.per.ps* [1]	
	1-6[2]	**7**[3]	**1-7**[3]	**8**[4]	**1-8**[4]	**10**[5]	**1-10**[5]	**11**[5]	**1-11**[5]	**12**[6]	**1-12**[6]	**13**[6]	**1-13**[6]
Minimum	32	0.91	182	0.20	65	1.01	72	0.23	21	0.53	30	0.07	6
1%	318	0.96	324	0.20	164	1.01	189	0.26	75	1.00	75	0.20	62
5%	326	1.01	341	0.57	338	1.01	389	0.62	344	1.01	367	0.85	348
10%	401	1.02	421	0.83	439	1.01	583	0.73	549	1.04	614	0.91	604
25%	587	1.04	614	0.95	618	1.08	874	0.87	855	1.11	999	0.97	1,009
Median	697	1.06	745	1.05	768	1.37	1,356	0.98	1,417	1.22	1,655	1.01	1,664
75%	800	1.08	902	1.19	937	5.90	4,651	1.11	4,321	1.37	5,225	1.05	5,005
90%	958	1.11	1,016	1.40	1,138	11.51	7,429	1.25	7,677	1.58	10,119	1.09	10,170
95%	984	1.15	1,058	1.60	1,294	13.60	10,825	1.40	10,367	1.76	13,821	1.16	14,253
99%	1,025	1.20	1,177	2.37	1,760	15.75	13,970	2.42	14,303	2.29	20,755	1.81	21,326
Maximum	5,829	7.01	6,135	3.10	9,078	20.41	32,310	11.88	55,319	3.50	61,120	7.35	47,260
n	8,933	8,393	8,393	8,393	8,393	4,559	4,559	4,559	4,559	3,602	3,602	3,602	3,602
Max/Mean	7.93	-	7.85	-	11.32	-	10.67	-	18.34	-	16.00	-	12.40

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.
Note 2: Under GEM, nonresponse adjustment factors (weight components #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.
[2] Based on eligible dwelling units.
[3] Based on screener-complete dwelling units.
[4] Based on screener-complete dwelling units, occupants verified eligible.
[5] Based on selected persons.
[6] Based on questionnaire-complete persons.

Model Group 6 Overview

Dwelling Unit Nonresponse

The first level of percent “Hispanic” had to be removed from the model due to zero sample. All other main effects were kept. The removal of the percent “Hispanic” variable from the main effects carried over into the two- and three-factor effects, and in fact, there were so few “Hispanic” respondents in this region that most of the segment-level percent “Hispanic” effects at the higher order had too few respondents to be kept in the model. Only “>10%,” “10-50% segment Hispanic” interactions with percent owner-occupied dwelling units and the first quintile of rent/housing by “10-50% segment Hispanic” were retained. Segment percent “Black” at the State level was reduced by removing Mississippi’s first and fourth quintiles. State segment owner-occupied remained as proposed except for the removal of Mississippi “50-100% owner-occupied.” Segment percentages owner-occupied by “Black” were reduced by singularity of the “>10% owner-occupied” by “10-50% Black.”

Few three-factor effects were kept in the model, largely due to hierarchical collapsing and insufficient sample sizes leading to singularities and zero sample. Alabama retained levels of segment percent owner-occupied by rent/housing value and segment percentage “Black” by rent/housing value. Segment percent owner-occupied level “10-50%” by segment percent “Black” was kept for Kentucky and Mississippi.

Dwelling Unit Poststratification

For the South Central States, all but three proposed one-factor and two-factor effects were kept in the model. “American Indian/Alaska Native” and “Asian” race categories were combined for the State by race interaction for Alabama and Kentucky, and race was collapsed to “White” and “non-White” for the race by Hispanicity interaction.

Based on the hierarchy of effects, interactions involving race and Hispanicity were redefined to maintain consistency. In addition, “18-25” was combined with “26-34” for the age, race, Hispanicity interaction. Even with the collapsed category of race, Kentucky still did not support a race by Hispanicity cross and was dropped. Race was collapsed to “White” and “non-White” for all levels of the State, age, race interaction, and for Kentucky in the State, race, gender interaction. The age category “12-26” was created for Mississippi and “18-34” in Alabama due to convergence and in the State, age, Hispanicity interaction. All other three-factor effects were controlled in full.

(Selected) Person-Level Poststratification

The first level of Hispanicity was removed due to singularity and the "college dorm" and "other group quarters" levels were combined. All other main effects were kept.

Carrying the effect of dropping "50-100% segment Hispanic" from the main effects, interactions with it among two- and three-factor effects were correspondingly removed. Although all two-factor crosses of percent "Hispanic" were present in the percent owner-occupied crosses, none of the rent/housing crosses were retained. The small sample present for the "10-50%" level of this variable made inclusion of three-factor interactions with it difficult as well, and many of them also were removed. Other non-State two-factor effects that were altered include age by race being collapsed to age by "White" and " non-White" for age categories spanning ranges "over 25," and the ">10% owner-occupied" by "50-100% segment Black" cross. State-level race was reduced to "White, Black, and Other" for Kentucky. Alabama and Mississippi combined Hispanicity effects. Mississippi combined percent segment owner-occupied levels to produce a "0-50%" range and had the first and fourth quintiles of rent/housing value removed due to singularity.

Among three-factor effects, no race by Hispanicity by gender or State by race by Hispanicity effects were kept. Age "34-49" was dropped into the reference for the age, Hispanicity, by gender interaction. Age, race, by gender was adjusted to feature the simplified "White" and "non-White" race categories for age ranges "26-34" and "34-49." Age by race by Hispanicity was greatly reduced, so that the only effect retained was a "White" and "non-White" combined race for respondents aged "12-17." State by age by Hispanicity also was reduced, so that the only effects retained were Kentucky Hispanics aged "12-17" and "18-25." Race was redefined into "White" and "non-White" categories for the State, race, and gender interaction. Alabama was the only State that supported a Hispanicity by gender interaction. Lastly, after dropping all levels of race for "26-34" and "35-49" in Alabama, all remaining State by age combinations combined "Black" and "Other" in the State by age by race interaction.

(Respondent) Person-Level Nonresponse

At the main effects level, race was reduced to three levels by combining "Asian" and "Native American/Alaska Native." Also, main effects group quarters and segment percent Hispanic were reduced, the former by combining the "other" and "college dorm" levels, the latter by removing the "50-100%" level due to zero sample.

Among two-factor effects, the age by race interaction collapsed the race categories "Black" and "Other" for ages "26-34" and "35-49." Similarly, "Black" and "Other" were combined for the race by Hispanicity and State by race interactions. Due to zero sample in the reference level, "<10% owner-occupied dwelling units in segment" by "10-50% segment Black" was dropped. Conserving the hierarchy of effects removed the "50-100% segment Hispanic" level of interactions with segment percent

“Hispanic.” This affected the percent owner-occupied by percent “Hispanic” and led to the removal of the “10-50%” by “10-50%” level to correct a zero sample reference level as well. State by percent “Hispanic” and rent/housing by percent “Hispanic,” due to small sample, were removed entirely. Alabama and Mississippi “Hispanic” samples were pooled for the State by Hispanicity interaction. For each State in the State by percent segment “Hispanic” interaction, percent “Hispanic” levels “10-50%” and “50-100%” were combined. Likewise, for each State in the State by percent owner-occupied levels, “<10%” and “10-50%” were combined. The State interaction with rent/housing was reduced by collapsing Alabama by quintile 1 and Mississippi quintile 4 with the reference.

Most three-factor interactions were removed. Of those that remained in the model, most were in the State by race by age interaction and State by age by gender (all levels were kept for this effect). That effect was reduced by combining “Black” and “Other” race categories for each State’s age “26-34” and “35-49” categories. State by race by gender also was kept, but “Black” and “Other” were collapsed in Kentucky. Lastly, the age by race by gender effect collapsed “Black” and “Other” for each age category except “12-17.”

(Respondent) Person-Level Poststratification

All proposed main effects were kept for this model. The two-factor effect age by race was reduced by combining “Black” and “Other” for the “35-49” age category. “Black” and “Other” also were combined for race by Hispanicity. State-level race was reduced to “White” and “non-White.” Age by Hispanicity had “35-49” by Hispanicity collapsed with the reference. State by Hispanicity was dropped for all States except Alabama.

Age by race by gender combined “Black” and “Other” for each age category, and combined ages to create a “35+” level by dropping “35-49” into the reference. State by race by gender also was reduced by combining “Black” and “Other.” Each State in the State by race interaction combined “Black” and “Other” due to the hierarchy of effects. All initially proposed levels of State by age by gender were retained. Of the three-factor effects involving Hispanicity, only age by race by Hispanicity and race by Hispanicity by gender retained any levels in the model. Age by race by Hispanicity kept collapsed “12-17” and “18-25” “Black plus Other” effects, and race by Hispanicity by gender kept “Black plus Other.”

Exhibit D6.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**21**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	1	Drop (1); sing.
%Owner Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
Two-Factor Effects		**86**	**61**	
State × Quarter	4*4	9	9	All levels present.
State × Pop. Density	4*4	9	6	Drop (*,1); zero counts/sing.
State × Group Quarter	4*3	6	3	Drop (2,1) & (3,*); zero cnts/sing.
State × %Black	4*3	6	6	All levels present.
State × %Hispanic	4*3	6	0	Drop all; zero cnts/sing.
State × %Owner Occupied	4*3	6	5	Drop (3,1); sing.
State × Rent/housing	4*5	12	10	Drop (3,1) & (3,4); zero cnts/ sing.
%Owner × %Black	3*3	4	3	Drop (3,2); zero cnts/sing.
%Owner × %Hispanic	3*3	4	2	Drop (*,1); zero cnts/sing.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	1	Keep (2,2). Drop remainder; zero cnts/sing./ conv.
Three-Factor Effects		**96**	**12**	
State × %Owner × %Black	4*3*3	12	4	Keep (2,2,*) & (3,2,*). Drop remainder; zero cnts./sing. / conv.
State × %Owner × %Hispanic	4*3*3	12	0	Drop all zero cnts, sing.
State × %Owner × Rent/housing	4*3*5	24	3	Keep (1,2,1), (1,2,2), & (2,2,1); Drop remainder; zero cnts, sing., conv.
State × Rent/house × % Black	4*3*5	24	5	Keep (1,1,*), (1,2,*), & (1,3,2). Drop remainder; zero cnts, sing. conv.
State × Rent/housing × %Hispanic .	4*3*5	24	0	Drop all; zero cnts, sing., conv.
Total		**208**	**94**	

Exhibit D6.2 Covariates for 2001 NHSDA Person Weights(res.sdu.ps), Model Group 6: East South Central

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**16**	**16**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**57**	**54**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3 level) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race(4 level)	4*4	9	7	Coll. (1,3) & (1,4), (2,3) & (2,4); conv.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
Three-Factor Effects		**85**	**68**	
Age × Race(3) × Hispanicity	5*3*2	8	3	Coll. (1,2,1) & (1,3,1), (4,2,1) & (4,3,1); hier. Coll. (2,*,1), & (3,*,1); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1) hier.
State × Age × Race(3 level)	4*5*3	24	20	Coll. (3,2,1) & (3,3,1) Do the same for all levels of Age within that State.
State × Age × Hispanicity	4*5*2	12	10	Coll. (1,2,1) & (1,3,1), (3,1,1) & (3,2,1).
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race(3 level) × Hispanicity	4*3*2	6	2	Coll. (1,2,1) & (1,3,1); hier. Coll. (2,2,1) & (2,3,1); zero cnts. Drop (3,*,1); conv.
State × Race(3 level) × Gender	4*3*2	6	5	Coll. (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	4*2*2	3	3	All levels present.
Total		**158**	**138**	

Exhibit D6.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**34**	**32**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll (1) & (2); conv.
%Black	3	2	2	All levels present.
%Hispanic	3	2	1	Drop (1); sing.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**119**	**96**	
Age × Race(3)	5*3	8	6	6 - Coll (3,2) & (3,3), (4,2) & (4,3); conv.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	3	Drop (3,1); sing.
%Owner × %Hispanic	3*3	4	2	Drop (2,1) & (3,1); heir.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	0	Drop (*,1); heir. Drop (4,2); sing. Drop (1,2) & (3,2); zero cnts. Drop (2,2); conv.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race(4 level)	4*4	9	9	Coll (2,3) & (2,4); conv.
State × Hispanicity	4*2	3	3	Coll (1,1) & (3,1); conv.
State × Gender	4*2	3	3	All levels present.
State × %Black	4*3	6	6	All levels present.
State × %Hispanic	4*3		6	Drop (1,1); heir. Do the same for all states. Drop (3,2); zero cnts. Drop (2, 2); sing.
State × %Owner Occupied	4*3	6	5	Drop (3,2); sing.
State × Rent/housing	4*5	12	10	Drop (3,1),& (3,4); sing.
Three-Factor Effects		**85**	**37**	
Age × Race(3) × Hispanicity	5*3*2	8	1	Drop (3,*,1) & (4,*,1); zero ref. Drop (2,*,1); sing. Coll. (1,1,1) & (1,2,1); zero cnts.
Age × Race(3) × Gender	5*3*2	8	6	Coll (3,2,1) & (3,3,1), (4,2,1) & (4,3,1); conv.
Age × Hispanicity × Gender	5*2*2	4	3	Drop (4,1,1); conv.
Race3 × Hispanicity × Gender	3*2*2	2	0	Drop all; conv.
State × Age × Race(3 level)	4*5*3	24	9	Drop (1,3,*) & (1,4,*). Coll (1,2,2) & (1,2,3); conv. Do the same for all states.
State × Age × Hispanicity	4*5*2	12	2	Drop (1,*,1), (3,*,1), (2,3,1) & (2,4,1); conv and zero cnts.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race(3 level) × Hispanicity	4*3*2	6	0	Drop all; conv, sing, or zero cnts.
State × Race(3 level) × Gender	4*3*2	6	3	Coll (1,2,1) & (1,3,1); conv. Do the same for all states.
State × Hispanicity × Gender	4*2*2	3	1	Drop (2,1,1) & (3,1,1); conv.
Total		**238**	**165**	

Exhibit D6.4 Covariates for 2001 NHSDA Person Weights (res.per.nr), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**34**	**31**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	2	Coll. (3) & (4); conv.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll (1) & (2); conv.
%Black	3	2	2	All levels present.
%Hispanic	3	2	1	Drop (1); zero cnts.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5		4	4All levels present.
Two-Factor Effects		**119**	**86**	
Age × Race(3)	5*3	8	6	Coll (3,2) & (3,3), (4,2) & (4,3); conv.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	1	Coll (2,1) & (3,1); conv.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	3	Drop (3,2); ref zero.
%Owner × %Hispanic	3*3	4	1	Drop (*,1); zero cnts. Drop (2,2); ref zero.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	0	Drop all; conv.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race(4 level)	4*4	9	6	Coll (*,3) & (*,4); conv.
State × Hispanicity	4*2	3	2	Coll (1,1) & (3,1); conv.
State × Gender	4*2	3	3	All levels present.
State × %Black	4*3	6	3	Coll (*,1) & (*,2); conv.
State × %Hispanic	4*3	6	0	Drop all; conv.
State × %Owner Occupied	4*3	6	3	Coll (*,2) & (*,3); conv.
State × Rent/housing	4*5	12	10	Drop (2,1), (3,4); ref. zero.
Three-Factor Effects		**85**	**40**	
Age × Race(3) × Hispanicity	5*3*2	8	0	Drop all; conv./sing./zero cnts.
Age × Race(3) × Gender	5*3*2	8	5	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1), (4,2,1) & (4,3,1); conv.
Age × Hispanicity × Gender	5*2*2	4	0	Drop all; conv./sing./zero cnts.
Race(3) × Hispanicity × Gender	3*2*2	2	0	Drop all; conv./sing./zero cnts.
State × Age × Race(3 level)	4*5*3	24	18	Coll. (*,3,2) & (*,3,3), (*,4,2) & (*,4,3); conv.
State × Age × Hispanicity	4*5*2	12	0	Drop all; conv./sing./zero cnts.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race(3 level) × Hispanicity	4*3*2	6	0	Drop all; conv./sing./zero cnts.
State × Race(3 level) × Gender	4*3*2	6	5	Coll. (2,2,1) & (2,3,1); conv.
State × Hispanicity × Gender	4*2*2	3	0	Drop all; conv./sing./zero cnts.
Total		**238**	**157**	

Exhibit D6.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**16**	**16**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**57**	**46**	
Age × Race(3 level)	5*3	8	7	Coll. (4,2) & (4,3); conv.
Age × Hispanicity	5*2	4	3	Drop (4,1); ref. zero
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race(4 level)	4*4	9	3	Coll (*,2) & (*,3), (*,4); conv.
State × Hispanicity	4*2	3	1	Drop (2,1), (3,1); conv.
State × Gender	4*2	3	3	All levels present.
Three-Factor Effects		**85**	**33**	
Age × Race(3) × Hispanicity	5*3*2	8	2	Kept (1,3,1), (2,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	3	Coll (1,2,1) & (1,3,1), (2,2,1), (2,3,1), (3,2,1) & (3,3,1) conv. Drop (4,2,1), 4,3,1); conv.
Age × Hispanicity × Gender	5*2*2	4	0	Drop all; conv./sing./zero cnts.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	4*5*3	24	12	Coll (*,*,2) & (*,*,3); conv.
State × Age × Hispanicity	4*5*2	12	0	Drop all; conv./sing./zero cnts.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race(3 level) × Hispanicity	4*3*2	6	0	Drop all; conv./sing./zero cnts.
State × Race(3 level) × Gender	4*3*2	6	3	Coll (*,2,1) & (*,3,1); conv.
State × Hispanicity × Gender	4*2*2	3	0	Drop all; conv./sing./zero cnts.
Total		**158**	**95**	

Appendix D7

Model Group 7: West South Central

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Table D.7a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 7: West South Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	3.12%	2.48%	0.01%	1.1067	208	(1.00, 1,30)	(1.03, 1.15)
	2.60%	2.65%	0.02%	1.1124	105	(1.00, 1.40)	(1.00, 1.40)
						(1.00, 1.40)	(1.00, 1.34)
res.sdu.ps	2.60%	2.65%	0.02%	1.1124	158	(0.28, 1.40)	(0.28, 1.40)
	2.39%	2.88%	0.27%	1.1709	140	(0.28, 2.40)	(0.28, 2.40)
						(0.80, 2.40)	(0.83, 2.38)
sel.per.ps	2.94%	5.42%	1.02%	2.1263	238	(0.35, 1.50)	(0.35, 1.50)
	0.91%	1.41%	0.15%	2.1089	205	(0.35, 2.70)	(0.35, 2.48)
						(0.40, 2.70)	(0.40, 2.19)
res.per.nr	0.92%	1.40%	0.15%	2.1342	238	(1.00, 2.00)	(1.01, 2.00)
	0.99%	2.40%	0.29%	2.3125	195	(1.00, 3.80)	(1.00, 3.80)
						(1.00, 3.80)	(1.03, 1.31)
res.per.ps	0.95%	2.42%	0.32%	2.3135	158	(0.18, 1.30)	(0.18, 1.30)
	0.86%	2.21%	0.30%	2.3664	125	(0.18, 2.80)	(0.18, 2.79)
						(0.80, 2.80)	(0.80, 1.22)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

[3] Number of proposed covariates on top line, and number finalized after modeling.

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum / minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.7b Distribution of Weight Adjustment Factors and Weight Products (Model Group 7: West South Central)

	sel.sdu.des [1]	*res.sdu.nr* [1]		*res.sdu.ps* [1]		*sel.per.des* [1]		*sel.per.ps* [1]		*res.per.nr* [1]		*res.per.ps* [1]	
	1-6[2]	**7**[3]	**1-7**[3]	**8**[4]	**1-8**[4]	**10**[5]	**1-10**[5]	**11**[5]	**1-11**[5]	**12**[6]	**1-12**[6]	**13**[6]	**1-13**[6]
Minimum	79	0.94	315	0.26	90	1.01	130	0.26	73	0.71	73	0.13	21
1%	316	1.00	321	0.28	238	1.01	320	0.56	270	1.00	328	0.18	130
5%	324	1.01	374	0.71	345	1.01	487	0.72	470	1.04	556	0.63	463
10%	393	1.02	403	0.86	389	1.01	688	0.80	663	1.07	797	0.92	682
25%	551	1.04	601	0.99	632	1.16	1,073	0.89	1,069	1.12	1,245	0.98	1,221
Median	846	1.06	893	1.11	923	1.46	1,588	1.00	1,640	1.21	1,934	1.01	1,970
75%	952	1.09	1,025	1.23	1,185	5.21	4,571	1.09	4,415	1.32	5,188	1.07	4,918
90%	1,076	1.12	1,138	1.36	1,353	9.36	7,447	1.20	7,459	1.48	9,892	1.16	10,024
95%	1,093	1.13	1,184	1.49	1,467	11.01	11,323	1.33	10,371	1.62	13,517	1.17	13,735
99%	1,233	1.21	1,436	2.10	1,906	13.81	14,164	1.63	15,000	2.10	20,650	1.59	21,258
Maximum	1,520	7.95	1,673	2.69	3,167	19.59	33,444	4.59	24,637	3.80	41,796	2.79	38,491
n	13,570	12,742	12,742	12,741	12,741	7,882	7,882	7,882	7,882	6,286	6,286	6,286	6,286
Max/Mean	2.00	-	2.04	-	2.42	-	10.50	-	7.86	-	10.63	-	9.79

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.
Note 2: Under GEM, nonresponse adjustment factors (weight components #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.
[2] Based on eligible dwelling units.
[3] Based on screener-complete dwelling units.
[4] Based on screener-complete dwelling units, occupants verified eligible.
[5] Based on selected persons.
[6] Based on questionnaire-complete persons.

Model Group 7 Overview

Dwelling Unit Nonresponse

Among main effects, all effects except group quarters were maintained intact. In that case "college dorm" collapsed with "other group quarters" because of small sample sizes. All non-State two-factor interactions were maintained. State two-factor interaction terms had population density level "MSA 1,000,000 or more" removed for both Louisiana and Oklahoma because of zero sample. "College dorm" and "other group quarters" were combined for all States. For the State percent of segments that are "Hispanic," only the "50-100%" level for Texas and "10-50%" level for Oklahoma were maintained. All others were dropped either because of singularities or to correct zero sample situations in the reference level. For State interactions with rent/housing value, all levels were kept except the ones that were excluded due to singularity or zero sample. For the State by percent of owner-occupied, the "10-50%" level was combined with the "<10%" level for Texas and Louisiana. Many variables were removed in the three-factor interactions due to the zero sample, singularity, or convergent problem.

Dwelling Unit Poststratification

Like most other models, all main effects were kept. In two-way interactions, all were maintained except race by Hispanicity and State by race, "Other Hispanic" and "Black Hispanic" were combined, and "American Indian/Alaska Native" and "Asian" were grouped together for all States. Because race by Hispanicity was simplified to "White Hispanic" versus "non-White Hispanic," higher order effects involving these terms were adjusted accordingly. None of the interactions for the age by race by Hispanicity were kept, and only "White Hispanic" and "non-White Hispanic" for Texas were kept for the State by race by Hispanicity. All other proposed three-factor effects were maintained in full.

(Selected) Person-Level Poststratification

All the main effects and two-factor effects were kept in the model. Also, all the non-State three-factor effects were maintained. Due to the convergent problem, the "Black" and "Other" were combined for all the States in State by age by race. For Louisiana, none was kept in the model for State by age by Hispanicity, while for Oklahoma and Texas the "35-49 " age group was dropped. None of the State by race by Hispanicity were kept. For State by race by gender, "Black" was collapsed with "Other" for all the States. "Male Hispanics in Louisiana" was not maintained in the model.

(Respondent) Person-Level Nonresponse

All the main effects and non-State two-factor effects were kept in the model. Due to the convergent problem, the four-level race was collapsed to "White" vs. "non-White" for the State by race factor. For State by percent of Hispanicity, the only "10-50%" level for Louisiana and Oklahoma were kept; others were dropped or collapsed due to singularity or convergent problem. Some of the State by rent/housing variables were dropped or collapsed because of the zero sample, singularity, or convergent problem. In the non-State three-way effects, the three-level race was collapsed to two levels, i.e. ("White" vs. "Non-white"). Due to the collapse of race in the State two-way effects, all the race in the State three-way effects were collapsed to two levels. For State by age by Hispanicity, none of the effects were kept for Louisiana.

(Respondent) Person-Level Poststratification

The main effects and most of the two-factor effects of this model were kept at levels proposed. Changes to the interaction of race and Hispanicity resulted in "Black" and "Other" being combined. At the State level, samples of "Black," "American Indian/Alaska Native," and "Asian" were too small to support independently and were combined for Louisiana and Oklahoma. In the three-way effects, all the three-level race was collapsed to two-level due to the hierarchical collapse in the two-ways or convergent problem. For State by age by Hispanicity, none of the effects for Louisiana were kept; the "35-49 " level of age was dropped for Oklahoma and Texas.

Exhibit D7.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**21**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll. (1) & (2);.conv.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
Two-Factor Effects		**86**	**70**	
State × Quarter	4*4	9	9	All levels present.
State × Pop. Density	4*4	9	7	Drop (2,1), (3,1); zero cnts.
State × Group Quarter	4*3	6	3	Coll. (2,1) & (2,2), (3,1) & (4,1) & (4,2); conv.
State × %Black	4*3	6	6	All levels present.
State × %Hispanic	4*3	6	2	Drop (4,1), (3,2); sing. Drop (3,1), (2,1); zero cnts.
State × %Owner Occupied	4*3	6	4	Coll. (2,2) & (2,3), (4,2)& (4,3); conv.
State × Rent/housing	4*5	12	7	Drop (2,3), (2,4), (3,3), (4,4); sing. Drop (3,4); zero cnts.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
Three-Factor Effects		**96**	**14**	
State × %Owner × %Black	4*3*3	12	6	Coll. (2,2,1) & (2,3,1), (2,2,2) & (2,2,3), (3,2,1) & (3,3,1); conv. Keep (4,2,1), (4,2,2). Drop remainder; conv.
State × %Owner × %Hispanic	4*3*3	12	2	Keep (4,2,2), (4,3,2). Drop remainder; conv.
State × %Owner × Rent/house	4*3*5	24	0	Drop all; zero cnts, sing, conv.
State × Rent/house × %Black	4*3*5	24	4	Keep (4,2,1), (4,3,2), (3,1,2),Coll. (2,1,1) & (2,1,2); conv. Drop remainder; conv.
State × Rent/house × %Hispanic	4*3*5	24	2	Keep (4,1,2), (4,2,2). Drop remainder; zero cnts, sing, conv.
Total		**204**	**105**	

Exhibit D7.2 Covariates for 2001 NHSDA Person Weights (res.sdu.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**16**	**16**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**57**	**53**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race(4 level)	4*4	9	6	Coll. (2,3) & (2,4), (3,3) & (3,4), (4,3) & (4,4); conv.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
Three-Factor Effects		**85**	**71**	
Age × Race(3) × Hispanicity	5*3*2	8	0	Drop all; conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	4*5*3	24	24	All levels present.
State × Age × Hispanicity	4*5*2	12	12	All levels present.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race(3 level) × Hispanicity	4*3*2	6	1	Coll. (4,2,1) & (4,3,1); conv. Drop others; conv.
State × Race(3 level) × Gender	4*3*2	6	6	All levels present.
State × Hispanicity × Gender	4*2*2	3	3	All levels present.
Total		**158**	**140**	

Exhibit D7.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**34**	**34**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**119**	**110**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race(4 level)	4*4	9	9	All levels present.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
State × %Black	4*3	6	6	All levels present.
State × %Hispanic	4*3	6	2	Drop (2,1), (3,1); zero cnts. Drop (3,2); sing. Coll. (4,1) & (4,2); sing.
State × %Owner Occupied	4*3	6	6	All levels present.
State × Rent/housing	4*5	12	7	Drop(3,4); zero cnts. Drop (2,3), (2,4), (3,3), (4,4); conv.
Three-Factor Effects		**85**	**61**	
Age × Race(3) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	4*5*3	24	16	Coll. (2,1,2) & (2,1,3), (2,2,2) & (2,2,3), (2,3,2) & (2,3,3), (2,4,2) & (2,4,3), (3,1,2) & (3,1,3), (3,2,2) & (3,2,3), (3,3,2) & (3,3,3), (3,4,2) & (3,4,3); conv.
State × Age × Hispanicity	4*5*2	12	6	Drop (2,*,1), (3,4,1), (4,4,1); conv.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race(3 level) × Hispanicity	4*3*2	6	0	Drop all; conv.
State × Race(3 level) × Gender	4*3*2	6	3	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1), (4,2,1) & (4,3,1); conv.
State × Hispanicity × Gender	4*2*2	3	2	Drop (2,1,1); conv.
Total		**238**	**205**	

Exhibit D7.4 Covariates for 2001 NHSDA Person Weights (res.per.nr), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**34**	**34**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**119**	**103**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race(4 level)	4*4	9	3	Coll. (2,2), (2,3) & (2,4); conv. Repeat for all States.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
State × %Black	4*3	6	6	All levels present.
State × %Hispanic	4*3	6	2	Drop (2,1), (3,1); zero cnts. Drop (3,2); sing. Coll. (4,1) & (4,2); sing.
State × %Owner Occupied	4*3	6	6	All levels present.
State × Rent/housing	4*5	12	6	Drop (3,4); zero cnts. Drop (4,4), (2,3), (2,4); sing. Drop (3,2), (3,3); conv.
Three-Factor Effects		**85**	**58**	
Age × Race(3) × Hispanicity	5*3*2	8	4	Coll. (*,2,1) & (*,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	4*5*3	24	12	Coll. (2,1,2) & (2,1,3); hier. Repeat for each State, age combination.
State × Age × Hispanicity	4*5*2	12	8	Drop (2,1,1), (2,2,1), (2,3,1); conv. Drop (2,4,1); zero cnts.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race(3 level) × Hispanicity	4*3*2	6	3	Coll. (2,2,1) & (2,3,1); hier. Repeat for each State.
State × Race(3 level) × Gender	4*3*2	6	3	Coll (2,2,1) & (2,3,1); hier. Repeat for each State.
State × Hispanicity × Gender	4*2*2	3	3	All levels present.
Total		**238**	**195**	

Exhibit D7.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**16**	**16**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**36**	**32**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race(4 level)	4*4	9	5	Coll(2,2), (2,3) & (2,4), (3,2), (3,3) & (3,4); conv.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
Three-Factor Effects		**63**	**44**	
Age × Race(3) × Hispanicity	5*3*2	8	4	Coll. (*,2,1) & (*3,1); hier
Age × Race(3) × Gender	5*3*2	8	4	Coll. (*,2,1) & (*,3,1); hier
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); hier
State × Age × Race(3 level)	4*5*3	24	17	Coll. (2,*,2) & (2,*,3), (3,*,2) & (3,*,3), (4,2,2) & (4,2,3); conv.
State × Age × Hispanicity	4*5*2	12	6	Drop (3,4,1), (4,4,1), (2,*,1); conv.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race(3 level) × Hispanicity	4*3*2	6	2	Coll. (4,2,1) & (4,3,1), (2,2,1) & (2,3,1); hier. Drop (3,2,1), (3,3,1); conv.
State × Race(3 level) × Gender	4*3*2	6	4	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	4*2*2	3	3	All levels present.
Total		**158**	**125**	

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Appendix D8

Model Group 8: Mountain

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Table D.8a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 8: Mountain)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	3.64%	1.86%	0.07%	1.5007	408	(1.00, 1.50)	(1.02, 1.38)
	3.34%	1.73%	0.07%	1.5111	122	(1.00, 8.00)	(1.00, 3.35)
						(1.00, 8.00)	(1.00, 1.08)
res.sdu.ps	3.34%	1.73%	0.07%	1.5110	294	(0.40, 1.50)	(0.40, 1.50)
	3.11%	5.36%	0.82%	1.5280	271	(0.40, 3.20)	(0.40, 3.20)
						(0.90, 3.20)	(0.90, 3.20)
sel.per.ps	3.23%	7.55%	1.52%	3.1730	414	(0.30, 1.30)	(0.30, 1.30)
	1.26%	2.09%	0.31%	3.1483	349	(0.30, 3.00)	(0.30, 2.99)
						(0.60, 3.00)	(0.60, 2.93)
res.per.nr	1.46%	2.56%	0.38%	3.1655	414	(1.00, 2.00)	(1.00, 2.00)
	1.01%	2.21%	0.39%	3.5133	300	(1.00, 4.00)	(1.00, 4.00)
						(1.00, 4.00)	(1.04, 1.13)
res.per.ps	1.08%	2.03%	0.49%	3.5133	294	(0.10, 1.30)	(0.10, 1.30)
	1.11%	2.20%	0.41%	3.5515	253	(0.10, 1.50)	(0.10, 5.00)
						(0.90, 5.00)	(0.90, 4.76)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

[3] Number of proposed covariates on top line, and number finalized after modeling.

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.8b Distribution of Weight Adjustment Factors and Weight Products (Model Group 8: Mountain)

	sel.sdu.des [1]	*res.sdu.nr* [1]		*res.sdu.ps* [1]		*sel.per.des* [1]		*sel.per.ps* [1]		*res.per.nr* [1]		*res.per.ps* [1]	
	1-6 [2]	**7** [3]	**1-7** [3]	**8** [4]	**1-8** [4]	**10** [5]	**1-10** [5]	**11** [5]	**1-11** [5]	**12** [6]	**1-12** [6]	**13** [6]	**1-13** [6]
Minimum	75	0.88	80	0.34	33	1.01	34	0.18	11	0.34	11	0.04	1
1%	79	1.00	83	0.44	77	1.01	94	0.42	74	1.00	97	0.10	27
5%	80	1.01	85	0.64	96	1.01	137	0.64	130	1.01	155	0.65	133
10%	108	1.02	111	0.82	119	1.01	182	0.75	177	1.04	209	0.91	185
25%	153	1.03	163	1.00	194	1.09	340	0.87	333	1.10	397	0.96	382
Median	334	1.05	345	1.12	356	1.27	780	0.99	773	1.19	890	1.00	898
75%	578	1.07	597	1.27	693	5.49	1,629	1.11	1,649	1.33	1,988	1.05	2,003
90%	732	1.09	778	1.51	884	8.98	4,151	1.26	3,929	1.52	4,885	1.17	4,929
95%	875	1.11	951	1.70	1,048	11.66	5,890	1.41	6,074	1.69	7,768	1.35	7,812
99%	1,162	1.16	1,233	2.57	1,477	13.47	11,774	1.92	11,333	2.42	15,587	1.97	15,346
Maximum	1,968	3.35	2,096	3.55	2,980	19.55	30,835	3.33	25,286	4.00	31,746	5.59	40,896
n	15,254	14,476	14,476	14,474	14,474	9,204	9,204	9,204	9,204	7,306	7,306	7,306	7,306
Max/Mean	5.10	-	5.10	-	6.50	-	19.50	-	16.30	-	16.30	-	21.00

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.

Note 2: Under GEM, nonresponse adjustment factors (weight component #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Model Group 8 Overview

Dwelling Unit Nonresponse

All main effects were kept in the model except group quarters, where "college dorm" was combined with "other group quarters." In non-State two-factor interactions, percent owner-occupied by percent "Black" and rent/housing by percent "Black" were dropped due to the majority of zero samples. All rent/housing and percent of "Hispanic" interactions were kept except the first quintile of rent/housing and "50-100% of Hispanic." The "MSA 1,000,000 or more" was dropped for Idaho, Montana, Nevada, New Mexico, and Wyoming. The "college dorm" was combined with "other group quarters" in the two-way effects, and only Montana, Utah, and Wyoming were kept. Only three variables were kept for State by percent "Black"; "Others" were dropped or collapsed. For the State by percent "Hispanic," the "50-100%" level was collapsed with "10-50%" level for Idaho, Montana, Utah, and Wyoming. None of the three-way effects were maintained.

Dwelling Unit Poststratification

All main effects and two-factor interactions were kept except the collapsing of "Black Hispanic" with "Other Hispanic." Moving on to higher order effects, "Black Hispanics" and "Other Hispanics" were combined for all the age groups; furthermore, "26-34" and "35-49" were also combined for the age by race by Hispanicity. For the State by age by race, none of the effects for Wyoming were kept, and the "Black" was combined with "Others" across age group "12-17, 18-26 and 35-49" for Utah and across age group "12-17" and "18-26" for Idaho. In the State by race by Hispanicity, "Black Hispanic" was combined with "Other Hispanic" due to the hierarchical collapsing in the two-ways.

(Selected) Person-Level Poststratification

No main effects were compromised in the model except the combination of "college dorm" with "other group quarters." The following non-State two-way effects were dropped or collapsed: "<10% owner-occupied and 50-100% of Black," "10-50% owner-occupied and 50-100% of Black" with "10-50% owner-occupied and 10-50% of Black," "50-100% of Black" for the first, second and third quintiles of rent/housing, and "the first quintile of rent/housing and 50-100% of Hispanics." Many effects were dropped or collapsed for State by percent of "Black." Only "10-50%" level for Nevada and New Mexico, and the combined "10-50%" and "50-100%" for Colorado were kept. The "50-100% of Hispanic" level was dropped for Idaho, Montana, Utah, and Wyoming. State by rent/housing variables were dropped due to zero samples, only 18 variables retained in the model. All the non-State three-factor effects were kept. Most of the effects for the State by age by race could not keep the "Black" and "Others" separately; for this kind of collapsing, 12 variables were lost. For State by race by Hispanicity, only Colorado, Nevada, and New Mexico could keep "Black Hispanic" and "Other Hispanic." Montana, Utah, and Wyoming could support the combined “Black Hispanic” with “Other Hispanic,” while none of the effects for Idaho could be maintained. The “Black Male” and “Other Male” were combined for Idaho and Wyoming for the State by race by gender. The “Male Hispanic” for Montana was dropped.

(Respondent) Person-Level Nonresponse

For the three-way effects, the variable collapsing and dropping followed the same pattern as in the selected person poststratification adjustment step. There was more collapsing and dropping in the three-way effects than in the selected person poststratification adjustment step. The three-level race could not be maintained in the three-ways except a few kept in the State by age by race, State by race by gender. None of the State by race by Hispanicity effects were maintained.

(Respondent) Person-Level Poststratification

All main effects and two-way effects were captured in the model. In the non-State three-way effects, the “Black Hispanic” and “Other Hispanic” were combined. Some of the State could not support the three-level race for the State by age by race interactions; in total, 23 effects were dropped or collapsed for this purpose. For State by age by Hispanicity, the “Hispanic aged 35-49" was dropped for Montana, Utah, and Wyoming. The “Black Hispanic” and “Other Hispanic” were collapsed for all the States: furthermore, Idaho and Wyoming were combined for the State by race by Hispanicity. In the State by race by gender, race was collapsed to two levels for Idaho and Wyoming.

Exhibit D8.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**26**	**25**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll. (1) & (2); conv.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
Two-Factor Effects		**158**	**97**	
State × Quarter	8*4	21	21	All levels present.
State × Pop. Density	8*4	21	16	Drop (2,1), (3,1), (4,1), (5,1), (7,1); zero cnts.
State × Group Quarter	8*3	14	3	Coll. (3,1) & (3,2), (6,1) & (6,2), (7,1) & (7,2); hier. Drop all others; zero cnts./conv.
State × %Black	8*3	14	3	Coll. (1,1) & (1,2), (5,1) & (5,2), (7.1) & (7.2); conv. Drop all others; zero cnts./sing./conv.
State × %Hispanic	8*3	14	10	Coll. (2,1) & (2,2), (3,1) & (3,2), (6,1) & (6,2), (7,1) & (7,2); conv.
State × %Owner Occupied	8*3	14	14	All levels present.
State × Rent/housing	8*5	28	11	Kept (1,2), (1,3), (1,4), (2,1), (2,2), (4,4), (5,3), (5,4), (6,1), (6,2) & (7,1). Drop remainder; zero cnts.
%Owner × %Black	3*3	4	0	Drop all; conv/zero cnts/sing.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	5*3	8	0	Drop all; conv/zero cnts/sing.
Rent/housing × %Hispanic	3*5	8	7	Drop (1,1); zero cnts.
Three-Factor Effects		**224**	**0**	
State × %Owner × %Black	8*3*3	28	0	Drop all; conv/zero cnts/sing.
State × %Owner × %Hispanic	8*3*3	28	0	Drop all; conv/zero cnts/sing.
State × %Owner × Rent/house	8*3*5	56	0	Drop all; conv/zero cnts/sing.
State × Rent/house × %Black	8*3*5	56	0	Drop all; conv/zero cnts/sing.
State × Rent/house × %Hispanic	8*3*5	56	0	Drop all; conv/zero cnts/sing.
Total		**408**	**122**	

Exhibit D8.2 Covariates for 2001 NHSDA Person Weights (res.sdu.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**20**	**20**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**105**	**105**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	8*4	21	21	All levels present.
State × Age	8*5	28	28	All levels present.
State × Race(4 level)	8*4	21	21	All levels present.
State × Hispanicity	8*2	7	7	All levels present.
State × Gender	8*2	7	7	All levels present.
Three-Factor Effects		**169**	**147**	
Age × Race(3) × Hispanicity	5*3*2	8	3	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1); hier. Coll. (3,2,1), (3,3,1), (4,2,1) & (4,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (2,3,1); hier.
State × Age × Race(3 level)	8*5*3	56	47	Coll. (6,1,2) & (6,1,3); zero cnts. Coll. (6,2,2) & (6,2,3), (6,4,2) & (6,4,3), (2,1,2) & (2,1,3), (2,2,2) & (2,2,3), (7,*,2) & (7,*,3); conv.
State × Age × Hispanicity	8*5*2	28	28	All levels present.
State × Age × Gender	8*5*2	28	28	All levels present.
State × Race(3 level) × Hispanicity	8*3*2	14	7	Coll. (*,2,1) & (*,3,1); hier.
State × Race(3 level) × Gender	8*3*2	14	14	All levels present.
State × Hispanicity × Gender	8*2*2	7	7	All levels present.
Total		**294**	**271**	

Exhibit D8.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**38**	**37**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll. (1) & (2); conv.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**154**	**123**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	2	Drop (3,1); zero cnts. Coll. (2,1) & (2,2); conv.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	5	Drop (1,1), (2,1), (3,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	7	Drop (1,1); zero cnts.
State × Quarter	8*4	21	21	All levels present.
State × Age	8*5	28	28	All levels present.
State × Race(4 level)	8*4	21	21	All levels present.
State × Hispanicity	8*2	7	7	All levels present.
State × Gender	8*2	7	7	All levels present.
State × %Black	8*3	14	3	Drop (2,1), (2,2), (3,1), (3,2), (5,1), (6,1), (7,1); zero cnts. Drop (4,1), (6,2), (7,2); sing. Coll. (1,1) & (1,2); conv.
State × %Hispanic	8*3	14	10	Drop (2,1), (3,1), (6,1), (7,1); zero cnts.
State × %Owner Occupied	8*3	14	14	All levels present.
State × Rent/housing	8*5	28	12	Drop (1,1), (2,4), (3,*), (4,1), (4,2), (4,3), (5,1), (5,2), (6,4), (7,4); zero cnts. Drop (2,3), (6,3), (7,3); ref. zero
Three-Factor Effects		**147**	**124**	
Age × Race(3) × Hispanicity	5*3*2	8	4	Coll. (*,2,1) & (*,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	8*5*3	56	44	Drop (6,1,2); zero cnts. Coll. (6,3,2) & (6,3,3); sing. Coll. (3,3,2) & (3,3,3), (6,4,2) & (6,4,3); zero cnts. Coll. (3,4,2) & (3,4,3); ref. zero; Coll. (2,1,2) & (2,1,3), (2,2,2) & (2,2,3), (2,3,2) & (2,3,3), (7,1,2) & (7,1,3), (7,2,2) & (7,2,3); conv. Drop (2,4,2), (2,4,3); conv.
State × Age × Hispanicity	8*5*2	28	26	Drop (3,3,1), (3,4,1); conv.
State × Age × Gender	8*5*2	28	28	All levels present.
State × Race(3 level) × Hispanicity	8*3*2	14	9	Drop (2,2,1), (6,2,1), (7,2,1); zero cnts. Coll. (3,2,1) & (3,3,1), sing. Drop (2,3,1); conv.
State × Race(3 level) × Gender	8*3*2	14	11	Coll. (3,2,1) & (3,3,1); sing. Coll. (2,2,1) & (2,3,1), (7,2,1) & (7,3,1); conv.
State × Hispanicity × Gender	8*2*2	7	6	Drop (3,1,1); conv.
Total		**414**	**349**	

Exhibit D8.4 Covariates for 2001 NHSDA Person Weights (res.per.nr), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**38**	**38**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**154**	**123**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	3	Drop (3,1); zero cnts.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	5	Drop (1,1), (2,1), (3,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	7	Drop (1,1); zero cnts.
State × Quarter	8*4	21	21	All levels present.
State × Age	8*5	28	28	All levels present.
State × Race(4 level)	8*4	21	21	All levels present.
State × Hispanicity	8*2	7	7	All levels present.
State × Gender	8*2	7	7	All levels present.
State × %Black	8*3	14	3	Drop (2,1), (2,2), (3,1), (3,2), (5,1), (6,1), (7,1); zero cnts. Coll. (4,1) & (4,2), sing. Drop (6,2), (7,2); sing. Coll. (1,1) & (1,2); conv.
State × %Hispanic	8*3	14	10	Drop (2,1), (3,1), (6,1), (7,1); zero cnts.
State × %Owner Occupied	8*3	14	14	All levels present.
State × Rent/housing	8*5	28	12	Drop (1,1), (2,4), (3,*), (4,1), (4,2), (4,3), (5,1), (5,2), (6,4) & (7,4); zero cnts. Drop (2,3), (6,3), (7,3); ref. zero
Three-Factor Effects		**147**	**80**	
Age × Race(3) × Hispanicity	5*3*2	8	2	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,31). Drop remainder; conv.
Age × Race(3) × Gender	5*3*2	8	4	Coll. (*,2,1) & (*,3,1); conv.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	8*5*3	56	16	Drop (1,*,*), (2,*,*); conv. Coll. (3,1,2) & (3,1,3), (3,2,2) & (3,2,3), (6,1,2) & (6,1,3), (6,2,2) & (6,2,3), (7,1,2) & (7,1,3), (7,2,2) & (7,2,3); conv. Coll. (4,3,2) & (4,3,3), (4,4,2) & (4,4,3); conv. Coll. (5,*,2) & (5,*,3); conv. Keep (4,1,2), (4,1,3), (4,2,2), (4,2,3); conv. Drop remainder; conv.
State × Age × Hispanicity	8*5*2	28	20	Drop (2,4,1), (3,3,1), (3,4,1), (4,4,1), (6,3,1), (6,4,1), (7,3,1), (7,4,1); conv.
State × Age × Gender	8*5*2	28	28	All levels present.
State × Race(3 level) × Hispanicity	8*3*2	14	0	Drop all; conv.
State × Race(3 level) × Gender	8*3*2	14	9	Drop (2,2,1), (2,3,1); conv. Coll. (3,2,1) & (3,3,1), (6,2,1) & (6,3,1), (7,2,1) & (7,3,1); conv.
State × Hispanicity × Gender	8*2*2	7	7	All levels present.
Total		**414**	**300**	

Exhibit D8.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**20**	**20**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**84**	**84**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	8*4	21	21	All levels present.
State × Age	8*5	28	28	All levels present.
State × Race(4 level)	8*4	21	21	All levels present.
State × Hispanicity	8*2	7	7	All levels present.
State × Gender	8*2	7	7	All levels present.
Three-Factor Effects		**147**	**111**	
Age × Race(3) × Hispanicity	5*3*2	8	4	Coll. (*,2,1) & (*,3,1); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	8*5*3	56	33	Drop (1,4,2), (1,4,3); conv. Coll. (1,1,2) & (1,1,3), (1,2,2) & (1,2,3), (1,3,2) & (1,3,3), (2,*,2) & (2,*,3), (3,*,2) & (3,*,3), (5,1,2) & (5,1,3), (5,2,2) & (5,2,3), (6,*,2) & (6,*,3), (7,*,2) & (7,*,3); conv.
State × Age × Hispanicity	8*5*2	28	25	Drop (3,4,1); ref. zero. Drop (6,4,1), (7,4,1); conv.
State × Age × Gender	8*5*2	28	28	All levels present.
State × Race(3 level) × Hispanicity	8*3*2	14	6	Coll. (1,2,1) & (1,3,1), (3,2,1) & (3,3,1), (4,2,1) & (4,3,1), (5,2,1) & (5,3,1), (6,2,1) & (6,3,1), (2,2,1) & (2,3,1) & (7,2,1) & (7,3,1); conv.
State × Race(3 level) × Gender	8*3*2	14	12	Coll. (2,2,1) & (2,3,1), (7,2,1) & (7,3,1); conv.
State × Hispanicity × Gender	8*2*2	7	7	All levels present.
Total		**294**	**253**	

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Appendix D9

Model Group 9: Pacific

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Table D.9a 2001 NHSDA Person Weight GEM Modeling Summary (Model Group 9: Pacific)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
res.sdu.nr	2.55%	1.28%	0.03%	1.3092	255	(1, 1.1)	(1, 1.10)
	2.24%	1.69%	0.02%	1.3122	105	(1, 1.5)	(1, 1.47)
						(1, 1.5)	(1, 1.11)
res.sdu.ps	2.24%	1.69%	0.02%	1.3249	192	(0.3, 1.7)	(0.3, 1.66)
	2.12%	3.79%	1.03%	1.3798	188	(0.3, 4.4)	(0.3, 4.39)
						(0.9, 4.4)	(0.9, 4.57)
sel.per.ps	3.63%	6.45%	1.73%	2.6295	282	(0.4, 2.5)	(0.4, 2.49)
	1.48%	3.06%	0.80%	2.5769	255	(0.4, 3.5)	(.41, 3.48)
						(0.4, 3.5)	(.48, 1.70)
res.per.nr	1.56%	3.30%	0.87%	2.6325	282	(1, 3.1)	(.46, 2.72)
	1.16%	3.30%	0.69%	2.9306	219	(1, 3.7)	(1.0, 3.70)
						(1, 3.7)	(1.1, 1.8)
res.per.ps	1.30%	3.68%	0.85%	2.9306	192	(.13, 1.1)	(.06, 1.08)
	0.46%	0.89%	0.11%	2.9399	173	(.13, 2.8)	(.13, 2.80)
						(.13, 2.8)	(1.03, 1.03)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

[3] Number of proposed covariates on top line, and number finalized after modeling.

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the GEM adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the non-extreme values, and the low-extreme values.

Table D.9b Distribution of Weight Adjustment Factors and Weight Products (Model Group 9: Pacific)

	sel.sdu.des [1]	*res.sdu.nr* [1]		*res.sdu.ps* [1]		*sel.per.des* [1]		*sel.per.ps* [1]		*res.per.nr* [1]		*res.per.ps* [1]	
	1-6[2]	**7**[3]	**1-7**[3]	**8**[4]	**1-8**[4]	**10**[5]	**1-10**[5]	**11**[5]	**1-11**[5]	**12**[6]	**1-12**[6]	**13**[6]	**1-13**[6]
Minimum	29	0.69	82	0.30	27	1.01	33	0.22	16	0.46	16	0.06	8
1%	81	0.98	84	0.51	68	1.01	98	0.52	92	1.00	96	0.18	53
5%	84	1.02	87	0.81	94	1.01	149	0.75	153	1.01	171	0.39	164
10%	87	1.03	97	0.91	116	1.01	215	0.83	218	1.05	254	0.82	248
25%	367	1.04	489	1.03	448	1.14	891	0.92	891	1.13	1,047	0.98	912
Median	1,116	1.07	1,191	1.13	1,241	1.29	1,776	1.01	1,850	1.24	2,235	1.03	2,253
75%	1,224	1.09	1,311	1.25	1,523	6.02	4,810	1.10	4 ,667	1.40	5,288	1.09	5,248
90%	1,268	1.13	1,391	1.41	1,698	9.44	10,467	1.21	1 0,683	1.58	14,005	1.24	14,381
95%	1,282	1.15	1,430	1.59	1,828	12.08	15,418	1.31	14,607	1.73	19,903	1.32	20,019
99%	1,362	1.26	1,572	2.43	2,278	13.53	20,061	1.75	20,200	2.42	30,951	1.54	31,675
Maximum	2,179	7.38	1,683	4.57	6,343	34.10	58,335	3.48	55,806	3.70	66,652	2.80	48,461
n	16,975	15,790	15,790	15,788	15,788	9,523	9,523	9,523	9,523	7,358	7,358	7,358	7,358
Max/Mean	2.61	-	1.87	-	6.04	-	15.17	-	14.64	-	13.55	-	9.86

Note 1: Weight component 9 and weight product 1-9 are excluded because weight 9 = 1 for all selected dwelling units.
Note 2: Under GEM, nonresponse adjustment factors (weight components #7 and #12) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] sel.sdu.des refers to selected screener dwellling unit design weight and sel.per.des to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.
[2] Based on eligible dwelling units.
[3] Based on screener-complete dwelling units.
[4] Based on screener-complete dwelling units, occupants verified eligible.
[5] Based on selected persons.
[6] Based on questionnaire-complete persons.

Model Group 9 Overview

Dwelling Unit Nonresponse

All the one-factor effects were included in the final model for the Pacific States. All non-State two-factor effects were present, except for the second quintile of the "combined rent/housing value" by "50% - 100% Black." Among the State variable combinations, all quarter interaction variables and percent owner-occupied variables were present. All levels of percent "Hispanic" were present for Washington only; "50% - 100% Hispanic" was dropped due to sample sizes of zero for Alaska and Hawaii, and for singularities in California. In Alaska and Hawaii "50% - 100% Black" was dropped due to zero sample sizes and due to singularities for Oregon and California. The only level of this variable dropped for converge problems was "10% - 50% Black" for Hawaii. For the within-State "group quarter indicator," the only level remaining in the model was a combination of "college dorm" and "other group quarter" for Alaska. For the measures of population density within States, "MSA 1,000,000 or more" had to be dropped for Alaska and Hawaii due to zero sample sizes. Within States, the following levels had to be dropped for measures of "segment-level combined median rent and housing value": for Oregon, all levels; for California, only the second quintile remained in the model; for Hawaii, all levels remained; and for Alaska, the third and fourth quintiles were dropped due to sample sizes of zero for the reference levels. For the three-way interaction terms, the majority were dropped due to either zero sample sizes, singularities, or nonconvergence of the model. The only three-way variables maintained throughout the modeling were the following interaction terms within California: the interaction terms of both the "percent of segments that are Black" and "percent of segments that are Hispanic" crossed with the two levels "10% - 50%" and "<10%" of "percent of owner-occupied dwelling units in segment."

Dwelling Unit Poststratification

No main effects, two-factor effects, or non-State three-way factor effects were compromised. The levels of "Black" and "Other" by "Hispanic" were collapsed for all four States in the model.

(Selected) Person-Level Poststratification

Proposed levels of the main effects were maintained in the Pacific model at this stage. A zero count in the second quintile of the rent/housing "50% - 100% Black" cell caused its removal. Similarly, in the State by percent "Black" interactions, factor effects corresponding to the Alaska and Hawaii "50% - 100% Black" were removed from the model due to zero sample. These same levels were collapsed with "10% - 50%" Black" for Oregon and California. Percent "Hispanic" was not supported at the "<10%" level in Alaska and Hawaii, and an exact linear combination removed it from the California cross. Several levels of rent/housing also were not supported at the State level, most notably in Oregon, where all levels were removed; the first quintile was removed for California; for Alaska, the fourth quintile; and for Hawaii, the third and fourth quintiles had to be dropped. At the three-factor interaction level, interactions between age, race, Hispanicity, and gender were largely supported, with "Black" and "Other" of the age, race, by Hispanicity cross compromised. Three-factor effects involving crosses with State, race and age or Hispanicity were reduced, due to convergence issues. For these variables "Black" and "Other" had to be collapsed for many levels. State crosses involving age, Hispanicity, and gender but excluding race, were maintained in full.

(Respondent) Person-Level Nonresponse

All main effects were maintained in the model, as were all but two-levels of non-State two-factor effects. Due to singularities, rent/housing crossed with percent "Black" was reduced by dropping "50% - 100% Black" by the second quintile of rent/housing, and "50% - 100% Black" and "10% - 50% Black" were combined for "<10% owner-occupied." In Oregon, race levels "Black" and "Other" were combined. Moving on to segment characteristics at the State level, Alaska and Hawaii had "50% - 100% Black" and "50% - 100% Hispanic" dropped, while Oregon and California had "50% - 100%" and "10% - 50%" collapsed for both. "Percent of segments that are Black" and "percent of segments that are Hispanic" within State rent/housing quintiles, all levels were dropped for Oregon, the first quintile was dropped for California, the fourth for Alaska, and for Hawaii, both the third and fourth quintiles.

In the three-factor effects, for the variables race by Hispanicity by age, and race by Hispanicity by gender, the race level "Other" was collapsed with race level "Black" for all interactions. All levels were maintained for State by gender by age, and State by gender by Hispanicity. For the remaining within-State interactions, all were dropped, except for the following interactions within California: all levels of age by gender were maintained; for the interaction of race by age, "Black" and "Other" were collapsed for all ages.

(Respondent) Person-Level Poststratification

In the Pacific model, main effects and two-factor effects were retained in the model. For the three-way interactions, all variables were unchanged, except for the within-State interactions of State by race with the variables age, Hispanicity and gender. "Black" and "Other" were collapsed within Alaska, Hawaii, and Oregon for all levels of age in the State by race by age variables, as well as in the State by race by Hispanicity factors for these three States, and for the Oregon by race by gender factor.

All interactions of age by race by Hispanicity were modified to have an expanded "35 or older" reference age level. Due to the hierarchical nature of the model, State interaction with age and race was modified by combining "Black" and "Other" within all levels of age in Oregon. Race also was redefined in this manner for age categories "12 to 17" and "35 to 49" in Hawaii. Age ranges "26 to 34" and "35 to 49" were dropped from Oregon. State by age and Hispanicity did not support an age "35 to 49" effect for Alaska. Also, State by race by Hispanicity was adjusted by combining "Black" and "Other" race within Oregon, and completely dropping effects for Alaska and Hawaii. The combination of "Black" plus "Other" also was used in the Hawaii interaction with race and gender. Effects corresponding to the interaction of race, gender were dropped for Oregon.

Exhibit D9.1 Covariates for 2001 NHSDA Person Weights (res.sdu.nr), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**23**	**23**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
Two-Factor Effects		**104**	**77**	
State × Quarter	5*4	12	12	All levels present.
State × Pop. Density	5*4	12	10	Drop (1,1), (2,1); zero cnts.
State × Group Quarter	5*3	8	1	Drop (2,2), (3,1), (5,1); zero cnts. Drop (5,2) sing; drop (2,1), (3,2); conv. Coll. (1,1) & (1,2) conv.
State × %Black	5*3	8	3	Drop (1,1), (2,1); zero cnts. Drop (3,1), (5,1), sing. Drop (2,2); conv.
State × %Hispanic	5*3	8	5	Drop (1,1), (2,1); zero cnts. Drop (5,1); sing.
State × %Owner Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	7	Drop (3,2), (3,3), (3,4), (5,1); zero cnts. drop(1,3), (1,4); ref. zero; drop (3,1), (5,3), (5,4); sing;
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	7	Drop (2,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
Three-Factor Effects		**128**	**5**	
State × %Owner × %Black	5*3*3	16	2	Keep (5,*,2). Drop remainder; zero cnts, sing., conv.
State × %Owner × %Hispanic	5*3*3	16	2	Keep (5,*,2). Drop remainder; zero cnts, sing., conv.
State × %Owner × Rent/house	5*3*5	32	1	Keep (5,2,3). Drop remainder; zero cnts, sing., conv.
State × Rent/house × %Black	5*3*5	3	0	Drop remainder; zero cnts, sing., conv.
State × Rent/house × %Hispanic	5*3*5	32	0	Drop remainder; zero cnts, sing., conv.
Total		**255**	**105**	

Exhibit D9.2 Covariates for 2001 NHSDA Person Weights (res.sdu.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**69**	**69**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race(4 level)	5*4	12	12	All levels present.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
Three-Factor Effects		**106**	**102**	
Age × Race(3) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	5*5*3	32	32	All levels present.
State × Age × Hispanicity	5*5*2	16	16	All levels present.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race(3 level) × Hispanicity	5*3*2	8	4	Coll. (1,2,1) & (1,3,1); conv. Repeat for all States.
State × Race(3 level) × Gender	5*3*2	8	8	All levels present.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
Total		**192**	**188**	

Exhibit D9.3 Covariates for 2001 NHSDA Person Weights (sel.per.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**88**	**73**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	4	All levels present.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	7	Drop (2,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race(4 level)	5*4	12	12	All levels present.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
State × %Black	5*3	8	4	Drop (1,1), (2,1); zero cnts. Coll. (3,1) & (3,2), (5,1) & (5,2); sing.
State × %Hispanic	5*3	8	5	Drop (1,1), (2,1); zero cnts. Drop (5,1); sing.
State × %Owner Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	8	Drop (3,1), (3,2), (3,3), (3,4), (5,1); zero cnts. Drop (1,4), (2,3), (2,4); sing.
Three-Factor Effects		**84**	**76**	
Age × Race(3) × Hispanicity	5*3*2	8	5	Coll. (1,2,1) & (1,3,1); conv. Repeat for States (2) & (3).
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	5*5*3	32	28	Coll. (3,1,2) & (3,1,3); conv. Repeat for each level of age within State (3).
State × Age × Hispanicity	5*5*2	16	16	All levels present.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race(3 level) × Hispanicity	5*3*2	8	4	Coll. (1,2,1) & (1,3,1); conv. Repeat for all States.
State × Race(3 level) × Gender	5*3*2	8	8	All levels present.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
Total		**282**	**255**	

Exhibit D9.4 Covariates for 2001 NHSDA Person Weights(res.per.nr), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comment
One-Factor Effects		**35**	**35**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
%Black	3	2	2	All levels present.
%Hispanic	3	2	2	All levels present.
%Owner Occupied	3	2	2	All levels present.
Rent/house Value	5	4	4	All levels present.
Two-Factor Effects		**141**	**121**	
Age × Race(3)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race(3) × Hispanicity	3*2	2	2	All levels present.
Race(3) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner × %Black	3*3	4	3	Coll. (3,1) & (3,2); conv.
%Owner × %Hispanic	3*3	4	4	All levels present.
%Owner × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	7	Dropped (2,1); zero cnts.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race(4 level)	5*4	12	10	Coll. (3,2,) & (3,3) & (3,4); conv.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
State × %Black	5*3	8	4	Drop (1,1), (2,1); zero cnts. Coll. (5,1) & (5,2), (3,1) & (3,2), sing.
State × %Hispanic	5*3	8	4	Drop (1,1), (2,1); zero cnts. Coll. (5,1,) & (5,2); conv. Coll. (3,1) & (3,2); conv.
State × %Owner Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	8	Drop (3,*), (5,1); zero cnts. Drop (1,4), (2,3), (2,4); sing., ref zero.
Three-Factor Effects		**106**	**63**	
Age × Race(3) × Hispanicity	5*3*2	8	4	Coll. (*,2,*) & (*,3,*); conv.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 level)	5*5*3	32	11	Coll.(3,*,2) & (3,*,3)hier., Coll. (1,*,2) & (1,*,3); conv. Coll. (2,*,2) & (2,*,3); conv. Coll. (5,*,2) & (5,*,3); conv. Drop (1,3,*), (1,4,*), (3,2,*), (3,3,*), (3,4,*); conv.
State × Age × Hispanicity	5*5*2	16	7	Drop (1,4,1), (2,4,1), (3,4,1); conv. Coll (1,1,1), (1,2,1) & (1,3,1); (2,1,1), (2,2,1) & (2,3,1), (3,1,1) & (3,2,1), (5,1,1) & (5,2,1); conv.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race(3 level) × Hispanicity	5*3*2	8	3	Coll. (3,2,1) & (3,3,1) hier. Coll. (1,2,1) & (1,3,1); conv. Coll. (2,2,1) & (2,3,1); conv. Coll. (5,2,1) & (5,3,1); conv. Drop (3,2_3,1); conv.
State × Race(3 level) × Gender	5*3*2	8	5	Coll. (3,2,1) & (3,3,1) hier. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1); conv.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
Total		**282**	**219**	

Exhibit D9.5 Covariates for 2001 NHSDA Person Weights (res.per.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race(4 level)	4	3	3	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**69**	**69**	
Age × Race(3 level)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	4	All levels present.
Age × Gender	5*2	4	4	All levels present.
Race (3 level) × Hispanicity	3*2	2	2	All levels present.
Race(3 level) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
State × Quarter	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race(4 level)	5*4	12	12	All levels present.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
Three-Factor Effects		**106**	**87**	
Age × Race(3) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race(3) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race3 × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race(3 level)	5*5*3	32	20	Coll. (1,1,2) & (1,1,3); conv. Repeat for all State age combinations except CA.
State × Age × Hispanicity	5*5*2	16	14	Drop (1,4,1), (3,4,1); conv.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race(3 level) × Hispanicity	5*3*2	8	4	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1); conv. Drop (3,2,1) & (3,3,1); conv.
State × Race(3 level) × Gender	5*3*2	8	7	Coll. (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
Total		**192**	**173**	

Appendix E

Evaluation of Calibration Weights: Response Rates

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Table E 2001 NHSDA Weighted Response Rates: United States, District of Columbia, and the 50 States

	Dwelling Unit					Person Level		Interview Response Rate	
Domain	Selected DUs	Eligible DUs	Completed DUs	Eligibility Rate	Screening Rate	Selected Persons	Respondents	Weight 1-10[1]	Weight 1-11[2]
United States	203,544	171,519	157,471	84.60%	91.86%	89,745	68,929	73.31%	73.29%
Alabama	2,696	2,246	2,071	83.20%	92.20%	1,134	885	73.31%	73.88%
Alaska	2,854	2,133	2,047	74.42%	96.03%	1,171	951	79.62%	78.01%
Arizona	2,628	2,186	2,042	80.44%	93.50%	1,229	964	76.41%	76.84%
Arkansas	3,025	2,482	2,400	82.08%	96.70%	1,152	911	75.36%	75.37%
California	9,745	8,600	7,948	87.99%	92.46%	4,881	3,729	71.83%	72.39%
Colorado	2,491	2,166	2,053	87.24%	94.78%	1,175	886	70.64%	70.55%
Connecticut	3,514	3,185	2,937	90.63%	92.16%	1,444	1,055	69.79%	69.72%
Delaware	2,403	2,034	1,875	84.37%	92.03%	1,191	893	69.07%	67.80%
District of Columbia	4,862	4,063	3,547	83.59%	86.40%	1,043	877	78.30%	78.12%
Florida	11,244	8,954	8,181	79.35%	91.15%	4,531	3,502	72.34%	72.77%
Georgia	2,605	2,196	2,011	84.24%	91.53%	1,241	940	70.84%	71.08%
Hawaii	2,519	2,069	1,890	81.01%	91.13%	1,172	887	68.17%	68.59%
Idaho	2,373	1,930	1,807	81.45%	93.83%	1,207	936	76.75%	76.30%
Illinois	11,100	9,784	8,397	88.21%	85.85%	5,270	3,558	64.39%	64.12%
Indiana	2,950	2,569	2,368	86.96%	92.29%	1,294	915	69.68%	69.16%
Iowa	2,511	2,178	2,048	86.72%	94.00%	1,185	961	77.52%	78.50%
Kansas	2,189	1,893	1,785	86.57%	94.35%	1,189	922	77.32%	77.05%
Kentucky	2,681	2,271	2,150	84.81%	94.76%	1,138	911	76.62%	76.65%
Louisiana	2,334	1,938	1,831	83.18%	94.47%	1,143	909	74.21%	73.81%
Maine	3,187	2,535	2,297	79.33%	90.69%	1,096	896	84.36%	84.10%
Maryland	2,211	1,974	1,825	89.29%	92.45%	1,158	961	79.19%	78.22%
Massachusetts	2,941	2,586	2,328	87.32%	89.99%	1,302	933	67.51%	66.21%
Michigan	11,657	9,699	8,856	82.13%	91.28%	4,993	3,768	73.71%	73.31%
Minnesota	2,235	1,931	1,803	87.08%	93.10%	1,113	883	79.88%	78.88%
Mississippi	2,610	2,017	1,929	77.46%	95.62%	1,121	885	73.73%	74.67%

DU = dwelling unit

[1] Includes DU-level and person-level design weights, DU nonresponse adjustment, and DU poststratification.

[2] Includes a selected person poststratification weight.

(continued)

Table E 2001 NHSDA Weighted Response Rates: United States, District of Columbia, and the 50 States (continued)

Domain	Dwelling Unit					Person Level		Interview Response Rate	
	Selected DUs	Eligible DUs	Completed DUs	Eligibility Rate	Screening Rate	Selected Persons	Respondents	Weight 1-10[1]	Weight 1-11[2]
Missouri	2,964	2,457	2,288	82.90%	93.12%	1,111	882	78.34%	78.94%
Montana	2,699	2,135	2,030	79.06%	95.08%	1,117	896	77.50%	77.72%
Nebraska	2,170	1,914	1,800	88.35%	94.04%	1,192	920	76.47%	76.42%
Nevada	2,333	1,942	1,852	82.24%	95.32%	1,169	944	75.37%	76.04%
New Hampshire	3,184	2,671	2,467	81.90%	92.35%	1,193	913	76.00%	76.11%
New Jersey	3,191	2,821	2,467	86.55%	87.52%	1,435	1,069	70.28%	70.23%
New Mexico	2,282	1,807	1,754	79.24%	97.07%	1,060	872	80.81%	80.41%
New York	13,869	11,921	9,998	85.44%	84.33%	5,544	4,023	68.67%	68.27%
North Carolina	2,848	2,421	2,244	85.08%	92.76%	1,144	852	72.11%	72.04%
North Dakota	2,615	2,191	2,067	83.76%	94.38%	1,128	883	77.62%	77.07%
Ohio	10,355	9,044	8,455	86.73%	93.46%	4,690	3,706	76.51%	76.20%
Oklahoma	2,525	2,156	2,007	85.30%	93.07%	1,142	862	74.69%	75.13%
Oregon	2,517	2,110	1,972	83.68%	93.40%	1,121	880	77.36%	77.01%
Pennsylvania	11,049	9,364	8,768	84.41%	93.65%	4,807	3,734	74.97%	75.35%
Rhode Island	2,833	2,453	2,232	86.61%	90.97%	1,237	895	69.70%	69.87%
South Carolina	2,922	2,307	2,176	77.77%	94.46%	1,166	891	71.52%	70.78%
South Dakota	2,360	1,989	1,871	84.28%	94.13%	1,187	931	80.36%	79.75%
Tennessee	2,834	2,399	2,243	83.95%	94.37%	1,166	921	74.43%	74.83%
Texas	8,391	6,994	6,504	83.19%	93.00%	4,445	3,604	77.77%	77.65%
Utah	1,390	1,218	1,172	87.15%	96.19%	1,095	895	80.23%	80.22%
Vermont	3,006	2,267	2,108	72.75%	93.00%	1,122	926	80.29%	80.43%
Virginia	2,827	2,455	2,251	87.14%	91.50%	1,200	929	75.20%	75.86%
Washington	2,554	2,063	1,933	80.13%	93.67%	1,178	911	74.07%	73.33%
West Virginia	3,200	2,668	2,517	83.27%	94.34%	1,163	876	70.06%	69.76%
Wisconsin	2,668	2,263	2,103	84.78%	92.85%	1,208	883	70.98%	71.18%
Wyoming	2,393	1,870	1,766	77.73%	94.44%	1,152	913	76.73%	76.95%

DU = dwelling unit
[1] Includes DU-level and person-level design weights, DU nonresponse adjustment, and DU poststratification.
[2] Includes a selected person poststratification weight.

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Appendix F

Evaluation of Calibration Weights: Dwelling Unit-Level Proportions of Extreme Values and Outwinsors

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Table F 2001 NHSDA Dwelling Unit-Level Proportions of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States

Domain	n	Before nr[1](Weight1*...*Weight6)			After nr & Before ps[2](Weight1*...*Weight7)			After ps(Weight1*...*Weight8)		
		Unweighted	Weighted[3]	Outwinsor[4]	Unweighted	Weighted[3]	Outwinsor[4]	Unweighted	Weighted[3]	Outwinsor[4]
United States	157,471	3.04%	2.80%	0.26%	2.38%	2.30%	0.17%	2.07%	3.16%	0.67%
Alabama	2,071	10.57%	10.79%	1.02%	0.00%	0.00%	0.00%	0.34%	0.81%	0.15%
Alaska	2,047	12.85%	14.92%	1.33%	5.62%	6.25%	0.22%	2.59%	5.87%	1.08%
Arizona	2,042	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.73%	1.72%	0.38%
Arkansas	2,400	7.88%	7.90%	0.53%	2.96%	3.37%	0.04%	2.75%	3.88%	0.53%
California	7,948	1.45%	1.43%	0.20%	1.71%	1.76%	0.09%	2.19%	3.92%	1.23%
Colorado	2,053	1.66%	1.52%	0.08%	0.00%	0.00%	0.00%	8.09%	10.88%	2.16%
Connecticut	2,937	9.33%	11.01%	0.95%	8.82%	9.90%	0.85%	2.18%	4.50%	0.72%
Delaware	1,875	0.21%	0.44%	0.09%	0.00%	0.00%	0.00%	2.29%	2.34%	0.33%
District of Columbia	3,547	1.80%	2.27%	0.11%	6.34%	8.57%	0.69%	1.86%	3.05%	0.85%
Florida	8,181	1.85%	2.69%	0.57%	2.37%	2.63%	0.19%	1.00%	1.56%	0.28%
Georgia	2,011	1.09%	1.26%	0.31%	4.43%	5.97%	0.79%	4.43%	5.33%	1.16%
Hawaii	1,890	1.11%	0.74%	0.20%	3.33%	3.11%	0.12%	1.80%	4.90%	1.12%
Idaho	1,807	6.59%	6.93%	0.52%	9.41%	10.15%	0.79%	5.20%	6.43%	1.44%
Illinois	8,397	4.95%	4.46%	0.28%	3.20%	3.90%	0.62%	2.56%	3.37%	0.79%
Indiana	2,368	0.34%	0.76%	0.04%	0.00%	0.00%	0.00%	3.51%	5.55%	0.83%
Iowa	2,048	0.00%	0.00%	0.00%	1.17%	1.49%	0.09%	1.12%	2.09%	0.49%
Kansas	1,785	5.99%	7.35%	0.28%	5.71%	6.72%	0.28%	2.07%	2.29%	0.53%
Kentucky	2,150	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.88%	3.63%	1.25%
Louisiana	1,831	9.99%	11.60%	0.85%	9.72%	10.50%	0.47%	4.48%	6.16%	1.07%
Maine	2,297	0.00%	0.00%	0.00%	2.92%	3.04%	0.07%	1.39%	2.40%	0.36%
Maryland	1,825	5.26%	6.51%	0.35%	7.62%	9.37%	0.49%	2.25%	1.60%	0.40%
Massachusetts	2,328	0.00%	0.00%	0.00%	0.30%	0.53%	0.14%	1.55%	2.65%	0.35%
Michigan	8,856	3.12%	3.77%	0.29%	1.72%	1.91%	0.03%	0.64%	0.95%	0.13%
Minnesota	1,803	12.42%	18.63%	0.83%	10.98%	16.61%	1.06%	1.39%	1.72%	0.18%
Mississippi	1,929	0.26%	0.02%	0.09%	0.00%	0.00%	0.00%	2.80%	5.93%	0.71%

(continued)

[1] nr: nonresponse adjustment.
[2] ps: poststratification adjustment.
[3] Weighted extreme value proportion: $100 * \sum_k w_{ek} / \sum_k w_k$, where w_{ek} denotes the weight for extreme values and w_k denotes the weight for both extreme values and non-extreme values.
[4] Outwinsor weight proportion: $100 * \sum_k (w_{ek} - b_k) / \sum_k w_k$, where b_k denotes the winsorized weight.

Table F 2001 NHSDA Dwelling Unit-Level Proportions of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States (continued)

		Before nr[1](Weight1*...*Weight6)			After nr & Before ps[2](Weight1*...*Weight7)			After ps(Weight1*...*Weight8)		
Domain	***n***	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**
Missouri	2,288	0.09%	0.05%	0.02%	2.05%	2.21%	0.02%	3.58%	2.76%	0.42%
Montana	2,030	1.92%	2.04%	0.07%	0.00%	0.00%	0.00%	3.00%	4.46%	0.62%
Nebraska	1,800	1.89%	1.65%	0.01%	0.83%	0.99%	0.06%	2.22%	3.13%	0.47%
Nevada	1,852	2.27%	3.09%	0.49%	5.99%	6.07%	0.57%	2.59%	5.71%	0.77%
New Hampshire	2,467	1.30%	2.98%	0.82%	0.24%	0.43%	0.04%	0.28%	0.53%	0.05%
New Jersey	2,467	0.57%	0.78%	0.06%	0.00%	0.00%	0.00%	0.65%	2.68%	1.28%
New Mexico	1,754	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.57%	6.21%	1.09%
New York	9,998	0.61%	0.79%	0.16%	0.00%	0.00%	0.00%	0.78%	2.10%	0.57%
North Carolina	2,244	0.31%	0.07%	0.02%	0.22%	0.08%	0.01%	1.69%	2.93%	0.31%
North Dakota	2,067	5.18%	4.29%	0.45%	1.94%	1.77%	0.12%	4.50%	5.15%	1.59%
Ohio	8,455	5.45%	5.41%	0.57%	2.26%	2.05%	0.05%	3.21%	3.37%	0.73%
Oklahoma	2,007	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.24%	4.16%	0.43%
Oregon	1,972	0.15%	0.05%	0.05%	0.00%	0.00%	0.00%	2.28%	3.27%	0.51%
Pennsylvania	8,768	4.58%	4.25%	0.24%	1.82%	1.79%	0.09%	1.00%	1.27%	0.19%
Rhode Island	2,232	0.36%	0.28%	0.02%	1.30%	1.72%	0.14%	3.09%	3.05%	0.61%
South Carolina	2,176	0.14%	0.06%	0.00%	0.00%	0.00%	0.00%	0.97%	1.59%	0.16%
South Dakota	1,871	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.14%	2.72%	0.68%
Tennessee	2,243	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.74%	5.51%	1.11%
Texas	6,504	0.38%	0.11%	0.14%	1.26%	1.32%	0.11%	1.74%	1.79%	0.39%
Utah	1,172	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.68%	1.51%	0.27%
Vermont	2,108	12.33%	14.76%	0.63%	15.61%	18.35%	1.03%	2.66%	1.98%	0.47%
Virginia	2,251	8.13%	7.97%	0.53%	1.78%	2.56%	0.26%	3.73%	6.56%	1.09%
Washington	1,933	0.00%	0.00%	0.00%	2.02%	1.62%	0.12%	1.55%	3.00%	0.72%
West Virginia	2,517	0.95%	1.14%	0.00%	0.00%	0.00%	0.00%	1.75%	3.93%	0.71%
Wisconsin	2,103	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.81%	3.15%	0.40%
Wyoming	1,766	16.59%	20.93%	1.27%	11.49%	14.66%	1.10%	0.85%	1.29%	0.11%

[1] nr: nonresponse adjustment.
[2] ps: poststratification adjustment.
[3] Weighted extreme value proportion: 100 * $\sum_k w_{ek} / \sum_k w_k$, where w_{ek} denotes the weight for extreme values and w_k denotes the weight for both extreme values and non-extreme values.
[4] Outwinsor weight proportion: 100 * $\sum_k (w_{ek} - b_k) / \sum_k w_k$, where b_k denotes the winsorized weight.

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Appendix G

Evaluation of Calibration Weights: Person-Level Proportions of Extreme Values and Outwinsors

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Table G.1 2001 NHSDA (Selected) Person-Level Proportions of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States

Domain	*n*	Before sel.per.ps[1] (Weight1*...Weight10) Unweighted	Before sel.per.ps[1] (Weight1*...Weight10) Weighted[2]	Before sel.per.ps[1] (Weight1*...Weight10) Outwinsor[3]	After sel.per.ps[1] (Weight1*...*Weight11) Unweighted	After sel.per.ps[1] (Weight1*...*Weight11) Weighted[2]	After sel.per.ps[1] (Weight1*...*Weight11) Outwinsor[3]
United States	89,745	3.52%	6.30%	1.53%	1.72%	3.14%	0.69%
Alabama	1,134	1.32%	1.31%	0.14%	1.23%	2.91%	0.37%
Alaska	1,171	4.53%	11.45%	3.78%	0.68%	1.01%	0.04%
Arizona	1,229	2.60%	5.77%	0.76%	0.90%	0.93%	0.14%
Arkansas	1,152	1.56%	2.62%	0.48%	1.74%	3.86%	0.71%
California	4,881	4.28%	7.33%	1.92%	1.64%	2.73%	0.79%
Colorado	1,175	3.49%	8.23%	1.90%	1.62%	3.31%	0.63%
Connecticut	1,444	3.67%	9.23%	1.66%	2.63%	5.52%	0.57%
Delaware	1,191	2.18%	3.11%	0.52%	2.60%	4.76%	0.75%
District of Columbia	1,043	3.16%	6.25%	1.48%	2.01%	5.04%	0.73%
Florida	4,531	2.80%	7.56%	2.57%	2.01%	4.62%	1.14%
Georgia	1,241	3.30%	7.40%	1.53%	0.97%	1.97%	0.24%
Hawaii	1,172	3.58%	6.89%	1.84%	1.71%	2.65%	0.53%
Idaho	1,207	5.80%	11.72%	3.17%	1.82%	3.32%	0.59%
Illinois	5,270	4.08%	7.02%	2.09%	2.22%	4.20%	0.74%
Indiana	1,294	2.78%	6.10%	1.53%	0.54%	0.62%	0.05%
Iowa	1,185	2.95%	5.11%	0.93%	1.94%	4.25%	0.88%
Kansas	1,189	2.61%	3.94%	1.09%	1.51%	1.89%	0.32%
Kentucky	1,138	8.52%	7.14%	1.83%	3.08%	6.00%	1.05%
Louisiana	1,143	4.72%	10.58%	2.78%	1.14%	2.75%	0.26%
Maine	1,096	4.56%	6.29%	1.45%	3.38%	4.39%	0.53%
Maryland	1,158	2.25%	4.42%	0.61%	1.21%	2.93%	0.56%
Massachusetts	1,302	4.69%	9.26%	1.97%	1.84%	3.20%	0.61%
Michigan	4,993	3.12%	5.49%	1.18%	1.22%	3.10%	0.85%
Minnesota	1,113	2.70%	7.53%	0.93%	1.17%	2.61%	0.50%
Mississippi	1,121	1.96%	6.33%	0.96%	0.62%	1.79%	0.42%

[1] Before sel.per.ps (Weight1*...*Weight10) and after sel.per.ps (Weight1*...*Weight11) used demographic variables from screener data for all selected persons.
[2] Weighted extreme value proportion: 100 * $\sum_k w_{ek} / \sum_k w_k$, where w_{ek} denotes the weight for extreme values and w_k denotes the weight for both extreme values and non-extreme values.
[3] Outwinsor weight proportion: 100 * $\sum_k (w_{ek} - b_k) / \sum_k w_k$, where b_k denotes the winsorized weight.

Table G.1 2001 NHSDA (Selected) Person-Level Proportions of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before sel.per.ps[1] (Weight1*...Weight10)			After sel.per.ps[1] (Weight1*...*Weight11)		
		Unweighted	Weighted[2]	Outwinsor[3]	Unweighted	Weighted[2]	Outwinsor[3]
Missouri	1,111	2.88%	6.46%	1.71%	0.63%	0.65%	0.06%
Montana	1,117	3.22%	9.05%	1.28%	3.58%	8.70%	0.30%
Nebraska	1,192	2.94%	5.60%	1.41%	2.43%	3.29%	0.46%
Nevada	1,169	2.82%	11.82%	2.94%	0.68%	2.91%	0.90%
New Hampshire	1,193	1.93%	2.87%	0.62%	1.68%	1.96%	0.20%
New Jersey	1,435	1.95%	3.49%	0.61%	1.25%	2.92%	0.67%
New Mexico	1,060	3.68%	9.16%	1.86%	0.47%	1.07%	0.09%
New York	5,544	2.45%	5.81%	1.57%	1.73%	4.86%	1.17%
North Carolina	1,144	2.71%	3.11%	0.69%	0.35%	1.04%	0.24%
North Dakota	1,128	4.26%	5.86%	1.39%	1.24%	2.73%	0.62%
Ohio	4,690	6.03%	6.44%	1.40%	2.41%	3.78%	0.81%
Oklahoma	1,142	2.71%	4.61%	0.72%	1.14%	1.95%	0.23%
Oregon	1,121	2.50%	3.89%	0.80%	1.43%	1.96%	0.38%
Pennsylvania	4,807	5.12%	6.18%	1.82%	2.00%	2.84%	0.54%
Rhode Island	1,237	3.31%	4.30%	1.04%	1.78%	3.22%	0.82%
South Carolina	1,166	3.52%	5.73%	0.94%	1.03%	1.44%	0.17%
South Dakota	1,187	6.23%	7.18%	1.84%	3.71%	4.93%	0.96%
Tennessee	1,166	3.60%	7.36%	2.28%	1.97%	7.17%	3.53%
Texas	4,445	2.20%	4.57%	0.97%	0.88%	1.02%	0.09%
Utah	1,095	1.74%	3.33%	0.52%	0.18%	0.41%	0.04%
Vermont	1,122	3.12%	3.70%	1.26%	1.78%	1.51%	0.45%
Virginia	1,200	3.83%	7.05%	1.98%	1.33%	3.84%	1.19%
Washington	1,178	3.65%	7.26%	1.88%	3.90%	9.09%	1.72%
West Virginia	1,163	3.18%	6.42%	1.10%	3.10%	5.05%	0.87%
Wisconsin	1,208	4.22%	6.82%	1.51%	1.57%	1.79%	0.20%
Wyoming	1,152	2.43%	4.22%	0.79%	2.69%	3.48%	0.56%

[1] Before sel.per.ps (Weight1*...*Weight10) and after sel.per.ps (Weight1*...*Weight11) used demographic variables from screener data for all selected persons.
[2] Weighted extreme value proportion: $100 * \sum_k w_{ek} / \sum_k w_k$, where w_{ek} denotes the weight for extreme values and w_k denotes the weight for both extreme values and non-extreme values.
[3] Outwinsor weight proportion: $100 * \sum_k (w_{ek} - b_k) / \sum_k w_k$, where b_k denotes the winsorized weight.

Table G.2 2001 NHSDA (Respondent) Person-Level Proportions of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States

		res.per.nr[1]						res.per.ps[2]					
		Before(Weight1*...Weight11)			After(Weight1*...*Weight12)			Before(Weight1*...*Weight12)			Final Weight After(Weight1*...*Weight13)		
Domain	***n***	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**
United States	68,929	1.71%	3.06%	0.68%	1.57%	3.61%	0.67%	1.65%	3.81%	0.76%	1.01%	2.00%	0.33%
Alabama	885	0.68%	1.67%	0.23%	0.11%	0.62%	0.05%	0.23%	0.88%	0.16%	0.45%	1.28%	0.37%
Alaska	951	0.63%	1.05%	0.05%	1.16%	2.30%	0.27%	1.26%	2.60%	0.32%	0.74%	1.36%	0.07%
Arizona	964	1.24%	2.04%	0.26%	0.21%	0.22%	0.00%	0.31%	0.56%	0.23%	0.83%	2.05%	0.41%
Arkansas	911	1.65%	3.93%	0.68%	0.22%	0.58%	0.12%	0.22%	0.58%	0.13%	1.10%	2.72%	0.57%
California	3,729	1.69%	3.17%	0.91%	1.13%	3.18%	0.61%	1.26%	3.48%	0.76%	0.29%	0.48%	0.07%
Colorado	886	1.35%	2.93%	0.52%	2.48%	6.14%	1.27%	2.60%	5.92%	1.37%	1.81%	3.35%	0.61%
Connecticut	1,055	2.46%	4.74%	0.46%	1.42%	1.74%	0.21%	1.52%	2.18%	0.32%	1.23%	2.05%	0.62%
Delaware	893	2.02%	2.73%	0.48%	4.48%	11.97%	3.94%	4.48%	12.07%	3.88%	2.58%	7.60%	1.23%
District of Columbia	877	2.05%	5.45%	0.68%	1.14%	2.68%	0.30%	1.48%	4.36%	0.70%	1.82%	3.92%	0.97%
Florida	3,502	1.77%	3.84%	1.04%	1.68%	3.59%	0.98%	1.80%	4.01%	1.19%	1.14%	2.34%	0.70%
Georgia	940	0.64%	0.73%	0.10%	0.53%	1.90%	0.41%	0.96%	3.44%	1.07%	1.70%	5.15%	0.42%
Hawaii	887	2.25%	4.08%	0.74%	2.14%	5.76%	1.04%	2.25%	6.75%	1.31%	0.68%	0.81%	0.14%
Idaho	936	1.92%	2.79%	0.56%	1.92%	3.70%	0.43%	1.92%	3.70%	0.44%	1.28%	2.66%	0.86%
Illinois	3,558	2.05%	3.63%	0.65%	2.53%	6.22%	0.80%	2.50%	6.15%	0.79%	0.62%	1.54%	0.22%
Indiana	915	0.87%	1.22%	0.06%	0.22%	0.24%	0.02%	0.22%	0.24%	0.02%	0.22%	0.22%	0.08%
Iowa	961	2.39%	5.25%	1.02%	1.77%	1.84%	0.19%	1.98%	2.22%	0.38%	1.04%	2.35%	0.53%
Kansas	922	1.63%	2.80%	0.42%	1.84%	3.68%	0.78%	1.95%	3.80%	0.78%	1.95%	3.72%	0.49%
Kentucky	911	3.07%	5.11%	0.72%	2.09%	4.12%	0.56%	2.09%	4.12%	0.54%	0.33%	2.01%	1.18%
Louisiana	909	1.10%	2.02%	0.23%	2.64%	7.67%	1.23%	2.53%	7.30%	1.17%	1.76%	6.00%	0.81%
Maine	896	3.13%	4.04%	0.42%	2.12%	1.97%	0.31%	2.57%	2.24%	0.30%	1.23%	1.80%	0.31%
Maryland	961	1.04%	0.92%	0.12%	1.46%	3.32%	0.69%	1.46%	3.32%	0.69%	0.83%	1.12%	0.06%
Massachusetts	933	2.36%	3.21%	0.54%	3.11%	7.91%	1.20%	3.11%	8.01%	1.29%	0.86%	1.18%	0.19%
Michigan	3,768	1.25%	2.92%	0.78%	1.04%	3.20%	0.38%	1.11%	3.38%	0.44%	0.58%	2.41%	0.15%
Minnesota	883	1.25%	2.26%	0.35%	2.15%	5.31%	0.78%	2.27%	5.48%	0.86%	1.36%	2.03%	0.43%
Mississippi	885	0.68%	2.31%	0.46%	0.79%	3.42%	0.87%	0.90%	3.59%	0.80%	0.45%	1.52%	0.19%

[1] Before res.per.nr (Weight1*...*Weight11) and after res.per.nr(Weight1*...*Weight12) used demographic variables from screener data for all respondents.
[2] Before res.per.ps (Weight1*...*Weight12) and after res.per.ps(Weight1*...*Weight13) used demographic variables from questionnaire data for all respondents.
[3] Weighted outlier proportion: 100 * $\sum_k w_{ok} / \sum_k w_k$, where w_{ok} denotes the weight for outliers and w_k denotes the weight for both outliers and non-outliers.
[4] Outwinsor weight proportion: 100 * $\sum_k (w_{ek} - b_k) / \sum_k w_k$, where b_k denotes the winsorized weight.

Table G.2 2001 NHSDA (Respondent) Person-Level Proportions of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States (continued)

		res.per.nr[1]						res.per.ps[2]					
		Before(Weight1*...Weight11)			After(Weight1*...*Weight12)			Before(Weight1*...*Weight12)			Final Weight After(Weight1*...*Weight13)		
Domain	***n***	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**	**Unweighted**	**Weighted[3]**	**Outwinsor[4]**
Missouri	882	0.11%	0.12%	0.01%	0.79%	2.47%	0.56%	0.91%	2.62%	0.59%	0.11%	0.10%	0.00%
Montana	896	2.68%	8.08%	0.24%	0.56%	0.47%	0.04%	0.56%	0.47%	0.04%	0.33%	0.24%	0.01%
Nebraska	920	3.37%	3.76%	0.59%	0.76%	0.84%	0.11%	0.87%	0.96%	0.12%	1.09%	2.10%	0.46%
Nevada	944	0.64%	3.40%	1.02%	0.64%	0.86%	0.09%	0.64%	0.86%	0.11%	0.53%	1.44%	0.34%
New Hampshire	913	1.64%	1.28%	0.21%	0.99%	1.14%	0.13%	0.99%	1.14%	0.12%	0.44%	0.35%	0.08%
New Jersey	1,069	1.50%	3.58%	0.84%	1.59%	2.90%	0.62%	1.50%	2.80%	0.62%	0.19%	0.15%	0.02%
New Mexico	872	0.57%	1.33%	0.09%	0.57%	2.03%	0.09%	0.69%	2.18%	0.12%	0.57%	1.35%	0.09%
New York	4,023	1.89%	6.04%	1.42%	1.62%	4.90%	0.75%	1.49%	4.52%	0.70%	0.82%	1.88%	0.12%
North Carolina	852	0.47%	1.19%	0.01%	1.88%	3.56%	1.05%	2.11%	4.03%	1.17%	1.06%	1.64%	0.45%
North Dakota	883	1.36%	2.89%	0.64%	4.08%	5.66%	1.34%	3.96%	5.55%	1.28%	3.17%	6.53%	1.88%
Ohio	3,706	2.27%	3.04%	0.57%	1.81%	3.80%	0.85%	2.08%	3.96%	1.01%	1.48%	2.36%	0.21%
Oklahoma	862	0.81%	1.60%	0.16%	1.39%	2.20%	0.31%	1.39%	2.20%	0.30%	1.28%	2.85%	0.65%
Oregon	880	0.80%	1.17%	0.23%	0.34%	1.31%	0.33%	0.57%	2.23%	0.63%	0.34%	1.31%	0.23%
Pennsylvania	3,734	2.06%	2.75%	0.60%	2.36%	5.60%	0.98%	2.49%	6.08%	1.11%	1.10%	1.92%	0.19%
Rhode Island	895	1.68%	3.01%	0.99%	1.79%	4.02%	0.81%	1.90%	4.17%	0.85%	1.68%	2.83%	0.71%
South Carolina	891	1.91%	1.68%	0.29%	1.91%	9.81%	1.29%	2.02%	10.91%	1.68%	1.46%	6.49%	0.64%
South Dakota	931	3.44%	4.80%	0.89%	0.86%	1.12%	0.17%	0.97%	1.43%	0.18%	0.75%	6.26%	3.29%
Tennessee	921	1.85%	7.13%	3.90%	2.82%	7.17%	2.55%	2.82%	7.17%	2.48%	1.30%	2.46%	0.45%
Texas	3,604	0.86%	1.13%	0.10%	0.75%	1.69%	0.15%	0.72%	1.79%	0.19%	0.53%	1.46%	0.15%
Utah	895	0.22%	0.51%	0.06%	0.34%	1.04%	0.18%	0.56%	1.35%	0.22%	1.01%	2.45%	0.38%
Vermont	926	1.94%	1.67%	0.44%	1.73%	1.80%	0.30%	1.73%	1.80%	0.30%	1.73%	1.96%	0.44%
Virginia	929	1.29%	5.00%	1.46%	1.08%	1.69%	0.31%	1.29%	2.16%	0.32%	0.86%	2.99%	1.01%
Washington	911	3.40%	7.35%	1.35%	2.85%	6.57%	1.64%	2.96%	6.73%	1.67%	2.31%	4.53%	0.66%
West Virginia	876	3.54%	5.07%	0.51%	2.85%	5.11%	0.96%	2.85%	5.11%	0.96%	2.40%	3.49%	0.79%
Wisconsin	883	1.59%	1.77%	0.25%	1.02%	1.24%	0.11%	1.02%	1.29%	0.13%	1.25%	2.25%	0.29%
Wyoming	913	3.18%	3.98%	0.62%	1.42%	1.77%	0.17%	1.31%	1.38%	0.17%	2.08%	2.95%	0.60%

[1] Before res.per.nr ,(Weight1*...*Weight11) and after res.per.nr(Weight1*...*Weight12) used demographic variables from screener data for all respondents.
[2] Before res.per.ps (Weight1*...*Weight12) and after res.per.ps(Weight1*...*Weight13) used demographic variables from questionnaire data for all respondents.
[3] Weighted outlier proportion: 100 * $\sum_k w_{ok} / \sum_k w_k$, where w_{ok} denotes the weight for outliers and w_k denotes the weight for both outliers and non-outliers.
[4] Outwinsor weight proportion: 100 * $\sum_k (w_{ek} - b_k) / \sum_k w_k$, where b_k denotes the winsorized weight.

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Appendix H

Evaluation of Calibration Weights: Slippage Rates

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Table H1 2001 NHSDA Slippage Rates: United States

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		68,929	225,635,790	225,635,790	225,635,790	0.00	-0.00
Quarter	**Quarter 1**	16,734	56,173,899	56,173,899	56,173,899	0.00	0.00
	Quarter 2	17,354	56,317,331	56,317,331	56,317,331	0.00	-0.00
	Quarter 3	17,088	56,489,290	56,489,290	56,489,290	0.00	0.00
	Quarter 4	17,753	56,655,270	56,655,270	56,655,270	0.00	0.00
Age Group	**12-17**	23,133	23,627,615	23,599,952	23,599,952	0.12	0.00
	18-25	22,658	29,323,040	29,485,025	29,485,025	-0.55	-0.00
	26-34	6,893	32,907,503	32,700,100	32,700,100	0.63	-0.00
	35-49	10,036	64,204,548	64,218,705	64,218,706	-0.02	-0.00
	50+	6,209	75,573,084	75,632,007	75,632,007	-0.08	0.00
Race	**White**	54,826	182,875,846	187,136,142	187,136,142	-2.28	0.00
	Black	9,079	28,263,712	27,338,780	27,338,780	3.38	-0.00
	Other	5,024	14,496,232	11,160,868	11,160,868	29.88	0.00
Hispanicity	**Hispanic**	8,879	24,898,243	24,662,196	24,662,196	0.96	-0.00
	Non-Hispanic	60,050	200,737,548	200,973,594	200,973,594	-0.12	0.00
Gender	**Male**	33,110	108,560,002	108,567,731	108,567,731	-0.01	0.00
	Female	35,819	117,075,789	117,068,058	117,068,059	0.01	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H2 2001 NHSDA Slippage Rates: Alabama

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		885	3,618,850	3,618,850	3,618,850	0.00	0.00
Quarter	**Quarter 1**	216	903,345	903,345	903,345	0.00	0.00
	Quarter 2	272	903,969	903,969	903,969	0.00	-0.00
	Quarter 3	219	905,168	905,168	905,168	0.00	0.00
	Quarter 4	178	906,369	906,369	906,369	0.00	0.00
Age Group	**12-17**	341	355,865	354,054	354,054	0.51	0.00
	18-25	252	489,409	480,773	480,773	1.80	0.00
	26-34	82	519,351	529,797	529,797	-1.97	-0.00
	35-49	123	1,001,793	994,262	994,262	0.76	0.00
	50+	87	1,252,433	1,259,964	1,259,964	-0.60	0.00
Race	**White**	595	2,681,568	2,683,593	2,683,593	-0.08	-0.00
	Black	260	897,759	873,568	900,850	-0.34	-3.03
	Other	30	39,523	61,689	34,407	14.87	79.29
Hispanicity	**Hispanic**	38	15,260	33,995	33,995	-55.11	0.00
	Non-Hispanic	847	3,603,590	3,584,855	3,584,855	0.52	0.00
Gender	**Male**	415	1,728,117	1,705,009	1,705,010	1.36	-0.00
	Female	470	1,890,733	1,913,841	1,913,841	-1.21	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H3 2001 NHSDA Slippage Rates: Alaska

Domain		n	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		951	480,653	480,653	480,653	0.00	-0.00
Quarter	**Quarter 1**	188	119,614	119,614	119,614	0.00	-0.00
	Quarter 2	261	119,964	119,964	119,964	0.00	0.00
	Quarter 3	242	120,351	120,350	120,351	0.00	-0.00
	Quarter 4	260	120,724	120,724	120,724	0.00	0.00
Age Group	**12-17**	313	65,576	65,895	65,895	-0.48	0.00
	18-25	313	76,800	76,265	76,265	0.70	0.00
	26-34	97	59,088	57,901	57,901	2.05	0.00
	35-49	161	144,454	146,482	146,482	-1.38	-0.00
	50+	67	134,734	134,111	134,111	0.46	-0.00
Race	**White**	719	371,907	371,473	371,473	0.12	0.00
	Black	37	13,851	14,512	14,512	-4.55	-0.00
	Other	195	94,894	94,668	94,668	0.24	0.00
Hispanicity	**Hispanic**	66	21,012	18,684	18,684	12.46	-0.00
	Non-Hispanic	885	459,641	461,968	461,969	-0.50	-0.00
Gender	**Male**	453	245,802	245,682	245,682	0.05	-0.00
	Female	498	234,851	234,971	234,971	-0.05	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H4 2001 NHSDA Slippage Rates: Arizona

Domain		n	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		964	3,970,677	3,970,677	3,970,677	0.00	0.00
Quarter	**Quarter 1**	301	983,253	983,253	983,253	0.00	0.00
	Quarter 2	162	989,319	989,319	989,319	0.00	0.00
	Quarter 3	248	995,847	995,847	995,847	0.00	0.00
	Quarter 4	253	1,002,257	1,002,257	1,002,257	0.00	0.00
Age Group	**12-17**	319	448,976	447,048	447,048	0.43	0.00
	18-25	321	534,065	537,312	537,312	-0.60	0.00
	26-34	95	560,708	551,226	551,226	1.72	0.00
	35-49	140	1,067,467	1,070,053	1,070,053	-0.24	0.00
	50+	89	1,359,461	1,365,038	1,365,038	-0.41	0.00
Race	**White**	810	3,509,338	3,547,161	3,547,161	-1.07	0.00
	Black	33	133,682	143,869	143,869	-7.08	0.00
	Other	121	327,657	279,647	279,647	17.17	0.00
Hispanicity	**Hispanic**	323	848,002	828,917	828,917	2.30	0.00
	Non-Hispanic	641	3,122,675	3,141,759	3,141,759	-0.61	0.00
Gender	**Male**	465	1,910,802	1,934,838	1,934,838	-1.24	0.00
	Female	499	2,059,875	2,035,838	2,035,838	1.18	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H5 2001 NHSDA Slippage Rates: Arkansas

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		911	2,119,431	2,119,431	2,119,431	-0.00	0.00
Quarter	**Quarter 1**	181	528,480	528,480	528,480	-0.00	-0.00
	Quarter 2	223	529,244	529,244	529,244	-0.00	0.00
	Quarter 3	243	530,326	530,326	530,326	-0.00	-0.00
	Quarter 4	264	531,381	531,381	531,381	0.00	0.00
Age Group	**12-17**	352	220,698	221,793	221,793	-0.49	-0.00
	18-25	263	284,284	283,189	283,189	0.39	-0.00
	26-34	78	286,654	291,222	291,222	-1.57	0.00
	35-49	125	567,147	554,594	554,594	2.26	-0.00
	50+	93	760,648	768,633	768,633	-1.04	0.00
Race	**White**	759	1,756,079	1,777,400	1,777,400	-1.20	0.00
	Black	129	325,927	291,732	315,592	3.27	-7.56
	Other	23	37,425	50,299	26,439	41.55	90.24
Hispanicity	**Hispanic**	39	41,121	44,579	44,579	-7.76	-0.00
	Non-Hispanic	872	2,078,309	2,074,852	2,074,852	0.17	0.00
Gender	**Male**	427	1,017,296	1,010,852	1,010,852	0.64	0.00
	Female	484	1,102,135	1,108,579	1,108,579	-0.58	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H6 2001 NHSDA Slippage Rates: California

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,729	27,199,998	27,199,998	27,199,998	0.00	0.00
Quarter	**Quarter 1**	921	6,762,903	6,762,903	6,762,903	0.00	0.00
	Quarter 2	867	6,786,162	6,786,162	6,786,162	0.00	0.00
	Quarter 3	979	6,812,730	6,812,730	6,812,730	0.00	0.00
	Quarter 4	962	6,838,204	6,838,204	6,838,204	-0.00	0.00
Age Group	**12-17**	1,247	2,806,963	2,798,323	2,798,323	0.31	0.00
	18-25	1,179	3,761,305	3,839,173	3,839,173	-2.03	0.00
	26-34	446	4,455,568	4,400,629	4,400,629	1.25	0.00
	35-49	550	7,934,126	7,929,338	7,929,338	0.06	0.00
	50+	307	8,242,037	8,232,536	8,232,536	0.12	-0.00
Race	**White**	2,653	19,980,017	21,520,789	21,520,789	-7.16	0.00
	Black	381	2,230,983	1,956,406	1,956,406	14.03	0.00
	Other	695	4,988,998	3,722,803	3,722,803	34.01	0.00
Hispanicity	**Hispanic**	1,442	8,200,831	8,157,169	8,157,169	0.54	0.00
	Non-Hispanic	2,287	18,999,168	19,042,829	19,042,829	-0.23	0.00
Gender	**Male**	1,782	13,366,484	13,381,571	13,381,571	-0.11	0.00
	Female	1,947	13,833,515	13,818,428	13,818,428	0.11	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H7 2001 NHSDA Slippage Rates: Colorado

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		886	3,423,345	3,423,345	3,423,345	0.00	-0.00
Quarter	**Quarter 1**	246	848,621	848,621	848,621	0.00	0.00
	Quarter 2	225	853,333	853,333	853,333	0.00	-0.00
	Quarter 3	195	858,308	858,308	858,308	0.00	0.00
	Quarter 4	220	863,083	863,083	863,083	0.00	0.00
Age Group	**12-17**	323	366,166	370,565	370,565	-1.19	0.00
	18-25	274	472,223	464,570	464,570	1.65	0.00
	26-34	89	444,296	465,586	465,586	-4.57	0.00
	35-49	125	1,025,859	1,015,289	1,015,289	1.04	-0.00
	50+	75	1,114,801	1,107,335	1,107,335	0.67	0.00
Race	**White**	783	3,127,050	3,169,767	3,169,767	-1.35	0.00
	Black	25	118,281	138,068	138,069	-14.33	-0.00
	Other	78	178,014	115,510	115,510	54.11	0.00
Hispanicity	**Hispanic**	180	458,954	467,840	467,840	-1.90	-0.00
	Non-Hispanic	706	2,964,391	2,955,505	2,955,505	0.30	0.00
Gender	**Male**	443	1,667,354	1,672,725	1,672,725	-0.32	0.00
	Female	443	1,755,991	1,750,620	1,750,620	0.31	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H8 2001 NHSDA Slippage Rates: Connecticut

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,055	2,726,039	2,726,039	2,726,039	0.00	0.00
Quarter	**Quarter 1**	197	679,209	679,209	679,209	0.00	0.00
	Quarter 2	292	680,588	680,588	680,588	-0.00	0.00
	Quarter 3	293	682,302	682,302	682,302	0.00	0.00
	Quarter 4	273	683,940	683,940	683,940	0.00	0.00
Age Group	**12-17**	392	280,426	279,241	279,241	0.42	0.00
	18-25	320	287,260	294,063	294,063	-2.31	0.00
	26-34	108	404,281	384,650	384,650	5.10	0.00
	35-49	138	794,299	816,218	816,218	-2.69	0.00
	50+	97	959,773	951,868	951,868	0.83	0.00
Race	**White**	838	2,299,304	2,399,789	2,399,789	-4.19	0.00
	Black	147	265,377	244,966	244,966	8.33	0.00
	Other	70	161,358	81,285	81,285	98.51	0.00
Hispanicity	**Hispanic**	172	217,137	215,086	215,086	0.95	0.00
	Non-Hispanic	883	2,508,902	2,510,953	2,510,953	-0.08	0.00
Gender	**Male**	510	1,314,308	1,312,208	1,312,208	0.16	0.00
	Female	545	1,411,731	1,413,831	1,413,831	-0.15	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H9 2001 NHSDA Slippage Rates: Delaware

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		893	633,298	633,298	633,298	0.00	0.00
Quarter	**Quarter 1**	225	157,399	157,399	157,399	0.00	0.00
	Quarter 2	256	157,973	157,973	157,973	0.00	0.00
	Quarter 3	207	158,635	158,635	158,635	0.00	0.00
	Quarter 4	205	159,291	159,291	159,291	0.00	0.00
Age Group	**12-17**	279	60,740	60,592	60,592	0.24	0.00
	18-25	332	76,595	79,144	79,144	-3.22	0.00
	26-34	85	103,216	95,967	95,967	7.55	0.00
	35-49	129	181,559	186,407	186,407	-2.60	0.00
	50+	68	211,188	211,188	211,188	0.00	0.00
Race	**White**	652	484,660	495,548	495,548	-2.20	0.00
	Black	198	119,155	120,957	120,957	-1.49	-0.00
	Other	43	29,482	16,794	16,794	75.56	0.00
Hispanicity	**Hispanic**	55	23,369	22,612	22,612	3.35	0.00
	Non-Hispanic	838	609,929	610,686	610,686	-0.12	0.00
Gender	**Male**	426	302,309	302,012	302,012	0.10	0.00
	Female	467	330,989	331,287	331,287	-0.09	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H10 2001 NHSDA Slippage Rates: District of Columbia

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		877	424,954	424,954	424,954	0.00	0.00
Quarter	**Quarter 1**	238	106,512	106,512	106,512	0.00	0.00
	Quarter 2	230	106,259	106,259	106,259	0.00	0.00
	Quarter 3	215	106,132	106,132	106,132	0.00	0.00
	Quarter 4	194	106,051	106,051	106,051	0.00	0.00
Age Group	**12-17**	317	28,188	28,390	28,390	-0.71	0.00
	18-25	300	49,048	50,891	50,891	-3.62	0.00
	26-34	92	75,054	74,779	74,779	0.37	0.00
	35-49	112	131,606	120,549	120,549	9.17	-0.00
	50+	56	141,058	150,344	150,344	-6.18	0.00
Race	**White**	275	149,897	161,030	161,030	-6.91	0.00
	Black	560	253,071	248,122	248,122	1.99	0.00
	Other	42	21,985	15,802	15,802	39.13	0.00
Hispanicity	**Hispanic**	64	27,820	31,081	31,081	-10.49	0.00
	Non-Hispanic	813	397,134	393,873	393,873	0.83	0.00
Gender	**Male**	391	194,213	192,787	192,787	0.74	0.00
	Female	486	230,741	232,167	232,167	-0.61	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H11 2001 NHSDA Slippage Rates: Florida

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		3,502	12,880,446	12,880,446	12,880,446	0.00	0.00
Quarter	**Quarter 1**	919	3,197,740	3,197,740	3,197,740	-0.00	0.00
	Quarter 2	970	3,211,647	3,211,647	3,211,647	0.00	0.00
	Quarter 3	795	3,227,612	3,227,612	3,227,612	0.00	0.00
	Quarter 4	818	3,243,448	3,243,448	3,243,448	0.00	0.00
Age Group	**12-17**	1,160	1,239,982	1,242,158	1,242,158	-0.18	0.00
	18-25	1,158	1,421,026	1,422,062	1,422,062	-0.07	0.00
	26-34	343	1,634,957	1,624,472	1,624,472	0.65	0.00
	35-49	479	3,502,620	3,420,017	3,420,017	2.42	0.00
	50+	362	5,081,861	5,171,738	5,171,738	-1.74	0.00
Race	**White**	2,721	10,468,300	10,741,838	10,741,838	-2.55	0.00
	Black	614	1,931,259	1,836,039	1,836,039	5.19	0.00
	Other	167	480,888	302,570	302,570	58.93	0.00
Hispanicity	**Hispanic**	979	2,062,530	2,072,242	2,072,242	-0.47	0.00
	Non-Hispanic	2,523	10,817,917	10,808,204	10,808,204	0.09	0.00
Gender	**Male**	1,666	6,138,679	6,136,306	6,136,306	0.04	0.00
	Female	1,836	6,741,767	6,744,140	6,744,140	-0.04	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H12 2001 NHSDA Slippage Rates: Georgia

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		940	6,473,255	6,473,255	6,473,255	0.00	0.00
Quarter	**Quarter 1**	186	1,607,183	1,607,183	1,607,183	0.00	-0.00
	Quarter 2	269	1,614,248	1,614,248	1,614,248	0.00	0.00
	Quarter 3	258	1,622,084	1,622,084	1,622,084	0.00	0.00
	Quarter 4	227	1,629,740	1,629,740	1,629,740	0.00	0.00
Age Group	**12-17**	313	702,732	695,054	695,054	1.10	0.00
	18-25	338	922,713	873,110	873,110	5.68	0.00
	26-34	103	1,029,717	1,050,430	1,050,430	-1.97	0.00
	35-49	112	1,873,381	1,923,605	1,923,605	-2.61	-0.00
	50+	74	1,944,712	1,931,055	1,931,055	0.71	0.00
Race	**White**	619	4,393,443	4,504,895	4,504,895	-2.47	0.00
	Black	265	1,836,076	1,809,960	1,809,960	1.44	-0.00
	Other	56	243,736	158,400	158,400	53.87	-0.00
Hispanicity	**Hispanic**	120	214,961	196,563	196,563	9.36	-0.00
	Non-Hispanic	820	6,258,294	6,276,692	6,276,692	-0.29	0.00
Gender	**Male**	455	3,083,944	3,084,312	3,084,312	-0.01	-0.00
	Female	485	3,389,311	3,388,943	3,388,943	0.01	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H13 2001 NHSDA Slippage Rates: Hawaii

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		887	930,043	930,043	930,043	0.00	-0.00
Quarter	**Quarter 1**	197	232,473	232,473	232,473	0.00	-0.00
	Quarter 2	242	232,421	232,421	232,421	0.00	-0.00
	Quarter 3	256	232,538	232,538	232,538	0.00	0.00
	Quarter 4	192	232,612	232,612	232,612	0.00	-0.00
Age Group	**12-17**	318	87,248	87,288	87,288	-0.05	-0.00
	18-25	304	115,668	116,850	116,850	-1.01	-0.00
	26-34	71	113,051	107,778	107,778	4.89	-0.00
	35-49	118	274,004	266,300	266,300	2.89	-0.00
	50+	76	340,072	351,828	351,828	-3.34	0.00
Race	**White**	225	323,734	310,147	310,147	4.38	0.00
	Black	25	9,416	18,653	18,653	-49.52	-0.00
	Other	637	596,893	601,244	601,244	-0.72	0.00
Hispanicity	**Hispanic**	107	94,620	67,927	67,927	39.30	-0.00
	Non-Hispanic	780	835,423	862,117	862,117	-3.10	-0.00
Gender	**Male**	442	444,914	444,404	444,404	0.11	-0.00
	Female	445	485,130	485,640	485,640	-0.11	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H14 2001 NHSDA Slippage Rates: Idaho

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		936	1,039,644	1,039,644	1,039,644	0.00	-0.00
Quarter	**Quarter 1**	201	258,274	258,274	258,274	0.00	0.00
	Quarter 2	218	259,320	259,320	259,320	0.00	-0.00
	Quarter 3	270	260,472	260,472	260,472	0.00	0.00
	Quarter 4	247	261,578	261,578	261,578	0.00	0.00
Age Group	**12-17**	297	123,786	124,216	124,217	-0.35	-0.00
	18-25	328	159,481	162,177	162,177	-1.66	0.00
	26-34	87	142,675	140,734	140,734	1.38	0.00
	35-49	142	273,405	272,219	272,219	0.44	0.00
	50+	82	340,297	340,297	340,297	0.00	0.00
Race	**White**	884	1,006,399	1,008,791	1,008,791	-0.24	-0.00
	Black	9	9,102	6,053	6,054	50.36	-0.00
	Other	43	24,142	24,800	24,800	-2.65	0.00
Hispanicity	**Hispanic**	64	71,466	70,924	70,924	0.76	-0.00
	Non-Hispanic	872	968,178	968,720	968,720	-0.06	0.00
Gender	**Male**	414	517,781	514,131	514,131	0.71	0.00
	Female	522	521,863	525,513	525,513	-0.69	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H15 2001 NHSDA Slippage Rates: Illinois

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		3,558	9,878,062	9,878,062	9,878,062	0.00	0.00
Quarter	**Quarter 1**	872	2,464,078	2,464,078	2,464,078	0.00	0.00
	Quarter 2	826	2,467,100	2,467,100	2,467,100	0.00	0.00
	Quarter 3	958	2,471,404	2,471,404	2,471,404	-0.00	-0.00
	Quarter 4	902	2,475,480	2,475,480	2,475,480	0.00	0.00
Age Group	**12-17**	1,149	1,045,013	1,038,580	1,038,580	0.62	0.00
	18-25	1,166	1,279,045	1,289,549	1,289,549	-0.81	0.00
	26-34	356	1,447,463	1,462,749	1,462,749	-1.05	0.00
	35-49	551	2,862,672	2,843,767	2,843,767	0.66	0.00
	50+	336	3,243,869	3,243,417	3,243,417	0.01	0.00
Race	**White**	2,831	7,925,381	8,087,103	8,087,103	-2.00	0.00
	Black	515	1,461,286	1,408,970	1,408,970	3.71	0.00
	Other	212	491,395	381,988	381,988	28.64	0.00
Hispanicity	**Hispanic**	509	930,110	991,603	991,603	-6.20	0.00
	Non-Hispanic	3,049	8,947,951	8,886,459	8,886,459	0.69	0.00
Gender	**Male**	1,711	4,721,874	4,754,650	4,754,650	-0.69	0.00
	Female	1,847	5,156,188	5,123,411	5,123,411	0.64	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H16 2001 NHSDA Slippage Rates: Indiana

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		915	4,908,674	4,908,674	4,908,674	0.00	0.00
Quarter	**Quarter 1**	213	1,223,259	1,223,259	1,223,259	0.00	0.00
	Quarter 2	214	1,225,594	1,225,594	1,225,594	0.00	-0.00
	Quarter 3	212	1,228,514	1,228,514	1,228,514	0.00	0.00
	Quarter 4	276	1,231,306	1,231,306	1,231,306	0.00	0.00
Age Group	**12-17**	341	510,502	516,730	516,730	-1.21	-0.00
	18-25	241	654,590	653,926	653,926	0.10	-0.00
	26-34	76	718,811	725,195	725,195	-0.88	0.00
	35-49	151	1,393,003	1,388,422	1,388,422	0.33	0.00
	50+	106	1,631,767	1,624,400	1,624,400	0.45	0.00
Race	**White**	792	4,442,138	4,453,808	4,453,808	-0.26	0.00
	Black	105	407,422	389,952	389,952	4.48	0.00
	Other	18	59,114	64,914	64,914	-8.94	0.00
Hispanicity	**Hispanic**	40	109,000	124,511	124,511	-12.46	0.00
	Non-Hispanic	875	4,799,674	4,784,163	4,784,163	0.32	0.00
Gender	**Male**	433	2,367,128	2,366,617	2,366,617	0.02	0.00
	Female	482	2,541,546	2,542,057	2,542,057	-0.02	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H17 2001 NHSDA Slippage Rates: Iowa

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		961	2,370,501	2,370,501	2,370,501	0.00	0.00
Quarter	**Quarter 1**	223	591,641	591,641	591,641	0.00	0.00
	Quarter 2	266	592,160	592,160	592,160	0.00	0.00
	Quarter 3	267	592,975	592,975	592,975	0.00	0.00
	Quarter 4	205	593,725	593,725	593,725	0.00	0.00
Age Group	**12-17**	329	256,285	256,927	256,927	-0.25	0.00
	18-25	342	326,908	319,029	319,029	2.47	0.00
	26-34	73	301,146	311,282	311,282	-3.26	0.00
	35-49	131	640,467	637,568	637,568	0.45	0.00
	50+	86	845,695	845,695	845,695	0.00	0.00
Race	**White**	901	2,276,177	2,287,572	2,287,572	-0.50	0.00
	Black	30	51,621	45,873	45,873	12.53	0.00
	Other	30	42,704	37,056	37,056	15.24	0.00
Hispanicity	**Hispanic**	23	54,154	50,576	50,576	7.07	0.00
	Non-Hispanic	938	2,316,347	2,319,925	2,319,925	-0.15	0.00
Gender	**Male**	445	1,151,157	1,150,197	1,150,197	0.08	0.00
	Female	516	1,219,345	1,220,304	1,220,304	-0.08	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H18 2001 NHSDA Slippage Rates: Kansas

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		922	2,167,331	2,167,331	2,167,331	0.00	0.00
Quarter	**Quarter 1**	266	540,587	540,587	540,587	-0.00	0.00
	Quarter 2	198	541,314	541,314	541,314	0.00	0.00
	Quarter 3	198	542,274	542,274	542,274	0.00	0.00
	Quarter 4	260	543,155	543,155	543,155	0.00	0.00
Age Group	**12-17**	283	243,411	241,463	241,463	0.81	0.00
	18-25	307	301,845	307,036	307,036	-1.69	0.00
	26-34	114	288,742	291,023	291,023	-0.78	0.00
	35-49	124	605,640	604,469	604,469	0.19	-0.00
	50+	94	727,693	723,339	723,339	0.60	-0.00
Race	**White**	831	2,001,030	1,993,508	1,993,508	0.38	0.00
	Black	52	116,667	115,864	115,864	0.69	-0.00
	Other	39	49,633	57,959	57,959	-14.36	0.00
Hispanicity	**Hispanic**	70	98,755	116,955	116,955	-15.56	0.00
	Non-Hispanic	852	2,068,575	2,050,376	2,050,376	0.89	0.00
Gender	**Male**	457	1,051,183	1,051,819	1,051,819	-0.06	0.00
	Female	465	1,116,147	1,115,511	1,115,511	0.06	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H19 2001 NHSDA Slippage Rates: Kentucky

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		911	3,291,520	3,291,520	3,291,520	0.00	-0.00
Quarter	**Quarter 1**	227	820,877	820,878	820,878	-0.00	0.00
	Quarter 2	238	822,013	822,013	822,013	0.00	0.00
	Quarter 3	214	823,568	823,568	823,568	0.00	0.00
	Quarter 4	232	825,062	825,061	825,062	0.00	-0.00
Age Group	**12-17**	306	327,421	327,421	327,421	0.00	0.00
	18-25	298	435,170	443,248	443,248	-1.82	0.00
	26-34	93	471,858	468,271	468,271	0.77	0.00
	35-49	142	925,571	921,081	921,081	0.49	-0.00
	50+	72	1,131,500	1,131,500	1,131,500	0.00	0.00
Race	**White**	812	3,043,302	3,041,101	3,041,101	0.07	-0.00
	Black	88	228,412	227,329	222,467	2.67	2.19
	Other	11	19,807	23,090	27,952	-29.14	-17.39
Hispanicity	**Hispanic**	14	24,768	60,368	25,285	-2.04	138.75
	Non-Hispanic	897	3,266,753	3,231,152	3,266,236	0.02	-1.07
Gender	**Male**	450	1,573,949	1,572,951	1,572,951	0.06	0.00
	Female	461	1,717,572	1,718,570	1,718,570	-0.06	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H20 2001 NHSDA Slippage Rates: Louisiana

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		909	3,515,905	3,515,905	3,515,905	0.00	0.00
Quarter	**Quarter 1**	244	878,645	878,645	878,645	0.00	0.00
	Quarter 2	235	878,624	878,624	878,624	0.00	0.00
	Quarter 3	225	879,106	879,106	879,106	0.00	0.00
	Quarter 4	205	879,529	879,529	879,529	0.00	-0.00
Age Group	**12-17**	275	393,369	395,852	395,852	-0.63	0.00
	18-25	337	525,245	529,191	529,191	-0.75	0.00
	26-34	103	514,790	482,397	482,397	6.72	0.00
	35-49	118	929,706	955,670	955,670	-2.72	0.00
	50+	76	1,152,795	1,152,795	1,152,795	0.00	-0.00
Race	**White**	598	2,376,423	2,377,847	2,377,847	-0.06	0.00
	Black	292	1,075,656	1,074,789	1,078,940	-0.30	-0.38
	Other	19	63,825	63,269	59,119	7.96	7.02
Hispanicity	**Hispanic**	28	122,839	93,165	93,165	31.85	0.00
	Non-Hispanic	881	3,393,065	3,422,739	3,422,739	-0.87	0.00
Gender	**Male**	424	1,662,135	1,653,949	1,653,949	0.49	-0.00
	Female	485	1,853,769	1,861,955	1,861,955	-0.44	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H21 2001 NHSDA Slippage Rates: Maine

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		896	1,073,323	1,073,323	1,073,323	0.00	0.00
Quarter	**Quarter 1**	244	267,307	267,307	267,307	0.00	0.00
	Quarter 2	232	267,937	267,937	267,937	0.00	0.00
	Quarter 3	230	268,682	268,682	268,682	0.00	0.00
	Quarter 4	190	269,397	269,397	269,397	0.00	0.00
Age Group	**12-17**	285	108,021	109,414	109,414	-1.27	0.00
	18-25	286	124,868	125,228	125,228	-0.29	0.00
	26-34	88	145,442	145,968	145,968	-0.36	0.00
	35-49	156	318,465	316,186	316,186	0.72	0.00
	50+	81	376,527	376,527	376,527	0.00	0.00
Race	**White**	866	1,064,127	1,055,269	1,055,269	0.84	0.00
	Black	9	2,541	5,706	5,706	-55.46	0.00
	Other	21	6,655	12,349	12,349	-46.11	0.00
Hispanicity	**Hispanic**	9	3,683	6,905	6,905	-46.66	0.00
	Non-Hispanic	887	1,069,640	1,066,418	1,066,418	0.30	0.00
Gender	**Male**	439	512,389	520,288	520,288	-1.52	0.00
	Female	457	560,934	553,036	553,036	1.43	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H22 2001 NHSDA Slippage Rates: Maryland

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		961	4,306,153	4,306,153	4,306,153	0.00	0.00
Quarter	**Quarter 1**	226	1,071,367	1,071,367	1,071,367	0.00	0.00
	Quarter 2	223	1,074,534	1,074,534	1,074,534	0.00	0.00
	Quarter 3	249	1,078,281	1,078,281	1,078,281	0.00	0.00
	Quarter 4	263	1,081,972	1,081,972	1,081,972	0.00	-0.00
Age Group	**12-17**	306	450,477	444,540	444,540	1.34	-0.00
	18-25	360	486,067	502,914	502,914	-3.35	0.00
	26-34	84	627,089	643,044	643,044	-2.48	0.00
	35-49	136	1,358,867	1,338,536	1,338,536	1.52	0.00
	50+	75	1,383,653	1,377,120	1,377,120	0.47	-0.00
Race	**White**	540	2,808,725	2,920,405	2,920,405	-3.82	-0.00
	Black	360	1,205,349	1,189,042	1,189,042	1.37	0.00
	Other	61	292,080	196,706	196,706	48.49	-0.00
Hispanicity	**Hispanic**	74	149,449	170,311	170,311	-12.25	0.00
	Non-Hispanic	887	4,156,704	4,135,843	4,135,843	0.50	-0.00
Gender	**Male**	466	2,036,245	2,053,519	2,053,519	-0.84	0.00
	Female	495	2,269,909	2,252,635	2,252,635	0.77	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H23 2001 NHSDA Slippage Rates: Massachusetts

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		933	5,168,284	5,168,284	5,168,284	0.00	0.00
Quarter	**Quarter 1**	234	1,288,211	1,288,211	1,288,211	0.00	0.00
	Quarter 2	264	1,290,495	1,290,495	1,290,495	0.00	0.00
	Quarter 3	206	1,293,409	1,293,409	1,293,409	0.00	0.00
	Quarter 4	229	1,296,170	1,296,170	1,296,170	0.00	0.00
Age Group	**12-17**	304	498,919	493,517	493,517	1.09	0.00
	18-25	302	592,149	597,372	597,372	-0.87	0.00
	26-34	93	803,568	799,134	799,134	0.55	0.00
	35-49	163	1,520,972	1,525,308	1,525,308	-0.28	0.00
	50+	71	1,752,677	1,752,954	1,752,954	-0.02	0.00
Race	**White**	767	4,400,578	4,661,217	4,661,217	-5.59	0.00
	Black	92	408,291	300,146	298,263	36.89	0.63
	Other	74	359,415	206,921	208,804	72.13	-0.90
Hispanicity	**Hispanic**	84	377,014	296,635	296,635	27.10	0.00
	Non-Hispanic	849	4,791,271	4,871,650	4,871,650	-1.65	0.00
Gender	**Male**	410	2,535,929	2,473,836	2,473,836	2.51	0.00
	Female	523	2,632,355	2,694,448	2,694,448	-2.30	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H24 2001 NHSDA Slippage Rates: Michigan

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,768	8,185,049	8,185,049	8,185,049	-0.00	0.00
Quarter	**Quarter 1**	906	2,039,686	2,039,686	2,039,686	-0.00	-0.00
	Quarter 2	761	2,043,560	2,043,560	2,043,560	0.00	-0.00
	Quarter 3	943	2,048,510	2,048,510	2,048,510	-0.00	0.00
	Quarter 4	1,158	2,053,293	2,053,293	2,053,293	-0.00	0.00
Age Group	**12-17**	1,239	895,057	892,815	892,815	0.25	0.00
	18-25	1,262	1,040,587	1,048,955	1,048,955	-0.80	0.00
	26-34	371	1,217,325	1,188,476	1,188,476	2.43	0.00
	35-49	592	2,326,293	2,347,424	2,347,424	-0.90	0.00
	50+	304	2,705,787	2,707,379	2,707,379	-0.06	0.00
Race	**White**	3,070	6,870,738	6,884,848	6,884,848	-0.20	0.00
	Black	554	1,109,788	1,096,546	1,096,546	1.21	0.00
	Other	144	204,522	203,654	203,654	0.43	-0.00
Hispanicity	**Hispanic**	160	203,971	211,370	211,370	-3.50	0.00
	Non-Hispanic	3,608	7,981,077	7,973,679	7,973,679	0.09	0.00
Gender	**Male**	1,815	3,923,252	3,933,771	3,933,771	-0.27	0.00
	Female	1,953	4,261,796	4,251,278	4,251,278	0.25	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H25 2001 NHSDA Slippage Rates: Minnesota

Domain		n	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		883	3,994,715	3,994,715	3,994,715	0.00	0.00
Quarter	**Quarter 1**	223	993,982	993,982	993,982	0.00	0.00
	Quarter 2	271	996,973	996,973	996,973	0.00	0.00
	Quarter 3	250	1,000,312	1,000,312	1,000,312	0.00	0.00
	Quarter 4	139	1,003,448	1,003,448	1,003,448	0.00	0.00
Age Group	**12-17**	287	456,811	458,149	458,149	-0.29	0.00
	18-25	289	542,086	537,708	537,708	0.81	0.00
	26-34	87	544,288	554,816	554,816	-1.90	0.00
	35-49	145	1,171,700	1,170,356	1,170,356	0.11	0.00
	50+	75	1,279,831	1,273,688	1,273,688	0.48	0.00
Race	**White**	782	3,714,735	3,730,723	3,730,723	-0.43	0.00
	Black	44	110,247	117,765	117,765	-6.38	0.00
	Other	57	169,733	146,228	146,228	16.07	0.00
Hispanicity	**Hispanic**	16	63,929	71,721	71,721	-10.86	0.00
	Non-Hispanic	867	3,930,786	3,922,995	3,922,995	0.20	0.00
Gender	**Male**	443	1,949,389	1,960,435	1,960,435	-0.56	0.00
	Female	440	2,045,326	2,034,280	2,034,280	0.54	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H26 2001 NHSDA Slippage Rates: Mississippi

Domain		n	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		885	2,245,926	2,245,926	2,245,926	0.00	0.00
Quarter	**Quarter 1**	202	559,991	559,991	559,991	0.00	0.00
	Quarter 2	193	560,808	560,808	560,808	0.00	0.00
	Quarter 3	205	561,983	561,983	561,983	-0.00	0.00
	Quarter 4	285	563,144	563,144	563,144	0.00	0.00
Age Group	**12-17**	314	252,409	251,798	251,798	0.24	0.00
	18-25	274	328,523	328,706	328,706	-0.06	0.00
	26-34	89	327,971	328,398	328,398	-0.13	0.00
	35-49	128	600,083	596,539	596,539	0.59	0.00
	50+	80	736,941	740,485	740,485	-0.48	0.00
Race	**White**	426	1,428,692	1,442,137	1,442,137	-0.93	0.00
	Black	428	787,176	775,012	780,160	0.90	-0.66
	Other	31	30,058	28,777	23,629	27.21	21.79
Hispanicity	**Hispanic**	9	16,214	5,840	18,492	-12.32	-68.42
	Non-Hispanic	876	2,229,712	2,240,086	2,227,434	0.10	0.57
Gender	**Male**	418	1,034,930	1,051,470	1,051,470	-1.57	-0.00
	Female	467	1,210,997	1,194,456	1,194,456	1.38	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H27 2001 NHSDA Slippage Rates: Missouri

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		882	4,522,003	4,522,003	4,522,003	0.00	-0.00
Quarter	**Quarter 1**	237	1,126,756	1,126,756	1,126,756	0.00	0.00
	Quarter 2	228	1,128,989	1,128,989	1,128,989	0.00	-0.00
	Quarter 3	222	1,131,787	1,131,787	1,131,787	0.00	0.00
	Quarter 4	195	1,134,471	1,134,471	1,134,471	0.00	0.00
Age Group	**12-17**	287	489,813	490,792	490,792	-0.20	-0.00
	18-25	287	592,928	593,850	593,851	-0.16	-0.00
	26-34	101	625,492	623,591	623,591	0.30	0.00
	35-49	123	1,268,655	1,268,655	1,268,655	0.00	0.00
	50+	84	1,545,114	1,545,114	1,545,114	0.00	0.00
Race	**White**	731	3,980,336	3,976,560	3,976,560	0.09	0.00
	Black	132	476,905	475,875	475,875	0.22	0.00
	Other	19	64,762	69,569	69,569	-6.91	-0.00
Hispanicity	**Hispanic**	23	57,068	72,864	72,864	-21.68	0.00
	Non-Hispanic	859	4,464,935	4,449,139	4,449,139	0.36	-0.00
Gender	**Male**	440	2,166,970	2,165,406	2,165,406	0.07	0.00
	Female	442	2,355,033	2,356,597	2,356,598	-0.07	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H28 2001 NHSDA Slippage Rates: Montana

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		896	741,996	741,996	741,996	0.00	0.00
Quarter	**Quarter 1**	287	184,890	184,890	184,890	0.00	0.00
	Quarter 2	173	185,255	185,255	185,255	0.00	0.00
	Quarter 3	199	185,708	185,708	185,708	0.00	0.00
	Quarter 4	237	186,143	186,143	186,143	0.00	0.00
Age Group	**12-17**	289	83,485	82,890	82,890	0.72	0.00
	18-25	312	97,774	100,664	100,664	-2.87	0.00
	26-34	82	86,364	83,435	83,435	3.51	0.00
	35-49	123	201,105	201,738	201,738	-0.31	0.00
	50+	90	273,268	273,268	273,268	0.00	0.00
Race	**White**	813	697,580	692,942	692,942	0.67	0.00
	Black	6	3,052	2,434	2,434	25.38	0.00
	Other	77	41,364	46,620	46,620	-11.27	0.00
Hispanicity	**Hispanic**	31	12,374	11,859	11,859	4.34	0.00
	Non-Hispanic	865	729,622	730,137	730,137	-0.07	0.00
Gender	**Male**	443	362,361	366,903	366,903	-1.24	0.00
	Female	453	379,635	375,093	375,093	1.21	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H29 2001 NHSDA Slippage Rates: Nebraska

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		920	1,359,771	1,359,771	1,359,771	0.00	0.00
Quarter	**Quarter 1**	223	339,177	339,177	339,177	0.00	0.00
	Quarter 2	241	339,617	339,617	339,617	0.00	0.00
	Quarter 3	278	340,213	340,213	340,213	0.00	-0.00
	Quarter 4	178	340,764	340,764	340,764	0.00	0.00
Age Group	**12-17**	310	153,717	154,704	154,704	-0.64	0.00
	18-25	279	192,944	192,760	192,760	0.10	0.00
	26-34	99	181,763	178,811	178,811	1.65	-0.00
	35-49	159	370,435	372,584	372,584	-0.58	0.00
	50+	73	460,912	460,912	460,912	0.00	-0.00
Race	**White**	820	1,272,301	1,280,348	1,280,348	-0.63	-0.00
	Black	54	55,901	50,904	50,904	9.82	0.00
	Other	46	31,569	28,519	28,519	10.69	0.00
Hispanicity	**Hispanic**	43	45,090	61,091	61,091	-26.19	0.00
	Non-Hispanic	877	1,314,681	1,298,680	1,298,680	1.23	0.00
Gender	**Male**	445	650,048	658,718	658,718	-1.32	0.00
	Female	475	709,723	701,054	701,054	1.24	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H30 2001 NHSDA Slippage Rates: Nevada

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		944	1,566,837	1,566,837	1,566,837	-0.00	-0.00
Quarter	**Quarter 1**	246	385,466	385,466	385,466	-0.00	-0.00
	Quarter 2	215	389,563	389,563	389,563	-0.00	0.00
	Quarter 3	205	393,817	393,817	393,817	0.00	0.00
	Quarter 4	278	397,992	397,992	397,992	0.00	0.00
Age Group	**12-17**	300	171,111	169,961	169,961	0.68	0.00
	18-25	311	189,129	192,933	192,933	-1.97	0.00
	26-34	113	230,629	223,448	223,448	3.21	-0.00
	35-49	130	447,934	446,592	446,592	0.30	0.00
	50+	90	528,035	533,904	533,904	-1.10	0.00
Race	**White**	731	1,291,955	1,338,871	1,338,871	-3.50	0.00
	Black	91	120,551	117,410	117,410	2.68	-0.00
	Other	122	154,331	110,556	110,556	39.60	0.00
Hispanicity	**Hispanic**	304	266,185	259,434	259,434	2.60	-0.00
	Non-Hispanic	640	1,300,653	1,307,404	1,307,404	-0.52	0.00
Gender	**Male**	477	785,314	787,058	787,058	-0.22	0.00
	Female	467	781,524	779,779	779,779	0.22	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H31 2001 NHSDA Slippage Rates: New Hampshire

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		913	1,029,894	1,029,894	1,029,894	0.00	0.00
Quarter	**Quarter 1**	229	255,598	255,598	255,598	0.00	0.00
	Quarter 2	256	256,817	256,817	256,817	0.00	0.00
	Quarter 3	258	258,116	258,116	258,116	0.00	0.00
	Quarter 4	170	259,363	259,363	259,363	0.00	0.00
Age Group	**12-17**	362	112,054	112,283	112,283	-0.20	0.00
	18-25	288	117,000	117,812	117,812	-0.69	0.00
	26-34	78	158,996	159,421	159,421	-0.27	0.00
	35-49	126	327,320	321,737	321,737	1.74	0.00
	50+	59	314,524	318,641	318,641	-1.29	0.00
Race	**White**	869	999,790	1,004,458	1,004,458	-0.46	0.00
	Black	21	11,643	8,148	8,148	42.89	0.00
	Other	23	18,461	17,288	17,288	6.79	0.00
Hispanicity	**Hispanic**	37	20,718	15,881	15,881	30.45	0.00
	Non-Hispanic	876	1,009,176	1,014,012	1,014,012	-0.48	0.00
Gender	**Male**	454	509,207	505,797	505,797	0.67	0.00
	Female	459	520,686	524,097	524,097	-0.65	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H32 2001 NHSDA Slippage Rates: New Jersey

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,069	6,778,644	6,778,644	6,778,644	-0.00	0.00
Quarter	**Quarter 1**	241	1,688,511	1,688,511	1,688,511	0.00	0.00
	Quarter 2	240	1,692,197	1,692,197	1,692,197	0.00	0.00
	Quarter 3	234	1,696,776	1,696,776	1,696,776	0.00	0.00
	Quarter 4	354	1,701,161	1,701,161	1,701,161	-0.00	0.00
Age Group	**12-17**	399	677,063	677,486	677,486	-0.06	0.00
	18-25	308	749,376	755,924	755,924	-0.87	0.00
	26-34	102	926,117	948,585	948,585	-2.37	0.00
	35-49	182	2,057,732	2,030,962	2,030,962	1.32	0.00
	50+	78	2,368,356	2,365,687	2,365,687	0.11	0.00
Race	**White**	783	5,220,600	5,386,473	5,386,473	-3.08	0.00
	Black	150	1,013,289	944,842	944,842	7.24	-0.00
	Other	136	544,756	447,329	447,329	21.78	0.00
Hispanicity	**Hispanic**	203	848,836	840,888	840,888	0.95	0.00
	Non-Hispanic	866	5,929,808	5,937,756	5,937,756	-0.13	0.00
Gender	**Male**	513	3,307,195	3,246,772	3,246,772	1.86	0.00
	Female	556	3,471,449	3,531,872	3,531,872	-1.71	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H33 2001 NHSDA Slippage Rates: New Mexico

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		872	1,414,192	1,414,192	1,414,192	0.00	0.00
Quarter	**Quarter 1**	220	352,085	352,085	352,085	0.00	0.00
	Quarter 2	282	352,992	352,992	352,992	-0.00	0.00
	Quarter 3	178	354,047	354,047	354,047	0.00	0.00
	Quarter 4	192	355,068	355,068	355,068	-0.00	0.00
Age Group	**12-17**	304	167,671	167,390	167,390	0.17	0.00
	18-25	265	201,085	198,879	198,879	1.11	0.00
	26-34	98	175,466	179,870	179,870	-2.45	0.00
	35-49	125	395,483	393,568	393,568	0.49	0.00
	50+	80	474,486	474,486	474,486	-0.00	0.00
Race	**White**	731	1,221,838	1,224,928	1,224,928	-0.25	0.00
	Black	24	34,580	36,278	36,278	-4.68	0.00
	Other	117	157,774	152,987	152,987	3.13	0.00
Hispanicity	**Hispanic**	434	568,798	554,494	554,494	2.58	0.00
	Non-Hispanic	438	845,394	859,698	859,698	-1.66	0.00
Gender	**Male**	437	683,275	683,590	683,590	-0.05	0.00
	Female	435	730,917	730,602	730,602	0.04	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H34 2001 NHSDA Slippage Rates: New York

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		4,023	14,973,600	14,973,600	14,973,600	0.00	0.00
Quarter	**Quarter 1**	848	3,739,000	3,739,000	3,739,000	0.00	0.00
	Quarter 2	918	3,740,908	3,740,908	3,740,908	0.00	0.00
	Quarter 3	873	3,744,963	3,744,963	3,744,963	-0.00	0.00
	Quarter 4	1,384	3,748,729	3,748,730	3,748,730	-0.00	0.00
Age Group	**12-17**	1,428	1,442,294	1,444,943	1,444,943	-0.18	0.00
	18-25	1,336	1,793,938	1,810,957	1,810,957	-0.94	0.00
	26-34	405	2,232,350	2,199,861	2,199,861	1.48	0.00
	35-49	535	4,252,982	4,290,024	4,290,024	-0.86	0.00
	50+	319	5,252,037	5,227,815	5,227,815	0.46	0.00
Race	**White**	2,765	10,871,029	11,482,029	11,482,029	-5.32	-0.00
	Black	846	2,797,858	2,544,630	2,544,630	9.95	0.00
	Other	412	1,304,714	946,941	946,941	37.78	0.00
Hispanicity	**Hispanic**	844	2,139,711	2,037,651	2,037,651	5.01	0.00
	Non-Hispanic	3,179	12,833,889	12,935,950	12,935,950	-0.79	-0.00
Gender	**Male**	1,942	7,087,508	7,080,651	7,080,651	0.10	0.00
	Female	2,081	7,886,092	7,892,950	7,892,950	-0.09	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H35 2001 NHSDA Slippage Rates: North Carolina

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		852	6,306,524	6,306,524	6,306,524	0.00	0.00
Quarter	**Quarter 1**	198	1,566,159	1,566,159	1,566,159	0.00	0.00
	Quarter 2	231	1,572,731	1,572,731	1,572,731	0.00	0.00
	Quarter 3	217	1,580,164	1,580,164	1,580,164	0.00	0.00
	Quarter 4	206	1,587,470	1,587,470	1,587,470	0.00	-0.00
Age Group	**12-17**	305	673,015	658,894	658,894	2.14	0.00
	18-25	227	745,050	772,121	772,121	-3.51	0.00
	26-34	92	970,485	944,179	944,179	2.79	0.00
	35-49	134	1,786,633	1,775,243	1,775,243	0.64	0.00
	50+	94	2,131,341	2,156,087	2,156,087	-1.15	-0.00
Race	**White**	588	4,747,372	4,816,897	4,816,897	-1.44	0.00
	Black	237	1,319,741	1,321,008	1,321,008	-0.10	0.00
	Other	27	239,410	168,619	168,619	41.98	0.00
Hispanicity	**Hispanic**	24	121,910	134,400	134,400	-9.29	0.00
	Non-Hispanic	828	6,184,613	6,172,124	6,172,124	0.20	0.00
Gender	**Male**	402	2,970,604	2,985,443	2,985,443	-0.50	0.00
	Female	450	3,335,920	3,321,081	3,321,081	0.45	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H36 2001 NHSDA Slippage Rates: North Dakota

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		883	513,684	513,684	513,684	0.00	0.00
Quarter	**Quarter 1**	237	128,509	128,509	128,509	0.00	0.00
	Quarter 2	212	128,420	128,420	128,420	0.00	0.00
	Quarter 3	225	128,394	128,394	128,394	0.00	0.00
	Quarter 4	209	128,361	128,361	128,361	0.00	-0.00
Age Group	**12-17**	279	56,638	56,825	56,825	-0.33	0.00
	18-25	302	73,267	74,293	74,293	-1.38	0.00
	26-34	82	66,254	64,429	64,429	2.83	0.00
	35-49	136	138,009	137,521	137,521	0.36	0.00
	50+	84	179,515	180,615	180,616	-0.61	-0.00
Race	**White**	823	488,311	485,402	485,402	0.60	0.00
	Black	9	2,403	2,922	2,922	-17.77	0.00
	Other	51	22,970	25,360	25,360	-9.42	0.00
Hispanicity	**Hispanic**	7	6,557	4,774	4,774	37.35	0.00
	Non-Hispanic	876	507,126	508,909	508,909	-0.35	0.00
Gender	**Male**	423	252,881	252,703	252,703	0.07	0.00
	Female	460	260,803	260,981	260,981	-0.07	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H37 2001 NHSDA Slippage Rates: Ohio

Domain		n	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		3,706	9,289,688	9,289,688	9,289,688	0.00	0.00
Quarter	**Quarter 1**	858	2,318,283	2,318,283	2,318,283	0.00	0.00
	Quarter 2	1,026	2,320,497	2,320,497	2,320,497	0.00	0.00
	Quarter 3	863	2,323,875	2,323,875	2,323,875	0.00	0.00
	Quarter 4	959	2,327,034	2,327,034	2,327,034	0.00	0.00
Age Group	**12-17**	1,288	975,973	979,605	979,605	-0.37	0.00
	18-25	1,173	1,200,207	1,202,851	1,202,851	-0.22	0.00
	26-34	334	1,344,238	1,326,304	1,326,304	1.35	0.00
	35-49	534	2,614,740	2,616,098	2,616,098	-0.05	0.00
	50+	377	3,154,531	3,164,829	3,164,829	-0.33	-0.00
Race	**White**	3,215	8,084,333	8,151,971	8,151,971	-0.83	0.00
	Black	421	1,030,155	1,004,408	1,004,408	2.56	0.00
	Other	70	175,200	133,310	133,310	31.42	-0.00
Hispanicity	**Hispanic**	97	150,820	143,134	143,134	5.37	0.00
	Non-Hispanic	3,609	9,138,868	9,146,554	9,146,554	-0.08	0.00
Gender	**Male**	1,805	4,459,846	4,440,910	4,440,910	0.43	0.00
	Female	1,901	4,829,842	4,848,778	4,848,778	-0.39	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H38 2001 NHSDA Slippage Rates: Oklahoma

Domain		n	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		862	2,739,551	2,739,551	2,739,551	-0.00	-0.00
Quarter	**Quarter 1**	216	684,032	684,032	684,032	-0.00	0.00
	Quarter 2	256	684,427	684,427	684,427	-0.00	0.00
	Quarter 3	224	685,189	685,189	685,189	-0.00	0.00
	Quarter 4	166	685,904	685,903	685,904	0.00	-0.00
Age Group	**12-17**	274	299,672	300,709	300,709	-0.34	0.00
	18-25	261	377,992	382,007	382,007	-1.05	0.00
	26-34	76	351,463	357,614	357,614	-1.72	0.00
	35-49	139	735,324	724,122	724,122	1.55	0.00
	50+	112	975,100	975,100	975,100	-0.00	-0.00
Race	**White**	698	2,336,994	2,306,870	2,306,870	1.31	-0.00
	Black	70	221,483	222,918	194,909	13.63	14.37
	Other	94	181,074	209,763	237,773	-23.85	-11.78
Hispanicity	**Hispanic**	53	105,671	102,796	102,796	2.80	0.00
	Non-Hispanic	809	2,633,881	2,636,756	2,636,756	-0.11	-0.00
Gender	**Male**	412	1,312,582	1,313,830	1,313,830	-0.09	0.00
	Female	450	1,426,969	1,425,721	1,425,721	0.09	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H39   2001 NHSDA Slippage Rates: Oregon

Domain		n	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		880	2,792,295	2,792,295	2,792,295	0.00	0.00
Quarter	**Quarter 1**	253	695,614	695,614	695,614	0.00	0.00
	Quarter 2	202	697,110	697,110	697,110	0.00	-0.00
	Quarter 3	220	698,927	698,927	698,927	0.00	0.00
	Quarter 4	205	700,644	700,644	700,644	-0.00	0.00
Age Group	**12-17**	279	285,218	286,559	286,559	-0.47	0.00
	18-25	306	372,171	361,755	361,755	2.88	0.00
	26-34	67	368,597	377,445	377,445	-2.34	-0.00
	35-49	134	773,864	774,092	774,092	-0.03	-0.00
	50+	94	992,445	992,445	992,445	0.00	-0.00
Race	**White**	790	2,593,085	2,612,532	2,612,532	-0.74	0.00
	Black	32	37,768	50,331	50,331	-24.96	0.00
	Other	58	161,442	129,431	129,431	24.73	0.00
Hispanicity	**Hispanic**	79	171,092	165,836	165,837	3.17	-0.00
	Non-Hispanic	801	2,621,203	2,626,458	2,626,458	-0.20	0.00
Gender	**Male**	438	1,381,553	1,368,882	1,368,882	0.93	0.00
	Female	442	1,410,742	1,423,413	1,423,413	-0.89	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H40   2001 NHSDA Slippage Rates: Pennsylvania

Domain		n	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,734	10,006,216	10,006,216	10,006,216	0.00	0.00
Quarter	**Quarter 1**	928	2,497,449	2,497,449	2,497,449	0.00	0.00
	Quarter 2	864	2,499,524	2,499,524	2,499,524	0.00	0.00
	Quarter 3	901	2,502,980	2,502,980	2,502,980	0.00	0.00
	Quarter 4	1,041	2,506,264	2,506,264	2,506,264	0.00	0.00
Age Group	**12-17**	1,202	1,000,953	1,003,125	1,003,125	-0.22	0.00
	18-25	1,282	1,158,002	1,162,686	1,162,686	-0.40	0.00
	26-34	346	1,355,543	1,350,155	1,350,155	0.40	0.00
	35-49	520	2,834,490	2,803,345	2,803,345	1.11	-0.00
	50+	384	3,657,229	3,686,905	3,686,905	-0.80	0.00
Race	**White**	3,303	8,904,127	8,916,099	8,916,099	-0.13	-0.00
	Black	341	884,744	899,843	899,843	-1.68	0.00
	Other	90	217,345	190,274	190,274	14.23	0.00
Hispanicity	**Hispanic**	144	227,045	250,459	250,459	-9.35	0.00
	Non-Hispanic	3,590	9,779,171	9,755,757	9,755,757	0.24	0.00
Gender	**Male**	1,782	4,721,180	4,755,145	4,755,145	-0.71	0.00
	Female	1,952	5,285,036	5,251,071	5,251,071	0.65	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H41 2001 NHSDA Slippage Rates: Rhode Island

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		895	825,080	825,080	825,080	-0.00	0.00
Quarter	**Quarter 1**	224	205,402	205,402	205,402	-0.00	0.00
	Quarter 2	211	205,926	205,926	205,926	-0.00	0.00
	Quarter 3	205	206,563	206,563	206,563	-0.00	0.00
	Quarter 4	255	207,190	207,190	207,190	0.00	0.00
Age Group	**12-17**	300	84,723	84,638	84,638	0.10	0.00
	18-25	318	95,856	96,005	96,005	-0.16	0.00
	26-34	70	121,040	123,755	123,755	-2.19	0.00
	35-49	131	237,778	234,999	234,999	1.18	0.00
	50+	76	285,684	285,684	285,684	0.00	0.00
Race	**White**	753	729,086	764,283	764,283	-4.61	0.00
	Black	76	45,652	38,546	38,546	18.43	0.00
	Other	66	50,342	22,252	22,252	126.24	0.00
Hispanicity	**Hispanic**	116	66,395	53,901	53,901	23.18	0.00
	Non-Hispanic	779	758,685	771,179	771,179	-1.62	0.00
Gender	**Male**	431	390,902	391,618	391,618	-0.18	0.00
	Female	464	434,178	433,463	433,463	0.16	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H42 2001 NHSDA Slippage Rates: South Carolina

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		891	3,243,829	3,243,829	3,243,829	0.00	0.00
Quarter	**Quarter 1**	214	807,485	807,485	807,485	0.00	0.00
	Quarter 2	214	809,545	809,545	809,545	0.00	0.00
	Quarter 3	234	812,113	812,113	812,113	0.00	0.00
	Quarter 4	229	814,685	814,685	814,685	0.00	0.00
Age Group	**12-17**	301	321,914	319,914	319,914	0.63	0.00
	18-25	326	426,633	428,105	428,105	-0.34	-0.00
	26-34	95	490,853	479,540	479,540	2.36	0.00
	35-49	97	887,408	910,673	910,673	-2.55	-0.00
	50+	72	1,117,022	1,105,596	1,105,596	1.03	0.00
Race	**White**	583	2,299,520	2,281,971	2,281,971	0.77	0.00
	Black	290	897,118	924,160	924,160	-2.93	0.00
	Other	18	47,191	37,698	37,698	25.18	0.00
Hispanicity	**Hispanic**	10	46,939	42,747	42,747	9.81	0.00
	Non-Hispanic	881	3,196,890	3,201,082	3,201,082	-0.13	0.00
Gender	**Male**	409	1,527,566	1,528,137	1,528,137	-0.04	0.00
	Female	482	1,716,262	1,715,692	1,715,692	0.03	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H43 2001 NHSDA Slippage Rates: South Dakota

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		931	600,407	600,407	600,407	0.00	-0.00
Quarter	**Quarter 1**	210	149,589	149,589	149,589	0.00	-0.00
	Quarter 2	273	149,901	149,901	149,901	0.00	0.00
	Quarter 3	243	150,278	150,278	150,278	0.00	-0.00
	Quarter 4	205	150,639	150,639	150,639	0.00	0.00
Age Group	**12-17**	292	70,099	70,003	70,003	0.14	0.00
	18-25	300	86,569	88,347	88,347	-2.01	-0.00
	26-34	90	75,047	74,365	74,365	0.92	0.00
	35-49	149	159,976	161,576	161,576	-0.99	0.00
	50+	100	208,716	206,116	206,116	1.26	-0.00
Race	**White**	837	552,607	550,956	550,956	0.30	-0.00
	Black	12	7,281	4,386	4,386	66.03	0.00
	Other	82	40,519	45,066	45,066	-10.09	0.00
Hispanicity	**Hispanic**	10	5,025	7,598	7,598	-33.87	-0.00
	Non-Hispanic	921	595,382	592,809	592,809	0.43	0.00
Gender	**Male**	437	291,584	292,296	292,297	-0.24	-0.00
	Female	494	308,824	308,111	308,111	0.23	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H44 2001 NHSDA Slippage Rates: Tennessee

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		921	4,593,998	4,593,998	4,593,998	0.00	0.00
Quarter	**Quarter 1**	221	1,143,460	1,143,460	1,143,460	0.00	0.00
	Quarter 2	241	1,146,523	1,146,523	1,146,523	-0.00	0.00
	Quarter 3	219	1,150,203	1,150,203	1,150,203	0.00	0.00
	Quarter 4	240	1,153,813	1,153,813	1,153,813	0.00	0.00
Age Group	**12-17**	312	453,402	453,402	453,402	0.00	0.00
	18-25	298	580,267	587,136	587,136	-1.17	0.00
	26-34	96	684,263	674,863	674,863	1.39	0.00
	35-49	125	1,316,769	1,303,490	1,303,490	1.02	0.00
	50+	90	1,559,297	1,575,107	1,575,107	-1.00	0.00
Race	**White**	717	3,806,984	3,815,924	3,815,924	-0.23	0.00
	Black	194	725,444	748,041	720,472	0.69	3.83
	Other	10	61,570	30,034	57,602	6.89	-47.86
Hispanicity	**Hispanic**	17	55,415	33,296	55,728	-0.56	-40.25
	Non-Hispanic	904	4,538,583	4,560,702	4,538,270	0.01	0.49
Gender	**Male**	420	2,190,853	2,184,584	2,184,584	0.29	0.00
	Female	501	2,403,145	2,409,414	2,409,414	-0.26	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H45 2001 NHSDA Slippage Rates: Texas

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		3,604	16,340,169	16,340,169	16,340,169	0.00	0.00
Quarter	**Quarter 1**	851	4,059,650	4,059,650	4,059,650	0.00	0.00
	Quarter 2	961	4,075,867	4,075,867	4,075,867	-0.00	0.00
	Quarter 3	872	4,093,724	4,093,724	4,093,724	-0.00	0.00
	Quarter 4	920	4,110,928	4,110,928	4,110,928	-0.00	0.00
Age Group	**12-17**	1,191	1,857,088	1,855,801	1,855,801	0.07	0.00
	18-25	1,175	2,387,862	2,407,553	2,407,553	-0.82	0.00
	26-34	405	2,501,133	2,417,965	2,417,965	3.44	0.00
	35-49	527	4,601,243	4,674,561	4,674,561	-1.57	0.00
	50+	306	4,992,843	4,984,290	4,984,290	0.17	0.00
Race	**White**	2,848	13,374,979	13,778,035	13,778,035	-2.93	0.00
	Black	461	1,969,320	1,970,002	1,970,002	-0.03	-0.00
	Other	295	995,870	592,133	592,133	68.18	0.00
Hispanicity	**Hispanic**	1,421	4,734,535	4,685,576	4,685,576	1.04	0.00
	Non-Hispanic	2,183	11,605,635	11,654,593	11,654,593	-0.42	0.00
Gender	**Male**	1,730	7,837,207	7,904,844	7,904,844	-0.86	0.00
	Female	1,874	8,502,963	8,435,325	8,435,325	0.80	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H46 2001 NHSDA Slippage Rates: Utah

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		895	1,685,576	1,685,575	1,685,576	0.00	-0.00
Quarter	**Quarter 1**	237	419,030	419,030	419,030	0.00	0.00
	Quarter 2	255	420,563	420,563	420,563	0.00	-0.00
	Quarter 3	203	422,221	422,221	422,221	0.00	0.00
	Quarter 4	200	423,762	423,762	423,762	0.00	0.00
Age Group	**12-17**	257	225,605	225,468	225,468	0.06	0.00
	18-25	357	344,057	342,106	342,106	0.57	0.00
	26-34	106	266,942	266,195	266,195	0.28	-0.00
	35-49	118	400,284	405,884	405,884	-1.38	-0.00
	50+	57	448,687	445,924	445,924	0.62	0.00
Race	**White**	838	1,595,581	1,604,335	1,604,335	-0.55	0.00
	Black	12	12,472	15,505	15,505	-19.56	-0.00
	Other	45	77,523	65,735	65,735	17.93	0.00
Hispanicity	**Hispanic**	75	110,413	112,750	112,750	-2.07	-0.00
	Non-Hispanic	820	1,575,163	1,572,825	1,572,825	0.15	0.00
Gender	**Male**	414	837,329	828,039	828,039	1.12	0.00
	Female	481	848,247	857,537	857,537	-1.08	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H47 2001 NHSDA Slippage Rates: Vermont

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		926	510,865	510,865	510,865	-0.00	0.00
Quarter	**Quarter 1**	239	127,183	127,183	127,183	-0.00	0.00
	Quarter 2	239	127,516	127,516	127,516	0.00	0.00
	Quarter 3	238	127,899	127,899	127,899	0.00	0.00
	Quarter 4	210	128,267	128,267	128,267	-0.00	0.00
Age Group	**12-17**	290	52,376	52,556	52,556	-0.34	0.00
	18-25	350	62,523	62,769	62,769	-0.39	0.00
	26-34	96	73,104	73,580	73,580	-0.65	0.00
	35-49	114	152,948	152,948	152,948	0.00	0.00
	50+	76	169,914	169,013	169,013	0.53	-0.00
Race	**White**	899	500,840	502,335	502,335	-0.30	0.00
	Black	3	1,258	1,061	2,944	-57.28	-63.96
	Other	24	8,768	7,470	5,587	56.94	33.71
Hispanicity	**Hispanic**	11	4,793	4,652	4,652	3.03	0.00
	Non-Hispanic	915	506,072	506,213	506,213	-0.03	0.00
Gender	**Male**	459	249,959	250,612	250,612	-0.26	0.00
	Female	467	260,906	260,254	260,254	0.25	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H48 2001 NHSDA Slippage Rates: Virginia

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		929	5,693,459	5,693,459	5,693,459	0.00	0.00
Quarter	**Quarter 1**	219	1,414,920	1,414,920	1,414,920	0.00	0.00
	Quarter 2	205	1,420,203	1,420,203	1,420,203	0.00	0.00
	Quarter 3	278	1,426,221	1,426,221	1,426,221	0.00	0.00
	Quarter 4	227	1,432,114	1,432,114	1,432,114	0.00	-0.00
Age Group	**12-17**	325	563,776	561,495	561,495	0.41	0.00
	18-25	264	709,689	719,717	719,717	-1.39	0.00
	26-34	107	856,574	872,021	872,021	-1.77	-0.00
	35-49	146	1,688,146	1,691,378	1,691,378	-0.19	0.00
	50+	87	1,875,273	1,848,848	1,848,848	1.43	0.00
Race	**White**	641	4,256,061	4,369,618	4,369,618	-2.60	0.00
	Black	233	1,049,097	1,080,097	1,080,097	-2.87	0.00
	Other	55	388,301	243,744	243,744	59.31	0.00
Hispanicity	**Hispanic**	48	216,788	214,190	214,190	1.21	0.00
	Non-Hispanic	881	5,476,671	5,479,269	5,479,269	-0.05	0.00
Gender	**Male**	462	2,725,860	2,690,226	2,690,226	1.32	-0.00
	Female	467	2,967,599	3,003,233	3,003,233	-1.19	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H49 2001 NHSDA Slippage Rates: Washington

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		911	4,779,064	4,779,064	4,779,064	0.00	0.00
Quarter	**Quarter 1**	198	1,189,274	1,189,274	1,189,274	-0.00	0.00
	Quarter 2	258	1,192,723	1,192,723	1,192,723	0.00	0.00
	Quarter 3	233	1,196,663	1,196,663	1,196,663	0.00	0.00
	Quarter 4	222	1,200,403	1,200,403	1,200,403	0.00	0.00
Age Group	**12-17**	309	519,883	515,057	515,057	0.94	0.00
	18-25	294	632,720	634,636	634,636	-0.30	0.00
	26-34	83	676,870	679,780	679,780	-0.43	0.00
	35-49	145	1,394,809	1,405,306	1,405,306	-0.75	0.00
	50+	80	1,554,782	1,544,285	1,544,285	0.68	0.00
Race	**White**	795	4,267,539	4,250,454	4,250,454	0.40	0.00
	Black	33	158,928	158,545	158,545	0.24	0.00
	Other	83	352,597	370,065	370,065	-4.72	0.00
Hispanicity	**Hispanic**	55	316,695	284,238	284,238	11.42	-0.00
	Non-Hispanic	856	4,462,368	4,494,825	4,494,825	-0.72	0.00
Gender	**Male**	452	2,349,147	2,340,267	2,340,267	0.38	0.00
	Female	459	2,429,917	2,438,797	2,438,797	-0.36	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H50 2001 NHSDA Slippage Rates: West Virginia

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		876	1,520,289	1,520,289	1,520,289	0.00	0.00
Quarter	**Quarter 1**	195	380,563	380,563	380,563	0.00	0.00
	Quarter 2	226	380,118	380,118	380,118	0.00	0.00
	Quarter 3	246	379,909	379,909	379,909	-0.00	0.00
	Quarter 4	209	379,699	379,699	379,699	0.00	0.00
Age Group	**12-17**	301	138,080	139,157	139,157	-0.77	0.00
	18-25	291	192,203	193,178	193,178	-0.50	0.00
	26-34	79	200,621	200,237	200,237	0.19	0.00
	35-49	115	399,441	397,775	397,775	0.42	0.00
	50+	90	589,943	589,943	589,943	0.00	0.00
Race	**White**	846	1,455,646	1,464,907	1,464,907	-0.63	0.00
	Black	20	44,033	45,215	45,215	-2.61	0.00
	Other	10	20,609	10,167	10,167	102.70	0.00
Hispanicity	**Hispanic**	3	8,520	8,520	8,520	0.00	0.00
	Non-Hispanic	873	1,511,769	1,511,769	1,511,769	-0.00	0.00
Gender	**Male**	406	723,676	726,679	726,679	-0.41	0.00
	Female	470	796,613	793,610	793,610	0.38	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H51 2001 NHSDA Slippage Rates: Wisconsin

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C %	(F-C)/C %
Total		883	4,384,578	4,384,578	4,384,578	0.00	0.00
Quarter	**Quarter 1**	201	1,091,986	1,091,986	1,091,986	0.00	0.00
	Quarter 2	257	1,094,551	1,094,551	1,094,551	0.00	0.00
	Quarter 3	230	1,097,581	1,097,581	1,097,581	0.00	0.00
	Quarter 4	195	1,100,461	1,100,461	1,100,461	0.00	0.00
Age Group	**12-17**	297	481,601	488,954	488,954	-1.50	0.00
	18-25	284	598,029	584,611	584,611	2.30	0.00
	26-34	95	603,374	598,200	598,200	0.86	0.00
	35-49	143	1,228,998	1,255,656	1,255,656	-2.12	0.00
	50+	64	1,472,576	1,457,155	1,457,155	1.06	-0.00
Race	**White**	807	4,042,061	4,065,626	4,065,626	-0.58	0.00
	Black	47	229,370	218,467	218,467	4.99	0.00
	Other	29	113,146	100,485	100,485	12.60	0.00
Hispanicity	**Hispanic**	51	118,815	109,517	109,517	8.49	0.00
	Non-Hispanic	832	4,265,762	4,275,060	4,275,060	-0.22	-0.00
Gender	**Male**	432	2,135,044	2,140,010	2,140,010	-0.23	0.00
	Female	451	2,249,534	2,244,568	2,244,568	0.22	0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Table H52 2001 NHSDA Slippage Rates: Wyoming

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		913	397,507	397,506	397,507	0.00	-0.00
Quarter	**Quarter 1**	208	99,192	99,192	99,192	0.00	0.00
	Quarter 2	262	99,292	99,291	99,292	0.00	-0.00
	Quarter 3	213	99,441	99,441	99,441	0.00	-0.00
	Quarter 4	230	99,583	99,583	99,583	-0.00	-0.00
Age Group	**12-17**	263	45,352	45,521	45,521	-0.37	0.00
	18-25	318	58,810	58,932	58,932	-0.21	-0.00
	26-34	93	46,818	46,527	46,527	0.62	0.00
	35-49	135	106,880	107,522	107,522	-0.60	-0.00
	50+	104	139,647	139,005	139,005	0.46	0.00
Race	**White**	853	381,549	383,562	383,562	-0.52	0.00
	Black	12	5,271	2,907	2,907	81.31	0.00
	Other	48	10,687	11,038	11,038	-3.18	-0.00
Hispanicity	**Hispanic**	54	21,067	22,070	22,070	-4.55	-0.00
	Non-Hispanic	859	376,440	375,436	375,436	0.27	0.00
Gender	**Male**	445	198,790	198,275	198,275	0.26	-0.00
	Female	468	198,716	199,231	199,231	-0.26	-0.00

[1] Weight1*...*Weight12 (before person post-stratification).
[2] Weight1*...*Weight13 (after person post-stratification).

Appendix I

Evaluation of Calibration Weights: Weight Summary Statistics

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Table I.1 2001 NHSDA Dwelling Unit-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

Domain	n	Before res.du.nr (Weight1*...*Weight6)[1]						After res.du.nr (Weight1*...*Weight7)[1]						After res.du.ps (Weight1*...*Weight8)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1	Med	Q3	Max	UWE[3]
United States	157,471	8	337	498	770	5,829	1.40	48	370	543	836	6,396	1.40	13	371	584	915	9,078	1.44
Alaska	2,047	78	83	85	86	105	1.01	82	86	88	97	121	1.01	27	87	102	124	376	1.13
Alabama	2,071	572	594	758	792	1,025	1.04	592	663	799	917	1,177	1.04	118	687	834	993	3,004	1.10
Arkansas	2,400	310	324	392	403	461	1.01	315	361	402	425	478	1.01	90	371	419	476	1,080	1.06
Arizona	2,042	506	533	590	894	1,968	1.16	519	576	655	989	2,097	1.16	260	709	863	1,040	2,980	1.13
California	7,948	150	1,177	1,223	1,264	2,179	1.00	932	1,259	1,309	1,372	1,683	1.00	382	1,372	1,512	1,647	6,343	1.06
Colorado	2,053	394	670	705	732	769	1.01	590	703	745	779	832	1.01	251	728	801	862	2,504	1.10
Connecticut	2,937	306	350	355	494	689	1.06	316	363	383	444	909	1.07	123	340	386	514	1,689	1.12
District of Columbia	3,547	46	51	57	58	93	1.04	48	56	61	74	142	1.08	13	58	66	76	496	1.13
Delaware	1,875	106	123	127	147	275	1.01	115	132	140	158	239	1.01	25	145	157	174	309	1.03
Florida	8,181	206	561	615	646	2,841	1.14	479	611	658	721	3,082	1.13	120	619	738	867	5,428	1.17
Georgia	2,011	1,028	1,103	1,340	1,471	4,552	1.03	1,061	1,316	1,382	1,554	4,561	1.04	212	1,260	1,474	1,679	5,130	1.13
Hawaii	1,890	29	165	174	184	367	1.04	132	183	191	201	416	1.05	50	165	206	249	825	1.17
Iowa	2,048	422	436	447	503	594	1.01	429	465	487	530	676	1.01	109	482	547	616	1,854	1.05
Idaho	1,807	165	180	206	237	256	1.02	178	198	217	234	585	1.03	72	231	256	277	680	1.07
Illinois	8,397	33	406	454	465	584	1.01	298	480	515	541	1,350	1.02	127	489	531	586	1,860	1.05
Indiana	2,368	660	692	852	956	1,943	1.02	694	865	961	1,023	1,884	1.02	223	856	965	1,091	3,128	1.07
Kansas	1,785	152	455	482	510	635	1.02	152	489	512	548	735	1.02	92	504	583	658	1,754	1.08
Kentucky	2,150	589	625	682	716	968	1.01	632	662	710	755	1,024	1.01	127	717	764	835	2,368	1.05
Louisiana	1,831	690	722	745	765	913	1.01	712	751	779	842	1,025	1.01	201	784	866	992	2,046	1.07
Massachusetts	2,328	769	803	827	933	1,154	1.01	819	881	954	1,072	1,725	1.01	405	915	1,016	1,128	2,582	1.04
Maryland	1,825	288	892	933	1,016	1,285	1.02	389	974	1,011	1,169	1,439	1.02	195	1,017	1,133	1,281	3,355	1.06
Maine	2,297	174	181	190	206	216	1.00	193	199	212	223	246	1.00	40	191	212	259	746	1.06
Michigan	8,856	131	325	352	371	1,257	1.02	147	358	389	418	815	1.02	104	374	427	492	1,306	1.05
Minnesota	1,803	681	731	802	892	1,415	1.07	683	808	876	961	1,636	1.08	166	931	1,023	1,174	3,165	1.07
Missouri	2,288	434	775	845	895	947	1.01	645	838	891	961	1,285	1.01	168	858	963	1,084	2,205	1.08

[1] Weight1-Weight6 are design-based weight components; nr = nonresponse adjustment, ps = poststratification.

(continued)

[2] Q1 and Q3 refer to the first and third quartile of the weight distribution.

[3] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

Table I.1 2001 NHSDA Dwelling Unit-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

		Before res.du.nr (Weight1*...*Weight6)[1]						After res.du.nr (Weight1*...*Weight7)[1]						After res.du.ps (Weight1*...*Weight8)[1]					
Domain	n	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1	Med	Q3	Max	UWE[3]
Mississippi	1,929	32	328	405	510	561	1.05	182	342	434	535	591	1.04	65	430	528	634	1,554	1.13
Montana	2,030	133	142	145	150	158	1.00	137	148	152	159	168	1.00	65	163	177	193	415	1.05
North Carolina	2,244	261	983	1,079	1,261	1,420	1.02	460	1,104	1,172	1,355	1,732	1.02	282	1,169	1,335	1,485	3,527	1.05
North Dakota	2,067	39	123	129	132	142	1.01	105	127	134	139	157	1.01	21	117	126	134	483	1.04
Nebraska	1,800	301	323	369	383	417	1.01	304	367	389	405	635	1.01	72	319	351	399	1,297	1.05
New Hampshire	2,467	150	155	169	205	1,043	1.07	156	165	188	227	366	1.05	32	160	200	233	578	1.08
New Jersey	2,467	545	560	1,096	1,144	1,782	1.09	584	649	1,220	1,335	1,985	1.10	369	810	1,242	1,420	7,677	1.20
New Mexico	1,754	315	328	337	344	361	1.00	319	336	349	359	382	1.00	135	300	367	432	1,141	1.13
Nevada	1,852	75	257	329	346	514	1.03	140	274	350	360	505	1.03	108	313	377	454	1,182	1.15
New York	9,998	154	537	561	645	1,209	1.07	326	559	666	768	1,329	1.07	161	571	708	815	3,922	1.11
Ohio	8,455	85	408	483	493	1,002	1.01	266	453	518	531	804	1.01	121	490	528	574	1,706	1.04
Oklahoma	2,007	466	546	559	612	654	1.00	517	583	615	656	746	1.01	170	585	683	776	1,732	1.09
Oregon	1,972	170	494	559	622	677	1.01	324	528	595	675	755	1.02	189	622	678	743	1,908	1.04
Pennsylvania	8,768	180	421	479	504	751	1.01	344	467	505	534	738	1.01	197	505	552	599	2,148	1.02
Rhode Island	2,232	42	151	156	163	170	1.00	131	164	170	180	287	1.01	41	168	180	194	468	1.03
South Carolina	2,176	275	555	576	756	994	1.04	511	578	628	809	1,155	1.04	117	601	679	817	1,970	1.06
South Dakota	1,871	94	108	118	143	181	1.04	101	115	131	154	191	1.04	21	134	149	166	599	1.05
Tennessee	2,243	372	702	875	942	5,829	1.82	620	773	935	1,003	6,135	1.76	153	790	952	1,119	9,078	1.26
Texas	6,504	79	879	942	1,057	1,520	1.02	555	948	1,023	1,121	1,673	1.02	239	1,017	1,165	1,297	3,167	1.06
Utah	1,172	367	403	473	562	627	1.03	376	411	511	582	670	1.03	222	496	581	676	1,531	1.06
Virginia	2,251	86	878	1,084	1,138	1,695	1.03	297	1,053	1,160	1,399	6,396	1.05	179	1,005	1,146	1,354	5,468	1.11
Vermont	2,108	8	89	92	96	202	1.01	77	97	98	102	137	1.01	19	102	114	130	343	1.07
Washington	1,933	603	797	973	1,061	1,120	1.02	673	862	1,045	1,132	1,573	1.02	382	1,023	1,184	1,341	4,546	1.06
Wisconsin	2,103	630	659	747	896	990	1.02	640	711	798	978	1,068	1.02	250	830	976	1,089	2,405	1.06
West Virginia	2,517	204	211	252	267	312	1.02	204	226	269	280	335	1.02	44	239	278	330	1,010	1.09
Wyoming	1,766	76	80	81	88	113	1.02	80	84	87	94	135	1.02	33	91	105	125	321	1.08

[1] Weight1-Weight6 are design-based weight components; nr = nonresponse adjustment, ps = poststratification.
[2] Q1 and Q3 refer to the first and third quartile of the weight distribution.
[3] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

Table I.2 2001 NHSDA (Selected) Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

		Before sel.per.ps (Weight1*...*Weight10)[1]						After sel.per.ps (Weight1*...*Weight11)[1]					
Domain	**n**	**Min**	**Q1[2]**	**Med**	**Q3[2]**	**Max**	**UWE[3]**	**Min**	**Q1[2]**	**Med**	**Q3[2]**	**Max**	**UWE[3]**
United States	89,745	17	587	1,127	2,997	59,241	2.87	6	587	1,123	2,990	55,806	2.85
Alaska	1,171	33	143	215	526	12,006	2.64	16	152	232	521	2,853	2.02
Alabama	1,134	125	866	1,453	5,283	19,012	2.15	36	866	1,539	4,869	21,140	2.15
Arkansas	1,152	130	508	804	2,877	10,541	2.01	73	506	818	3,061	13,685	2.11
Arizona	1,229	332	991	1,384	4,770	25,945	2.30	211	988	1,442	4,309	25,286	2.33
California	4,881	487	1,779	2,364	8,996	58,335	1.99	469	1,841	2,464	8,865	55,806	1.96
Colorado	1,175	254	836	1,397	4,430	30,835	2.29	102	815	1,361	4,187	20,829	2.24
Connecticut	1,444	142	486	676	2,865	15,565	2.45	130	512	707	2,826	15,813	2.44
District of Columbia	1,043	17	73	129	603	2,965	2.78	25	72	131	597	4,291	2.97
Delaware	1,191	27	162	202	863	3,120	2.11	21	159	199	845	3,996	2.24
Florida	4,531	121	760	1,071	4,157	38,107	2.40	60	744	1,081	4,134	30,798	2.45
Georgia	1,241	226	1,610	2,260	8,142	59,241	2.31	158	1,467	2,271	7,454	31,955	2.28
Hawaii	1,172	51	192	307	994	12,254	2.61	25	186	313	1,098	7,573	2.52
Iowa	1,185	110	615	769	3,320	12,772	2.34	116	589	803	3,040	12,727	2.27
Idaho	1,207	73	290	382	1,251	8,361	2.11	26	290	419	1,175	5,695	2.17
Illinois	5,270	136	591	793	2,910	25,547	2.06	69	605	832	2,946	12,513	1.97
Indiana	1,294	236	1,176	1,901	6,322	42,904	2.01	149	1,184	1,954	5,724	19,807	1.95
Kansas	1,189	111	621	826	2,662	9,590	2.09	38	611	859	2,423	10,527	2.10
Kentucky	1,138	136	921	1,170	4,859	17,292	2.22	214	878	1,211	4,148	23,798	2.28
Louisiana	1,143	209	1,027	1,405	4,421	25,934	2.20	73	1,015	1,512	4,253	21,771	2.09
Massachusetts	1,302	436	1,112	1,467	7,030	33,000	2.15	278	1,082	1,565	5,956	40,578	2.25
Maryland	1,158	265	1,065	1,380	6,423	37,515	2.35	148	1,043	1,412	5,934	39,706	2.47
Maine	1,096	45	285	365	1,509	5,348	2.23	11	297	372	1,425	6,015	2.29
Michigan	4,993	108	497	665	2,405	12,061	2.17	67	504	696	2,487	22,413	2.29
Minnesota	1,113	225	1,150	1,529	6,020	30,343	2.39	146	1,177	1,594	5,200	26,116	2.21
Missouri	1,111	171	1,298	1,751	6,077	52,942	2.29	97	1,231	1,858	5,982	28,713	2.20

[1] Weight1*...*Weight10 and Weight1*...*Weight11 used demographic variables from screener data; ps = poststratification.

(continued)

[2] Q1 and Q3 refer to the first and third quartile of the weight distribution.

[3] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

Table I.2 2001 NHSDA (Selected) Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

Domain	n	Before sel.per.ps (Weight1*...*Weight10)[1]						After sel.per.ps (Weight1*...*Weight11)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
Mississippi	1,121	72	620	1,050	2,829	16,719	2.06	21	630	1,081	2,799	22,008	2.11
Montana	1,117	66	196	281	871	4,437	2.25	43	192	291	1,024	3,374	2.14
North Carolina	1,144	307	1,731	2,749	8,053	37,787	1.98	256	1,763	2,725	8,240	30,335	1.92
North Dakota	1,128	23	152	202	676	2,366	2.05	11	142	209	630	3,038	2.15
Nebraska	1,192	83	383	520	1,557	9,028	2.13	27	391	535	1,542	8,088	2.21
New Hampshire	1,193	33	232	306	1,280	6,724	2.56	9	235	305	1,314	7,427	2.73
New Jersey	1,435	458	1,230	1,871	7,343	35,706	2.39	400	1,227	1,924	6,780	43,114	2.53
New Mexico	1,060	171	411	643	1,809	14,255	2.27	152	417	690	1,729	9,058	2.20
Nevada	1,169	109	368	673	1,973	14,888	2.34	80	353	667	2,056	15,786	2.22
New York	5,544	201	726	995	3,683	50,900	2.62	153	710	1,030	3,647	29,914	2.62
Ohio	4,690	138	612	797	3,298	11,221	2.05	84	627	816	3,306	18,732	2.05
Oklahoma	1,142	198	797	1,246	3,710	15,216	1.99	182	805	1,335	3,401	14,956	1.96
Oregon	1,121	262	784	1,019	3,999	11,512	2.02	152	743	1,063	3,906	14,241	2.13
Pennsylvania	4,807	199	601	727	3,313	42,224	2.27	184	613	767	3,367	24,767	2.16
Rhode Island	1,237	46	195	231	1,067	6,728	2.29	19	180	246	982	6,353	2.46
South Carolina	1,166	131	818	1,051	3,692	22,752	2.34	169	816	1,073	3,722	19,690	2.43
South Dakota	1,187	28	170	215	717	3,813	2.23	16	179	229	712	2,765	2.05
Tennessee	1,166	193	1,122	1,760	5,711	32,310	2.12	50	1,104	1,966	5,962	55,319	2.38
Texas	4,445	270	1,277	1,768	5,710	33,444	2.00	213	1,308	1,827	5,489	24,637	1.99
Utah	1,095	267	641	848	2,053	11,256	1.87	229	651	881	1,939	10,184	1.98
Virginia	1,200	206	1,336	2,061	7,638	57,815	2.20	216	1,339	2,155	6,999	36,089	2.14
Vermont	1,122	20	130	165	662	3,183	2.35	6	130	167	628	2,830	2.38
Washington	1,178	425	1,264	1,635	6,660	35,180	2.17	391	1,264	1,731	6,227	26,936	2.09
Wisconsin	1,208	276	1,102	1,560	5,363	27,154	2.20	147	1,170	1,599	5,204	28,425	2.37
West Virginia	1,163	45	371	505	1,929	8,528	2.14	22	376	523	1,905	9,288	2.16
Wyoming	1,152	34	125	169	522	2,839	1.98	11	123	175	487	1,499	1.86

[1] Weight1*...*Weight10 and Weight1*...*Weight11 used demographic variables from screener data; ps = poststratification.

(continued)

[2] Q1 and Q3 refer to the first and third quartile of the weight distribution.

[3] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

Table I.3 2001 NHSDA Dwelling Unit-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

		Before res.per.nr (Weight1*...*Weight11)[1]						After res.per.nr (Weight1*...*Weight12)[1]						Final Weight After res.per.ps (Weight1*...*Weight13)[1]					
Domain	**n**	**Min**	**Q1[2]**	**Med**	**Q3[2]**	**Max**	**UWE[3]**	**Min**	**Q1[2]**	**Med**	**Q3[2]**	**Max**	**UWE[3]**	**Min**	**Q1**	**Med**	**Q3**	**Max**	**UWE[3]**
United States	68,929	6	575	1,080	2,781	55,806	2.89	11	715	1,368	3,724	66,652	3.16	1	706	1,367	3,708	77,154	3.16
Alaska	951	16	152	232	508	2,600	1.93	16	172	277	593	4,450	2.26	8	171	280	573	4,277	2.27
Alabama	885	36	830	1,446	4,550	21,140	2.25	36	973	1,831	6,039	24,905	2.35	10	967	1,798	5,887	30,937	2.42
Arkansas	911	84	489	791	2,923	12,615	2.12	116	583	997	3,554	16,831	2.34	30	587	970	3,639	20,165	2.35
Arizona	964	211	985	1,413	4,168	25,286	2.35	215	1,227	1,865	5,078	30,232	2.49	30	1,226	1,859	5,043	40,896	2.53
California	3,729	469	1,813	2,362	8,326	55,806	2.00	577	2,216	3,165	11,059	66,652	2.21	237	2,235	3,370	10,853	48,461	2.23
Colorado	886	102	818	1,311	3,728	17,994	2.24	105	949	1,682	5,246	31,746	2.55	10	1,008	1,708	5,251	31,280	2.55
Connecticut	1,055	157	499	663	2,644	15,813	2.52	157	602	974	3,724	21,870	2.67	24	591	968	3,518	24,655	2.76
District of Columbia	877	25	71	119	512	4,195	3.12	31	84	137	625	4,475	3.29	6	79	136	562	4,771	3.49
Delaware	893	24	156	193	795	3,996	2.27	58	181	228	1,090	7,643	2.73	8	197	259	1,059	6,237	2.67
Florida	3,502	71	722	1,047	3,748	21,857	2.53	83	860	1,331	4,777	36,388	2.69	47	871	1,351	4,765	35,313	2.70
Georgia	940	185	1,427	2,224	6,476	31,955	2.34	212	1,736	2,868	8,405	58,466	2.64	35	1,727	2,907	8,140	47,049	2.62
Hawaii	887	25	182	289	907	7,573	2.66	25	211	377	1,219	11,551	3.15	13	224	391	1,156	10,517	3.11
Iowa	961	116	586	779	2,911	12,727	2.32	134	686	942	3,587	16,225	2.39	42	692	953	3,656	22,022	2.45
Idaho	936	26	291	408	1,171	4,915	2.15	28	346	537	1,468	7,581	2.26	3	346	541	1,448	10,174	2.32
Illinois	3,558	69	595	794	2,786	12,513	2.01	71	814	1,177	4,145	20,905	2.20	70	835	1,190	4,126	25,963	2.20
Indiana	915	149	1,110	1,851	5,630	19,807	2.01	149	1,461	2,683	8,616	27,296	2.01	146	1,463	2,641	8,654	26,893	2.01
Kansas	922	38	615	855	2,390	10,527	2.11	51	761	1,118	2,961	20,865	2.21	52	737	1,129	3,079	18,356	2.19
Kentucky	911	214	870	1,176	4,007	21,385	2.27	214	1,057	1,486	5,034	36,814	2.56	65	1,095	1,517	4,871	47,260	2.68
Louisiana	909	73	996	1,450	3,873	21,368	2.11	73	1,135	1,695	5,011	35,219	2.47	21	1,109	1,783	4,714	33,545	2.49
Massachusetts	933	278	1,061	1,527	5,582	24,085	2.22	312	1,307	2,202	7,115	59,374	2.72	49	1,341	2,233	7,219	47,979	2.71
Maryland	961	148	1,022	1,371	5,599	24,933	2.46	163	1,164	1,624	6,315	50,884	2.69	32	1,156	1,635	6,658	35,069	2.60
Maine	896	11	299	378	1,450	6,015	2.27	17	360	469	1,778	5,893	2.19	16	364	475	1,769	6,132	2.20
Michigan	3,768	67	504	693	2,405	22,413	2.27	99	643	935	3,175	23,121	2.41	33	644	938	3,152	20,927	2.40
Minnesota	883	153	1,166	1,574	5,173	20,991	2.21	213	1,444	2,007	6,266	28,769	2.23	141	1,451	2,034	6,513	25,075	2.19
Missouri	882	97	1,221	1,824	5,914	28,713	2.23	192	1,504	2,351	6,993	46,959	2.29	107	1,546	2,377	6,991	30,825	2.24

[1] nr = nonresponse adjustment, ps = poststratification.

(continued)

[2] Q1 and Q3 refer to the first and third quartile of the weight distribution.

[3] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

Table I.3 2001 NHSDA Dwelling Unit-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

Domain	n	Before res.per.nr (Weight1*...*Weight11)[1]						After res.per.nr (Weight1*...*Weight12)[1]						Final Weight After res.per.ps (Weight1*...*Weight13)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1	Med	Q3	Max	UWE[3]
Mississippi	885	30	598	997	2,519	22,008	2.23	30	717	1,266	3,355	21,093	2.29	6	695	1,280	3,373	17,499	2.29
Montana	896	49	196	290	969	3,374	2.15	53	237	370	1,150	5,265	2.31	24	239	378	1,135	5,360	2.31
North Carolina	852	256	1,743	2,614	8,024	24,213	1.95	319	2,145	3,349	10,877	55,024	2.06	103	2,150	3,441	11,080	38,731	2.03
North Dakota	883	22	142	201	606	3,038	2.19	49	170	247	745	3,585	2.24	25	174	253	751	6,747	2.34
Nebraska	920	27	389	528	1,543	8,088	2.23	71	499	696	1,927	10,201	2.31	28	502	695	1,933	12,086	2.37
New Hampshire	913	9	233	304	1,222	7,427	2.79	12	284	401	1,749	9,620	2.81	4	285	406	1,699	9,760	2.83
New Jersey	1,069	400	1,189	1,830	6,223	43,114	2.59	470	1,508	2,390	8,102	60,775	2.93	100	1,484	2,444	7,991	62,720	2.94
New Mexico	872	152	415	665	1,611	9,058	2.24	191	487	814	2,034	15,204	2.37	22	481	844	2,081	12,789	2.36
Nevada	944	80	340	620	1,815	15,786	2.34	81	398	727	2,260	13,454	2.50	9	394	725	2,252	13,297	2.60
New York	4,023	153	700	994	3,302	29,755	2.67	178	889	1,364	4,819	52,674	2.91	34	907	1,389	4,859	36,533	2.86
Ohio	3,706	84	619	800	3,190	15,574	2.05	90	752	1,015	4,163	25,027	2.21	52	762	1,025	4,182	18,337	2.18
Oklahoma	862	182	799	1,290	3,354	14,956	1.99	212	1,018	1,706	4,870	20,459	1.97	51	1,006	1,743	4,840	24,607	1.98
Oregon	880	172	742	1,062	3,844	14,241	2.15	172	952	1,319	4,744	30,951	2.26	40	972	1,339	4,723	19,873	2.22
Pennsylvania	3,734	184	607	751	3,252	24,767	2.21	188	753	970	4,212	26,927	2.32	141	762	978	4,239	25,960	2.29
Rhode Island	895	19	177	242	966	6,353	2.53	25	244	335	1,292	9,029	2.61	4	244	340	1,281	11,914	2.76
South Carolina	891	169	807	1,042	3,290	18,452	2.51	177	1,016	1,342	4,521	36,303	2.88	41	1,031	1,361	4,398	30,281	2.85
South Dakota	931	16	178	229	733	2,765	2.07	23	228	310	955	3,189	1.98	11	225	320	949	11,819	2.49
Tennessee	921	50	1,067	1,792	5,664	55,319	2.56	62	1,236	2,135	7,506	61,120	2.49	12	1,238	2,327	7,681	31,163	2.29
Texas	3,604	213	1,287	1,785	5,196	24,637	2.02	238	1,524	2,144	6,432	41,796	2.19	43	1,553	2,195	6,171	38,491	2.26
Utah	895	263	657	883	1,871	10,184	1.96	271	768	1,017	2,229	12,946	2.11	39	755	1,037	2,268	17,939	2.14
Virginia	929	216	1,329	2,075	6,909	36,089	2.16	221	1,724	2,775	9,193	34,982	2.17	31	1,720	2,824	9,546	77,154	2.27
Vermont	926	6	130	167	611	2,830	2.42	26	155	197	772	3,224	2.45	9	154	200	765	3,201	2.45
Washington	911	391	1,262	1,710	6,056	26,936	2.06	404	1,474	2,190	7,796	57,376	2.33	55	1,517	2,231	7,611	38,187	2.28
Wisconsin	883	147	1,165	1,596	5,023	24,368	2.35	172	1,548	2,229	6,345	34,178	2.51	48	1,523	2,220	6,329	59,047	2.55
West Virginia	876	22	368	509	1,770	9,288	2.26	54	427	643	2,675	11,561	2.40	8	430	652	2,665	10,892	2.40
Wyoming	913	11	121	166	470	1,499	1.88	11	149	211	626	2,502	1.97	1	142	208	640	2,991	2.01

[1] nr = nonresponse adjustment, ps = poststratification.
[2] Q1 and Q3 refer to the first and third quartile of the weight distribution.
[3] Unequal weighting effect defined as $1+[(n-1)/n]*CV^2$ where CV = coefficient of variation of weights.

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