

# **2003 NATIONAL SURVEY ON DRUG USE AND HEALTH**

## **Person-Level Sampling Weight Calibration**

Prepared for the 2003 Methodological Resource Book

Contract No. 283-98-9008

RTI Project No. 7190

Deliverable No. 28

Authors:

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Lanting Dai  
Harper Gordek  
Weihua Shi  
Avinash C. Singh  
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Project Director: Thomas G. Virag

Prepared for:

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# Preface

This report contains a brief review of the sampling weight calibration methodology used for the 2003 National Survey on Drug Use and Health (NSDUH), which was known as the National Household Survey on Drug Abuse (NHSDA) prior to 2002. This report also lists 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 the generalized exponential model [GEM]) in order to have more flexibility in dealing with the extreme weights internally and to be able to set bounds directly 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 NSDUH 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 1999 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 and 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 value adjustment after the final poststratification, whenever the extreme weight percentage in the initial unadjusted weights was considered to be too large. This was accomplished by using the GEM so that the sample demographic distribution was preserved. This method represents an improvement over the trimming method implemented before the nonresponse adjustment in NHSDAs prior to 1999 and the extreme value 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, Lanting Dai, Harper Gordek, Weihua Shi, and Matthew Westlake.

This report consists of several chapters describing the implementation and evaluation of the 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<sup>1</sup>, 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

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<sup>1</sup>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 percentages of weights trimmed after extreme value adjustment 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 adjustment that replaces extreme values with the critical values used for defining low and high extreme values.

# 1. Introduction

The design for the National Survey on Drug Use and Health (NSDUH) 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 2003 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. For the 2003 NSDUH, which followed the 2003 design plan, the total realized sample size was 67,784 persons (corresponding to 47,753 responding dwelling units [DUs] selected at the second phase out of 130,602 DUs screened at the first phase), with a low of 856 for Tennessee to a high of 964 for Massachusetts among small States, and a low of 3,541 for Florida to a high of 3,711 for Illinois among large States.

In the 2003 NSDUH 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 (EPSEM) goal. 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 10 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 2003 NSDUH 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 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.

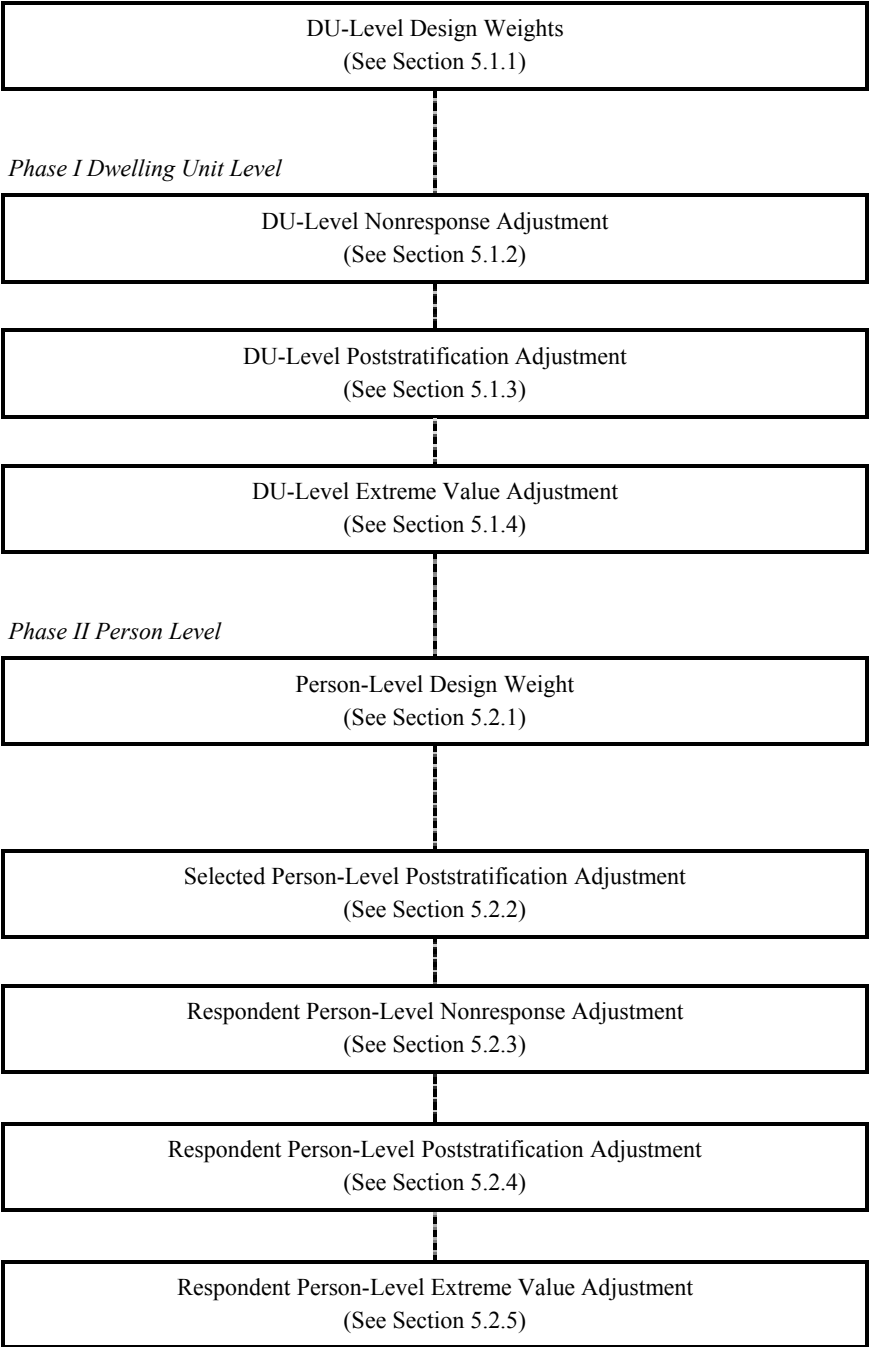
As in the 1999, 2000, and 2001 National Household Surveys on Drug Abuse (NHSDAs) and 2002 NSDUH, the sample weighting of the 2003 NSDUH posed challenges because of the sheer magnitude of the number of State-specific predictors for use in nonresponse (nr) and

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 Census divisions. This helped to keep a substantial number of predictor variables in each model, and reduced the computing time that would be associated with fitting a larger model.

As with all the surveys after 1999, an important feature of the 2003 NSDUH sample weighting was to capitalize on the inherent two-phase nature of the NSDUH 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, 2000, and 2001 NHSDAs and 2002 NSDUH, 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 the 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 adjustment 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 2003 NSDUH 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.

## 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 adjustment 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 over 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 adjustment 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 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 percentage 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, the target UWE, and the target proportions of extreme values. The percentage of "outwinsors" (a term coined to signify the extent of residual weights after extreme value adjustment 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. In particular, an adaptive method based on realized minimum and maximum bounds after setting loose initial bounds is recommended for choosing bounds more objectively.

A large increase in the number of predictor variables in GEM typically would result in a higher unequal weighting effect, 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 (which accounts for the variability in the GEM parameter estimates) for variance of selected study variables. This was implemented by Vaish, Gordek, and Singh (2000), and results are presented in Chapter 6.

### **3. Predictor Variables in GEM for the 2003 NSDUH**

For the 2003 National Survey on Drug Use and Health (NSDUH), the initial set of predictor variables was identical to the one used for the 2002 NSDUH. 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 Segment-Combined Median Rent and Housing Value which is also called Socioeconomic Status (SES) indicator. The SES indicator 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, Gender, Race, Hispanicity, and relation to Head of Household. For poststratification, predictors typically used were State, Age, Race, Gender, Hispanicity, and Quarter. In all cases, the model consisted of main effects and some interactions of these predictors. For a separate extreme value adjustment with the generalized exponential model (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 NSDUH, 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 2003 NSDUH, 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 a 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 unequal weighting effect (UWE) was checked.

For the 2003 NSDUH data, as for the previous National Household Survey on Drug Abuse (NHSDA) and NSDUH data, 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 2003, as in 2000 to 2002, 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+<sup>1,4</sup>

**Gender**

1: Male, 2: Female<sup>1</sup>

**Group Quarter Indicator**

1: College Dorm, 2: Other Group Quarter, 3: Non-Group Quarter<sup>1</sup>

**Hispanicity**

1: Hispanic, 2: Non-Hispanic<sup>1</sup>

**Percent of Owner-Occupied Dwelling Units in Segment (% Owner)**

1: 50% - 100%,<sup>1</sup> 2: 10% - 50%, 3: <10%

**Percent of Segments That Are Black (% Black)**

1: 50% - 100%, 2: 10% - 50%, 3: <10%<sup>1</sup>

**Percent of Segments That Are Hispanic (% Hispanic)**

1: 50% - 100%, 2: 10% - 50%, 3: <10%<sup>1</sup>

**Population Density**

1: MSA 1,000,000 or more, 2: MSA less than 1,000,000, 3: Non-MSA urban, 4: Non-MSA rural<sup>1</sup>

**Quarter**

1: Quarter 1, 2: Quarter 2, 3: Quarter 3, 4: Quarter 4<sup>1</sup>

**Race (3 level)**

1: White,<sup>1</sup> 2: Black, 3: Other

**Race (5 level)**

1: White,<sup>1</sup> 2: Black, 3: American Indian/Alaska Native, 4: Asian, 5: Two or More Races

**Relation to Householder**

1: Householder or Spouse,<sup>1</sup> 2: Child, 3: Other Relative, 4: Non-Relative

**Segment-Combined Median Rent and Housing Value (Rent/Housing)<sup>2</sup>**

1: First Quintile, 2: Second Quintile, 3: Third Quintile, 4: Fourth Quintile, 5: Fifth Quintile<sup>1</sup>

**States<sup>3</sup>**

Model Group 1: 1: Connecticut, 2: Maine, 3: New Hampshire, 4: Rhode Island, 5: Vermont, 6: Massachusetts<sup>1</sup>

Model Group 2: 1: New Jersey,<sup>1</sup> 2: New York, 3: Pennsylvania

Model Group 3: 1: Illinois, 2: Indiana,<sup>1</sup> 3: Michigan, 4: Wisconsin, 5: Ohio

Model Group 4: 1: Iowa, 2: Kansas, 3: Minnesota, 4: Missouri,<sup>1</sup> 5: Nebraska, 6: South Dakota, 7: North Dakota

Model Group 5: 1: Delaware, 2: District of Columbia, 3: Georgia,<sup>1</sup> 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<sup>1</sup>

Model Group 7: 1: Arkansas,<sup>1</sup> 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<sup>1</sup>

Model Group 9: 1: Alaska, 2: Hawaii, 3: Oregon, 4: Washington,<sup>1</sup> 5: California

MSA = metropolitan statistical area.

<sup>1</sup>The reference level for this variable. This is the level against which effects of other factor levels are measured.

<sup>2</sup>Segment-Combined Median Rent and Housing Value is a composite measure based on rent, housing value, and percent owner occupied.

<sup>3</sup>The States assigned to a particular model are based on Census divisions.

<sup>4</sup>50+ was further broken down into 50-64 and 65+ for Person-Level Poststratification Adjustment, for which 65+ was used as the reference level.

Source: SAMHSA, Office of Applied Studies, National Survey of Drug Use and Health, 2003





## 4. Practical Aspects of Implementing GEM for the NSDUH

As explained in Chapter 2, the generalized exponential model (GEM) can be used for extreme value adjustment, 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).

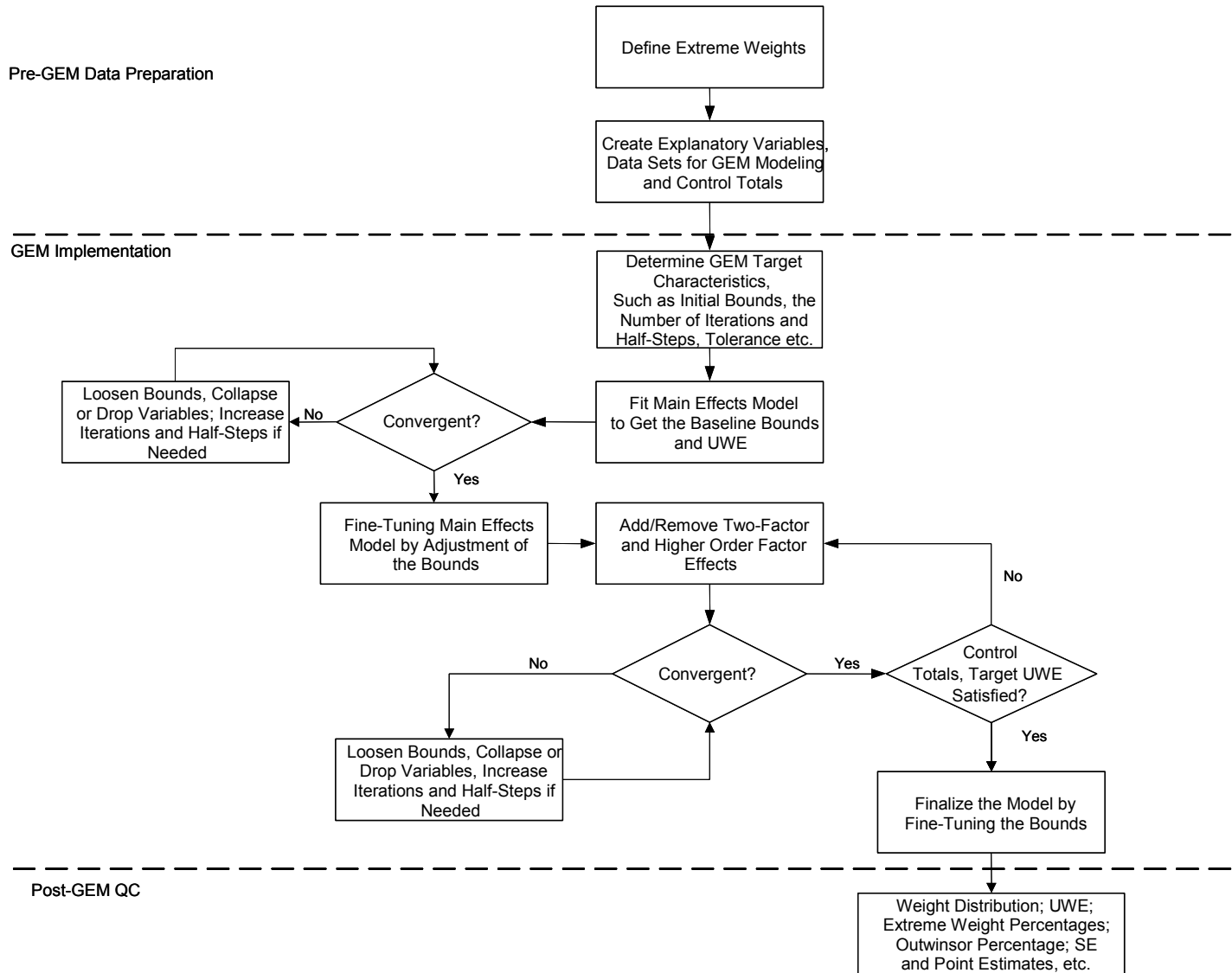
### 4.1 Definition of Extreme Values of Sampling Weights

An important aspect of GEM is the built-in provision of extreme value adjustment. 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  $\pm 3 \times$  interquartile range (IQR), for some prespecified domains; these domains were usually defined by design strata, taking into account deep stratification. For example, the dwelling unit (DU)-level weight for the 2003 National Survey on Drug Use and Health (NSDUH) used the field interviewer (FI) region as the domain. The person-level weight adjustments used a hierarchy of four domains: (1) FI region  $\times$  Age group, (2) State  $\times$  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  $\times$  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  $\times$  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 are denoted by  $b_{k(l)}$  and  $b_{k(u)}$ , respectively. The critical points for extreme weights within GEM modeling were defined as the median  $\pm 2.5 \times$  IQR, which was conservative when compared with the commonly used standard of the median  $\pm 3 \times$  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 (which 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.) Nonextreme 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. 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 adjustment is analogous to the poststratification adjustment (see Appendix A) in that it is a repeated poststratification with tighter bounds for extreme values identified after the poststratification step. 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 adjustment, 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 2003 NSDUH, the control totals for various domains for the selected person-level poststratification adjustment (sel.per.ps, see Section 5.2.2) were obtained from the first-phase sample containing roster information, and the control totals for the respondent person-level poststratification (res.per.ps, see Section 5.2.4) were obtained from the Census Bureau's Postcensal Population Estimates for various demographic domains. Controls used for extreme value adjustment 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 unequal weighting effect (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 (nonresponse adjustment, poststratification, or extreme value adjustment), a forward selection method for modeling was used. A model with only main effects and loose bounds was first fit to obtain a set of realized baseline U and L bounds for extreme and nonextreme weights and to calculate a baseline UWE. Next, using the realized bounds, as many higher order interactions as possible were added to the model to help reduce bias, without unduly increasing the UWE and the extreme value percentages. Convergence problems were addressed by loosening Ls and Us, 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 realized 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 2003 NSDUH, 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 Us and Ls could optimize the model by reducing UWE and the extreme weight percentages.

## 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 ratios of the maximum weight to the mean weight and the UWEs were compared across various domains both before and after each adjustment. The percentages 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 or collapsed in the model). To check for overfitting after the final weight adjustment, point estimates for the main drug use variables and standard errors (SEs) were computed using a sandwich variance formula (see Section 6.5) and were compared with 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 was examined. If the domain sample size was zero and the control total corresponding to this domain was also zero, the factor was generally dropped. This automatically collapsed the factor level with the reference level; however, if the control total was not zero, the factor could not 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 these cases, the factor level corresponding to zero domain sample size should be collapsed with another level for which we are willing to compromise on satisfying the control total.

In general, domains with small sample sizes may cause problems during GEM modeling and prevent the model from converging. For the 2003 NSDUH, 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. For example, if State was involved, then it was better, in general, to collapse within States; collapsing of geographically adjacent States was done only when there was no other reasonable alternative (see Section 4.8 for more details). 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 using the hierarchy principle at succeeding stages involving higher order factor effects.

**2. Singularity checks.** As in the case of collapsing checks, singularity checks (i.e., checks for linear dependence of columns of realized values of the predictors) were performed for the baseline model; additionally, they were performed at each stage of model enlargement because singularities depended on what other predictors were in 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.) For nonresponse adjustment, any variable that was a linear combination of other variables was either dropped from the model or collapsed with other variables. In order to decide whether to drop or to collapse, a singularity check was performed for both respondents only and the full sample. If both samples showed the same set of variables causing singularity, then these singularity variables could be dropped; if not, collapsing needed to be performed. For poststratification adjustment, any variable that was a linear combination of other variables had to be collapsed with other variables, since the variables corresponding to poststratification controls typically were linearly independent.

**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 any required collapsing) 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 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 the model was optimized using criteria described in Guideline 4 above. The non-State two-factor effects were added first, and then, in a separate step, the State two-factor effects were added.

**6. Baseline with two and higher order 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. Again, criteria from Guideline 4 were followed to obtain an optimal model.

**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 center was set as  $C_1 = C_2 = C_3 = 1$ . Instead of tightening the bounds to as close to 1 as possible, as was done for previous surveys, for the 2002 NSDUH, we used an adaptive approach to choose the bounds. We used the same approach for the 2003 NSDUH as for the 2002 NSDUH, i.e. starting with loose bounds of (0.1, 10), we performed GEM iteratively 4 times, each with the realized bounds from the previous iteration. The final bounds for nonextreme weights were desired to be around (0.3, 5). The iterations based on the adaptive approach generally met this desired criterion. If this was not the case, then collapsing of some model variables was allowed to meet this criterion. Finally, the bounds  $U_1$  and  $L_3$  were further tightened to as close to 1 as possible to better control high and low extreme values, while maintaining  $L_3 \geq L_2$  and  $U_1 \leq U_2$
- In the case of nonresponse, the center  $C_s$  were set equal to the common value of the overall inverse response propensity, and all the three lower bounds ( $L_1, L_2$ , and  $L_3$ ) were set to 1. Next, starting with the loose bounds of (1, 10), the bounds were chosen iteratively as mentioned above using the realized bounds from the previous GEM iteration. The bounds  $U_1$  and  $L_3$  were further tightened to as close to  $C$  as possible, while maintaining  $L_3 \geq L_2$  and  $U_1 \leq U_2$ .
- 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 after all stages of calibrations, a separate GEM for adjustment of extreme values was 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 set of realized bounds for the final model, the baseline model was rerun, and then point estimates and SEs for selected outcome variables for the two models were compared. Generally, the two estimates were likely to be close, but not the SEs. The SEs for the final model were expected to be smaller but, at times, could be larger. Larger SEs were identified and examined because they could be an indication of instability of the model parameter estimates due to possible overfitting or insufficient sample sizes. In such situations, the final model was 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 model 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., 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> quintile) with the 5<sup>th</sup> quintile set for the reference. If the 4<sup>th</sup> quintile needed to be collapsed, it would be collapsed with either the 3<sup>rd</sup> or 5<sup>th</sup> quintile.
- *Age Groups.* Age group had five levels: 12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older (50 or older was further broken down into 50 to 64 and 65 or older for the Person-Level Poststratification Adjustment and the Person-Level Extreme Value Adjustment in order to increase the accuracy of estimates for these age groups). For the main effects, the age covariate with five or six levels was easy to incorporate in the model. For the interactions, every effort was made to maintain the age group and, therefore, collapsing was performed within age groups first; collapsing across age groups occurred only if the age groups 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 (CA, FL, IL, MI, NY, OH, PA, TX), 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 five levels (white, black, American Indian/Alaska Native, Asian, and two or more races) while in non-State-specific two- and three-factor effects, Race had three levels (white, black, and other). If maintaining all five levels was difficult in the main effects or State  $\times$  Race interactions, the following guidelines were followed: collapse American Indian/Alaska Native and Asian if either of them caused a convergence problem; collapse black with two or more races if black caused a convergence problem; collapse two or more races with American Indian/Alaska Native or Asian, whichever had a smaller sample size, if two or more races caused a convergence problem; collapse American Indian/Alaska Native, Asian, and two or more races, or collapse all nonwhite Race groups if necessary. In the State  $\times$  Race interactions, collapsing Race should be done within State. If the three-level Race could not be maintained, the levels were collapsed to white and nonwhite.



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

The 2003 National Survey on Drug Use and Health (NSDUH) 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 of 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 field interviewer (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 2003 NSDUH Sample Design Report (Bowman et al., 2005).

As part of the post-survey data-processing activities, analysis weights were calculated for the 2003 NSDUH 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 2003 NSDUH sample are products 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-level 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 2003 NSDUH sample are the product of all 14 weight components, as illustrated in Exhibit 5.1.

In 2003, as in 2000–2002, the order of the extreme value adjustment step at both the DU and person level was different from the order used in the 1999 National Household Survey on Drug Abuse (NHSDA) computer-assisted interviewing (CAI). In the 1999 NHSDA CAI, the extreme value adjustment 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 nonextreme weights were adjusted so that the original sample distribution of the weights for various domains was preserved. As a better alternative for NHSDAs after 1999, we first allowed the generalized exponential model (GEM) to control the extreme weights during nonresponse and poststratification steps, and then performed a separate extreme value adjustment step after poststratification, if necessary. This step would be like a repeated poststratification,

## Exhibit 5.1 Summary of 2003 NSDUH 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	Subsampling of Added Dwelling Unit Adjustment
#6	Dwelling Unit Percent Release Adjustment
#7	Dwelling Unit Nonresponse Adjustment ( <i>res.sdu.nr</i> )*
#8	Dwelling Unit Poststratification Adjustment ( <i>res.sdu.ps</i> )*
#9	Dwelling Unit Extreme Value Adjustment ( <i>res.sdu.ev</i> )*

### Phase II Person Level

Design Weight Components	
#10	Inverse Probability of Selecting a Person Within a Dwelling Unit
#11	Selected Person-Level Poststratification Adjustment to Screener Data Controls ( <i>sel.per.ps</i> )*
#12	Person-Level Nonresponse Adjustment ( <i>res.per.nr</i> )*
#13	Person-Level Poststratification Adjustment ( <i>res.per.ps</i> )*
#14	Person-Level Extreme Value Adjustment ( <i>res.per.ev</i> )*

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

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

<b>Model Group</b>	<b>Eligible DU</b>	<b>Completed DU</b>	<b>Eligible Persons</b>	<b>Selected Persons</b>	<b>Completed Persons</b>
1	12,383	11,245	6,787	6,787	5,566
2	19,114	16,668	9,949	9,949	8,089
3	26,799	24,050	15,446	15,446	12,727
4	12,595	11,845	7,219	7,219	6,266
5	24,825	22,391	13,052	13,052	10,768
6	7,413	6,950	4,213	4,213	3,542
7	12,045	11,295	7,460	7,460	6,302
8	13,800	13,033	8,571	8,571	7,260
9	14,511	13,128	8,934	8,934	7,264
Total	143,485	130,605	81,631	81,631	67,784

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). It so happened that the extreme value adjustment step was not needed at the DU level, but was implemented at the person level.

## **5.1 Phase I Household-Level Weight Components**

### **5.1.1 Weight Components #1 to #6: 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 was randomly selected. Weight Component #3 (i.e., subsegmentation inflation factor) is an adjustment that accounts for this selection process.

As noted in the 2003 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 2002. Because the listing was done a short time before the 2003 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 NSDUH has a procedure for locating and adding missed DUs. The current procedure requires field interviewers (FIs) to look both on the property of selected DUs and between each DU and the next listed DU (half-open interval rule). Starting from the 2000 survey, 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 2003 NSDUH Sample Design Report (Bowman et al., 2005).

### **5.1.2 Weight Component #7: Dwelling Unit–Level 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 surveys, the (unconditional) sample weights up to this point (equal to the product of Weight Components #1 through #6) were adjusted using a multiplicative adjustment factor derived from modeling response propensity via GEM.

### **5.1.3 Weight Component #8: Dwelling Unit–Level 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 was 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, gender, and two or more races) 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 MULTLOG 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**

<b>Imputed Variable</b>	<b>Methodology</b>	<b>Explanatory or Auxiliary Sort Variables</b>
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–Level Extreme Value Adjustment

The product of Weight Components #1 through #8 was checked to see if the extreme value adjustment 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  $\pm 3 \times$  interquartile range (IQR). Since the unweighted, weighted, and winsorized extreme value percentages were not high, the extreme value adjustment 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 through #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 NSDUH interview was sought; they also account for person-level nonresponse, extreme values, and coverage errors resulting from the last stages of the sample design.

Details 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: Selection of a Person within a Dwelling Unit**

The rate at which persons were selected within each DU depended on the age group, and was determined during the design of the 2003 study; this was also done for the probabilities of selecting DUs (i.e., Weight Component #4). Note that, similar to the 1999-2001 NHSDAs and 2002 NSDUH, 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 poststratification 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 1999-2001 NHSDAs and 2002 NSDUH, 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 survey 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 distributions over various demographic domains 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 demographic was 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 imputation-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**

This adjustment was to calibrate the weighted respondent-sample data for various demographic domains to the specified control totals obtained from the Census Bureau's estimates of the civilian, noninstitutionalized population aged 12 or older for the year 2003 based on the 2000 census. 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 our 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 Adjustment**

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



## 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. Greater details can be found in the Supplement to the Appendices.

### 6.1 Response Rates

Table E in Appendix E displays the final sample sizes for the categories "selected," "eligible," and "completed" at the dwelling unit (DU) level, and for "selected" and "respondents" at the person level from the 2003 National Survey on Drug Use and Health (NSDUH), for both the national and State levels. 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 84.16 percent as compared to 84.73 percent for 2002. This similarity in overall rates held in nearly all States, with a few notable exceptions: the eligibility rate dropped from 90.14 to 84.47 percent for Utah and increased from 80.09 to 85.37 percent for Nevada. The screening rate at the national level remained the same as that for 2002 (90.72 percent) except the screening rate increased from 77.38 to 95.42 percent in New Mexico and from 86.58 to 95.34 in Mississippi. The national interview response rate was 77.40 percent, a decrease of 1.12 percent compared with 78.51 percent for 2002, with the biggest decrease in Nevada (6.92 percent) and the biggest increase in Vermont (8.08 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
<i>DU Level</i>			
Eligibility Rate	76.61% (Arizona)	83.11% (Colorado)	89.84% (Iowa)
Screener Response Rate	83.44% (Illinois)	93.19% (Vermont)	95.53% (Arkansas)
<i>Person Level</i>			
Interview Response Rate	71.91% (New York)	79.22% (Washington)	87.80% (Utah)

## 6.2 Percentage 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 calculated 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 2003 NSDUH sample, domains for extreme value definitions were defined as follows for various weight adjustments via the generalized exponential model (GEM) (see Section 4.1):

- DU nonresponse: by field interviewer (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 7 for Hispanics; an Initial Total, also known as the design-based weight, of 6,669; a Census Total of 8,001; and an initial slippage rate of -16.64 percent. The ratio of the Census Total to the Initial Total gives the value of the weight adjustment, 1.20. Similar to this example, but in the opposite direction, is Table H.47 for Vermont. The Race domain for "black" contains a sample size of 15 and an initial slippage rate of 55.39 percent. The Initial Total of 4,594 and the Census Total of 2,957 indicates an adjustment of 0.64 would be required.

## **6.4 Weight Adjustment Summary Statistics**

Tables I.1 to I.52 in Supplement 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 unequal weighting effect (UWE) prior to poststratification based on the questionnaire data (e.g., see Table I.1, under the heading "After res.per.nr") would only be slightly different from what would be obtained after the nonresponse adjustment (e.g., see Table I.1, 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), then we would feel comfortable fitting the more complex model.

The "standard" SE (a ratio-adjusted estimator denoted by SE1) computed under the DESCRIPT procedure in SUDAAN® treats the calibration adjustment factors as nonrandom. A more complete method of estimation would take into account the variability present in the weight adjustment. The sandwich formula for the Taylor linearization (see Vaish, et al., 2000) is designed to provide an estimate of the variance which adjusts for the random calibration factors to sampling weights via GEM. This "sandwich variance", adjusting for the post-stratification variability, is denoted by SE2. Both SE1 and SE2 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 to 17, 18 to 25, 26 to 34, and 35 or older), for the eight States with large sample sizes.

As noted above, to check for overfitting the variances of the baseline and final models were compared. In Tables 6.2 to 6.7, there are a few cases where the SE2 from the final model is slightly larger than the SE2 from the baseline model, indicating possible overfitting. However, in most cases, the variance estimates for the two models (baseline and final) are generally similar to each other (for both SE1 and SE2) or SE2 from final model is smaller than the SE2 from the baseline model. Note that the smaller variance estimates for the final model would indicate that the complex model for the poststratification adjustment resulted in better 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). Therefore, the evidence does not favor the view that fitting a large number of parameters in GEM creates instability in estimates.

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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: 2003 NSDUH**

Variables	U.S.		California		Florida		Illinois		Michigan		
	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	
<b>Cigarettes Lifetime</b>											
Total	Point Estimates	68.75	68.68	63.93	63.87	68.54	68.74	70.19	70.23	72.36	72.28
	SE1	0.33	0.35	1.27	1.37	1.32	1.30	1.28	1.33	1.32	1.33
	SE2	0.30	0.29	1.17	1.13	1.29	1.11	1.26	1.25	1.31	1.27
12-17	Point Estimates	30.98	31.01	24.48	24.70	29.25	29.30	31.60	31.36	31.01	31.34
	SE1	0.43	0.45	1.49	1.58	1.57	1.63	1.49	1.54	1.78	1.77
	SE2	0.43	0.43	1.50	1.58	1.59	1.59	1.48	1.52	1.77	1.73
18-25	Point Estimates	70.20	70.18	65.83	65.89	63.54	64.04	71.30	71.22	71.66	71.83
	SE1	0.46	0.48	1.79	1.82	1.77	1.75	1.53	1.67	1.43	1.45
	SE2	0.46	0.46	1.77	1.81	1.81	1.63	1.52	1.74	1.47	1.61
26-34	Point Estimates	72.17	72.27	65.18	65.47	71.95	71.82	73.30	73.05	79.01	79.08
	SE1	0.76	0.79	3.06	3.11	2.48	2.52	2.29	2.49	2.40	2.38
	SE2	0.74	0.69	3.02	2.73	2.38	2.24	2.29	2.33	2.38	2.21
35+	Point Estimates	74.08	73.94	70.49	70.28	74.48	74.71	75.85	76.03	78.21	77.98
	SE1	0.47	0.49	1.74	1.90	1.85	1.77	1.80	1.88	1.74	1.77
	SE2	0.44	0.42	1.61	1.58	1.81	1.46	1.77	1.75	1.74	1.74
<b>Alcohol Lifetime</b>											
Total	Point Estimates	83.26	83.11	81.57	81.46	84.21	83.89	85.10	85.13	86.41	86.36
	SE1	0.24	0.25	0.68	0.71	0.99	1.02	0.92	0.93	0.76	0.80
	SE2	0.22	0.21	0.69	0.63	0.97	0.90	0.88	0.75	0.74	0.71
12-17	Point Estimates	42.88	42.86	38.97	39.12	43.39	43.50	42.35	42.42	45.00	45.07
	SE1	0.44	0.45	1.37	1.40	1.51	1.52	1.49	1.50	1.67	1.64
	SE2	0.43	0.43	1.38	1.35	1.53	1.53	1.47	1.44	1.66	1.63
18-25	Point Estimates	87.05	87.06	85.03	85.21	84.31	84.50	88.40	88.64	87.96	88.10
	SE1	0.32	0.32	1.09	1.08	1.26	1.27	1.27	1.32	1.06	1.04
	SE2	0.32	0.31	1.06	1.05	1.28	1.22	1.27	1.28	1.07	1.06
26-34	Point Estimates	90.39	90.32	85.06	85.04	90.68	90.68	90.06	89.74	92.18	92.10
	SE1	0.48	0.50	2.00	1.99	1.92	1.93	1.71	1.84	1.52	1.55
	SE2	0.48	0.44	2.05	1.89	1.85	1.65	1.70	1.70	1.50	1.45
35+	Point Estimates	87.64	87.41	87.74	87.51	88.86	88.34	90.52	90.57	91.99	91.90
	SE1	0.35	0.37	1.09	1.18	1.22	1.27	1.27	1.30	1.08	1.14
	SE2	0.33	0.31	1.06	1.03	1.21	1.26	1.23	1.11	1.07	1.08

(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: 2003 NSDUH (continued)**

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
<b>Cigarettes Lifetime</b>									
Total	Point Estimates	67.33	66.75	72.22	71.90	69.02	69.25	64.64	64.77
	SE1	1.34	1.33	0.98	1.00	1.30	1.28	1.35	1.34
	SE2	1.22	1.11	0.97	0.99	1.29	1.20	1.25	1.18
12-17	Point Estimates	27.07	27.45	32.55	32.61	32.23	32.34	32.01	31.93
	SE1	1.70	1.76	1.61	1.60	1.43	1.44	1.82	1.86
	SE2	1.73	1.77	1.61	1.59	1.44	1.42	1.81	1.82
18-25	Point Estimates	68.07	69.19	73.42	73.25	73.17	73.32	70.16	69.97
	SE1	1.63	1.61	1.75	1.74	1.35	1.35	1.71	1.70
	SE2	1.61	1.53	1.75	1.64	1.36	1.34	1.72	1.60
26-34	Point Estimates	71.02	71.41	82.42	81.52	72.27	71.98	67.50	67.31
	SE1	2.78	3.30	2.22	2.35	2.01	2.08	2.47	2.52
	SE2	2.78	2.75	2.22	2.02	2.01	1.77	2.45	2.17
35+	Point Estimates	72.57	71.29	76.39	76.05	73.17	73.60	69.08	69.40
	SE1	2.21	2.26	1.49	1.51	1.84	1.81	2.09	2.05
	SE2	2.11	1.96	1.46	1.45	1.84	1.74	1.99	1.84
<b>Alcohol Lifetime</b>									
Total	Point Estimates	83.16	82.60	85.16	84.93	84.64	85.19	79.76	79.65
	SE1	0.87	1.00	0.74	0.80	0.83	0.78	0.98	1.00
	SE2	0.84	0.87	0.75	0.84	0.82	0.70	0.87	0.87
12-17	Point Estimates	44.98	45.75	42.24	42.36	41.11	41.32	44.92	44.84
	SE1	1.78	1.79	1.60	1.61	1.30	1.31	1.81	1.87
	SE2	1.83	1.77	1.60	1.57	1.31	1.31	1.80	1.81
18-25	Point Estimates	88.36	88.06	88.84	88.90	89.24	89.48	85.03	84.66
	SE1	1.01	1.10	1.37	1.38	1.12	1.11	1.28	1.30
	SE2	1.01	1.13	1.37	1.37	1.12	1.13	1.29	1.30
26-34	Point Estimates	89.04	89.23	94.41	94.24	93.32	93.66	86.76	86.53
	SE1	1.77	2.02	1.01	1.05	1.40	1.28	1.79	1.87
	SE2	1.82	1.73	1.02	1.07	1.40	1.15	1.78	1.77
35+	Point Estimates	86.66	85.66	89.56	89.15	88.67	89.45	83.51	83.49
	SE1	1.36	1.54	1.18	1.29	1.27	1.16	1.43	1.45
	SE2	1.31	1.37	1.18	1.33	1.26	1.09	1.34	1.32

**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: 2003 NSDUH**

Variables	U.S.		California		Florida		Illinois		Michigan		
	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	
<b>Marijuana Lifetime</b>											
Total	Point Estimates	40.81	40.65	42.51	42.04	38.54	38.30	39.50	39.21	46.28	46.50
	SE1	0.36	0.37	1.34	1.38	1.45	1.43	1.38	1.36	1.47	1.47
	SE2	0.30	0.29	1.15	1.04	1.33	0.99	1.35	1.19	1.44	1.24
12-17	Point Estimates	19.63	19.55	18.21	17.94	17.97	17.94	18.89	18.45	21.41	21.38
	SE1	0.36	0.37	1.28	1.29	1.35	1.34	1.20	1.22	1.47	1.47
	SE2	0.36	0.36	1.30	1.30	1.36	1.36	1.20	1.24	1.47	1.44
18-25	Point Estimates	54.04	53.90	54.37	54.27	49.50	49.76	55.14	54.57	56.60	56.80
	SE1	0.48	0.50	1.63	1.70	1.82	1.80	1.75	1.82	1.78	1.78
	SE2	0.49	0.48	1.63	1.65	1.93	1.66	1.75	1.73	1.79	1.85
26-34	Point Estimates	51.13	51.01	46.93	47.42	55.71	55.94	47.41	46.68	57.92	57.53
	SE1	0.82	0.83	3.01	3.02	3.19	3.30	2.92	3.00	2.57	2.59
	SE2	0.81	0.75	2.89	2.72	3.01	2.61	2.89	2.75	2.55	2.53
35+	Point Estimates	39.09	38.90	43.07	42.22	36.15	35.77	37.59	37.45	45.75	46.18
	SE1	0.52	0.52	2.07	2.15	2.02	1.93	2.00	1.99	2.06	2.07
	SE2	0.44	0.41	1.82	1.62	1.84	1.35	1.96	1.75	2.02	1.68
<b>Cocaine Lifetime</b>											
Total	Point Estimates	14.74	14.68	18.74	18.60	16.39	16.24	12.80	12.71	14.58	14.58
	SE1	0.24	0.24	0.93	0.90	1.10	1.10	0.93	0.94	0.85	0.85
	SE2	0.23	0.21	0.88	0.84	1.05	0.89	0.92	0.87	0.85	0.80
12-17	Point Estimates	2.59	2.59	2.20	2.27	1.66	1.69	2.35	2.20	2.69	2.71
	SE1	0.14	0.15	0.57	0.59	0.42	0.43	0.52	0.50	0.63	0.63
	SE2	0.14	0.14	0.57	0.59	0.42	0.44	0.52	0.49	0.63	0.63
18-25	Point Estimates	15.03	14.99	16.90	17.11	14.44	14.70	13.61	13.83	12.91	12.97
	SE1	0.33	0.34	1.23	1.22	1.37	1.40	1.21	1.24	0.92	0.92
	SE2	0.33	0.32	1.28	1.24	1.40	1.34	1.20	1.23	0.91	0.96
26-34	Point Estimates	18.08	18.06	22.04	22.77	24.65	23.80	14.06	14.26	20.59	20.53
	SE1	0.64	0.64	2.40	2.37	2.78	2.84	2.19	2.24	2.27	2.28
	SE2	0.64	0.60	2.43	2.23	2.72	2.63	2.17	2.14	2.28	2.25
35+	Point Estimates	15.96	15.87	21.35	20.84	17.23	17.13	14.12	13.89	15.65	15.66
	SE1	0.36	0.36	1.61	1.57	1.40	1.39	1.31	1.34	1.18	1.18
	SE2	0.33	0.31	1.48	1.39	1.33	1.16	1.31	1.30	1.18	1.12

(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: 2003 NSDUH (continued)**

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
<b>Marijuana Lifetime</b>									
Total	Point Estimates	42.12	40.82	43.19	42.81	37.28	38.37	35.79	35.45
	SE1	1.41	1.39	1.14	1.21	1.33	1.37	1.36	1.36
	SE2	1.34	1.19	1.13	1.05	1.25	1.04	1.19	1.05
12-17	Point Estimates	18.10	18.47	19.16	19.24	18.85	18.81	21.63	21.55
	SE1	1.36	1.38	1.39	1.39	1.43	1.44	1.45	1.47
	SE2	1.39	1.37	1.38	1.39	1.43	1.45	1.45	1.43
18-25	Point Estimates	56.40	55.71	55.61	55.65	55.69	55.98	47.37	46.98
	SE1	1.77	1.83	2.13	2.11	1.59	1.57	1.88	1.89
	SE2	1.76	1.80	2.14	2.09	1.61	1.65	1.89	1.72
26-34	Point Estimates	49.01	47.10	59.62	59.19	54.63	54.58	41.47	41.90
	SE1	3.12	3.13	2.63	2.64	2.73	2.59	2.46	2.48
	SE2	3.17	3.06	2.65	2.73	2.73	2.48	2.44	2.26
35+	Point Estimates	41.30	39.77	40.97	40.43	33.15	34.81	34.09	33.50
	SE1	2.00	2.00	1.66	1.73	1.67	1.74	2.16	2.16
	SE2	1.91	1.54	1.61	1.46	1.58	1.36	1.96	1.77
<b>Cocaine Lifetime</b>									
Total	Point Estimates	16.87	16.23	12.40	12.35	13.75	14.28	13.35	13.25
	SE1	1.17	1.07	0.81	0.77	0.80	0.81	0.80	0.79
	SE2	1.16	1.03	0.82	0.83	0.79	0.77	0.74	0.71
12-17	Point Estimates	1.43	1.31	1.77	1.77	2.27	2.28	4.68	4.53
	SE1	0.41	0.36	0.39	0.39	0.45	0.45	0.66	0.67
	SE2	0.41	0.36	0.40	0.39	0.45	0.44	0.67	0.66
18-25	Point Estimates	13.45	13.28	12.62	12.94	12.99	12.97	16.19	15.90
	SE1	1.11	1.18	1.20	1.25	1.13	1.11	1.53	1.53
	SE2	1.11	1.19	1.19	1.14	1.13	1.07	1.52	1.42
26-34	Point Estimates	12.46	11.94	17.01	16.77	18.79	18.82	20.36	20.58
	SE1	1.77	1.70	1.98	1.92	2.38	2.34	2.23	2.26
	SE2	1.83	1.86	1.98	2.01	2.37	2.24	2.18	2.17
35+	Point Estimates	21.03	20.19	13.13	13.02	14.67	15.50	12.37	12.25
	SE1	1.78	1.65	1.21	1.18	1.05	1.10	1.29	1.27
	SE2	1.76	1.51	1.23	1.27	1.05	1.06	1.23	1.16

**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: 2003 NSDUH**

Variables	U.S.		California		Florida		Illinois		Michigan		
	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	
<b>Cigarettes Past Year</b>											
Total	Point Estimates	29.42	29.39	22.16	22.12	27.75	27.65	30.80	30.68	32.23	32.48
	SE1	0.34	0.34	1.11	1.12	1.34	1.35	1.14	1.15	1.36	1.35
	SE2	0.31	0.30	1.09	1.05	1.29	1.16	1.13	1.05	1.35	1.33
12-17	Point Estimates	18.96	18.95	13.60	13.79	16.26	16.44	19.01	18.85	19.11	19.32
	SE1	0.36	0.36	1.05	1.12	1.33	1.38	1.23	1.22	1.50	1.50
	SE2	0.36	0.35	1.07	1.10	1.35	1.36	1.23	1.21	1.49	1.44
18-25	Point Estimates	47.73	47.63	41.20	41.10	41.66	42.43	49.38	49.02	50.72	50.82
	SE1	0.45	0.46	1.55	1.50	1.62	1.66	1.71	1.74	1.36	1.37
	SE2	0.44	0.44	1.55	1.47	1.63	1.65	1.71	1.84	1.37	1.44
26-34	Point Estimates	38.51	38.50	30.64	31.35	39.26	38.62	39.34	39.12	44.40	44.66
	SE1	0.78	0.80	2.53	2.57	2.87	2.86	3.12	3.20	2.70	2.73
	SE2	0.78	0.72	2.51	2.22	2.87	2.89	3.11	2.81	2.69	2.63
35+	Point Estimates	25.06	25.03	17.02	16.72	24.65	24.53	26.54	26.46	27.77	28.10
	SE1	0.45	0.46	1.50	1.51	1.67	1.70	1.56	1.58	1.88	1.87
	SE2	0.42	0.41	1.46	1.43	1.61	1.52	1.56	1.52	1.87	1.81
<b>Alcohol Past Year</b>											
Total	Point Estimates	65.18	65.02	65.55	65.44	66.31	65.81	68.67	68.71	68.77	68.58
	SE1	0.36	0.37	1.19	1.21	1.40	1.46	1.22	1.24	1.27	1.31
	SE2	0.33	0.32	1.14	1.03	1.40	1.35	1.18	1.08	1.26	1.18
12-17	Point Estimates	34.35	34.26	29.61	29.49	34.80	35.02	34.65	34.56	35.32	35.35
	SE1	0.41	0.42	1.28	1.32	1.24	1.27	1.41	1.41	1.45	1.42
	SE2	0.41	0.40	1.29	1.30	1.25	1.25	1.40	1.37	1.44	1.44
18-25	Point Estimates	78.20	78.09	74.58	74.52	75.94	76.32	82.66	82.74	80.90	81.07
	SE1	0.40	0.41	1.45	1.47	1.69	1.68	1.53	1.55	1.27	1.25
	SE2	0.40	0.40	1.45	1.38	1.71	1.55	1.54	1.49	1.28	1.24
26-34	Point Estimates	78.14	78.10	73.88	74.08	80.04	80.57	79.55	79.83	84.35	84.32
	SE1	0.67	0.69	2.34	2.35	2.46	2.35	2.23	2.38	1.97	1.93
	SE2	0.66	0.61	2.39	2.20	2.33	2.01	2.22	2.26	1.93	1.72
35+	Point Estimates	64.52	64.31	67.85	67.66	66.45	65.55	68.71	68.64	68.44	68.16
	SE1	0.53	0.55	1.92	1.95	1.87	1.96	1.86	1.95	1.82	1.87
	SE2	0.50	0.47	1.75	1.51	1.87	1.90	1.82	1.70	1.82	1.74

(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: 2003 NSDUH (continued)**

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
<b>Cigarettes Past Year</b>									
Total	Point Estimates	29.95	29.53	33.99	33.66	29.88	30.23	31.44	31.06
	SE1	0.97	0.98	1.34	1.33	1.09	1.10	1.42	1.44
	SE2	0.95	0.90	1.33	1.25	1.04	0.96	1.35	1.24
12-17	Point Estimates	16.81	16.80	20.72	20.73	21.09	21.33	20.37	20.09
	SE1	1.22	1.23	1.32	1.33	1.30	1.30	1.29	1.36
	SE2	1.27	1.28	1.33	1.31	1.31	1.26	1.28	1.36
18-25	Point Estimates	48.15	48.55	51.43	51.16	53.38	53.62	47.69	47.47
	SE1	1.63	1.62	1.89	1.87	1.70	1.68	1.66	1.68
	SE2	1.55	1.48	1.87	1.71	1.70	1.65	1.67	1.66
26-34	Point Estimates	36.27	35.46	44.42	44.23	41.29	40.61	40.49	40.27
	SE1	2.69	2.64	3.05	3.11	2.89	2.88	2.50	2.59
	SE2	2.75	2.61	3.04	2.96	2.87	2.47	2.45	2.22
35+	Point Estimates	26.76	26.21	30.20	29.81	24.45	25.04	26.94	26.48
	SE1	1.24	1.32	1.76	1.74	1.33	1.39	2.13	2.14
	SE2	1.24	1.25	1.72	1.55	1.32	1.37	2.07	1.89
<b>Alcohol Past Year</b>									
Total	Point Estimates	69.61	68.58	70.05	69.84	67.51	67.92	62.11	61.56
	SE1	1.27	1.27	1.14	1.18	1.33	1.38	1.20	1.24
	SE2	1.19	1.07	1.16	1.24	1.33	1.30	1.12	1.07
12-17	Point Estimates	37.07	37.78	33.78	33.87	33.34	33.41	36.19	36.07
	SE1	1.85	1.92	1.30	1.30	1.18	1.25	1.42	1.47
	SE2	1.91	1.91	1.31	1.28	1.19	1.27	1.42	1.41
18-25	Point Estimates	82.34	82.17	81.80	81.78	81.91	82.40	74.84	74.45
	SE1	1.13	1.27	1.51	1.51	1.47	1.42	1.59	1.63
	SE2	1.12	1.30	1.51	1.49	1.48	1.41	1.59	1.60
26-34	Point Estimates	80.67	80.46	82.58	82.48	83.04	83.02	75.96	75.58
	SE1	2.30	2.72	2.15	2.16	2.39	2.44	2.10	2.18
	SE2	2.33	2.37	2.15	2.15	2.39	2.28	2.10	2.00
35+	Point Estimates	69.44	67.79	70.89	70.54	66.89	67.48	60.14	59.45
	SE1	2.00	1.94	1.71	1.74	2.09	2.18	1.74	1.82
	SE2	1.91	1.68	1.74	1.86	2.09	2.05	1.69	1.60

**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: 2003 NSDUH**

Variables		U.S.		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
<b>Marijuana Past Year</b>											
Total	Point Estimates	10.65	10.62	10.90	10.87	11.76	11.92	10.39	10.27	13.26	13.13
	SE1	0.19	0.19	0.77	0.77	0.81	0.85	0.69	0.68	0.86	0.86
	SE2	0.18	0.17	0.72	0.71	0.76	0.61	0.68	0.64	0.84	0.73
12-17	Point Estimates	15.06	14.98	13.69	13.33	13.15	13.23	14.58	14.21	16.89	16.79
	SE1	0.31	0.31	0.92	0.94	1.22	1.21	1.08	1.10	1.32	1.31
	SE2	0.31	0.31	0.93	0.91	1.23	1.23	1.08	1.12	1.32	1.28
18-25	Point Estimates	28.59	28.51	29.36	29.55	28.99	29.15	28.31	28.26	31.48	31.50
	SE1	0.46	0.46	1.83	1.86	1.70	1.71	1.76	1.77	1.61	1.62
	SE2	0.46	0.45	1.86	1.82	1.77	1.61	1.71	1.57	1.62	1.66
26-34	Point Estimates	14.41	14.43	16.05	16.31	19.81	20.63	13.37	12.98	17.65	17.55
	SE1	0.60	0.60	2.07	2.10	2.52	2.51	2.16	2.16	2.09	2.09
	SE2	0.58	0.55	2.01	1.84	2.50	2.31	2.12	2.13	2.08	2.05
35+	Point Estimates	5.09	5.07	4.68	4.58	6.89	6.99	4.91	4.86	7.71	7.56
	SE1	0.21	0.21	0.84	0.83	0.90	0.92	0.74	0.72	1.02	1.01
	SE2	0.20	0.20	0.83	0.80	0.85	0.75	0.73	0.70	1.01	0.96
<b>Cocaine Past Year</b>											
Total	Point Estimates	2.49	2.49	2.63	2.65	2.73	2.72	2.16	2.10	2.83	2.79
	SE1	0.10	0.10	0.37	0.38	0.32	0.31	0.36	0.34	0.44	0.43
	SE2	0.09	0.09	0.37	0.36	0.31	0.27	0.36	0.34	0.44	0.41
12-17	Point Estimates	1.76	1.75	1.05	1.08	1.17	1.20	1.58	1.44	1.79	1.82
	SE1	0.11	0.11	0.39	0.39	0.31	0.32	0.38	0.36	0.41	0.41
	SE2	0.11	0.11	0.39	0.40	0.31	0.32	0.38	0.37	0.41	0.41
18-25	Point Estimates	6.59	6.61	6.96	7.08	6.70	6.95	6.33	6.49	5.58	5.57
	SE1	0.22	0.23	0.82	0.84	0.95	1.01	0.84	0.89	0.50	0.50
	SE2	0.22	0.22	0.84	0.84	0.97	0.98	0.84	0.89	0.50	0.52
26-34	Point Estimates	4.07	4.06	6.61	6.67	5.09	5.02	3.08	3.14	4.45	4.45
	SE1	0.36	0.36	1.66	1.66	1.34	1.34	1.12	1.16	1.15	1.15
	SE2	0.36	0.35	1.67	1.61	1.34	1.34	1.12	1.14	1.15	1.15
35+	Point Estimates	1.34	1.34	0.83	0.81	1.77	1.75	1.10	0.96	2.05	2.00
	SE1	0.11	0.11	0.29	0.29	0.38	0.38	0.37	0.33	0.61	0.58
	SE2	0.10	0.10	0.30	0.30	0.38	0.35	0.37	0.33	0.61	0.57

(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: 2003 NSDUH (continued)**

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
<b>Marijuana Past Year</b>									
Total	Point Estimates	12.24	11.90	10.19	10.02	10.12	10.26	8.69	8.59
	SE1	0.80	0.79	0.58	0.59	0.74	0.76	0.57	0.57
	SE2	0.81	0.81	0.58	0.56	0.71	0.65	0.56	0.53
12-17	Point Estimates	14.99	15.21	14.68	14.77	14.21	14.27	15.64	15.40
	SE1	1.18	1.21	1.00	1.01	1.25	1.28	1.14	1.10
	SE2	1.20	1.17	1.00	1.01	1.26	1.29	1.13	1.09
18-25	Point Estimates	34.39	33.83	27.77	27.67	29.94	30.08	21.78	21.40
	SE1	1.58	1.67	1.87	1.86	1.79	1.79	1.52	1.53
	SE2	1.60	1.62	1.86	1.82	1.78	1.75	1.52	1.48
26-34	Point Estimates	16.90	15.96	14.19	14.04	16.69	16.54	10.01	10.15
	SE1	2.24	2.31	2.17	2.14	2.15	2.06	1.81	1.83
	SE2	2.27	2.29	2.16	2.16	2.15	2.02	1.83	1.87
35+	Point Estimates	6.15	5.91	4.79	4.62	4.38	4.57	3.54	3.50
	SE1	1.00	0.97	0.68	0.67	0.76	0.82	0.60	0.59
	SE2	1.00	0.94	0.68	0.68	0.75	0.79	0.59	0.56
<b>Cocaine Past Year</b>									
Total	Point Estimates	2.66	2.62	2.25	2.32	2.81	2.77	2.55	2.52
	SE1	0.34	0.34	0.33	0.35	0.38	0.37	0.32	0.33
	SE2	0.34	0.31	0.33	0.36	0.38	0.35	0.32	0.32
12-17	Point Estimates	0.98	0.97	1.47	1.48	1.66	1.66	3.29	3.08
	SE1	0.31	0.30	0.34	0.34	0.37	0.37	0.56	0.53
	SE2	0.30	0.30	0.34	0.34	0.37	0.36	0.56	0.53
18-25	Point Estimates	8.06	7.90	6.34	6.49	6.91	6.82	6.28	6.24
	SE1	0.73	0.77	0.83	0.84	1.02	1.01	0.78	0.79
	SE2	0.75	0.77	0.83	0.80	1.01	0.98	0.79	0.76
26-34	Point Estimates	2.30	2.27	1.37	1.34	5.59	5.42	3.61	3.65
	SE1	0.84	0.84	0.62	0.60	1.65	1.57	1.09	1.10
	SE2	0.83	0.79	0.62	0.61	1.65	1.38	1.08	1.08
35+	Point Estimates	1.89	1.88	1.70	1.79	1.65	1.64	1.13	1.13
	SE1	0.45	0.45	0.49	0.54	0.45	0.44	0.37	0.37
	SE2	0.45	0.42	0.50	0.56	0.44	0.43	0.37	0.36

**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: 2003 NSDUH**

Variables	U.S.		California		Florida		Illinois		Michigan		
	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	
<b>Cigarettes Past Month</b>											
Total	Point Estimates	25.45	25.43	18.24	18.15	23.66	23.73	26.72	26.51	28.40	28.39
	SE1	0.33	0.33	0.95	0.95	1.32	1.34	1.04	1.05	1.30	1.30
	SE2	0.30	0.29	0.95	0.94	1.28	1.16	1.03	0.97	1.29	1.25
12-17	Point Estimates	12.21	12.18	7.28	7.16	10.44	10.69	11.97	11.83	13.60	13.71
	SE1	0.29	0.29	0.62	0.66	1.11	1.15	1.12	1.12	1.31	1.31
	SE2	0.29	0.29	0.64	0.67	1.13	1.11	1.12	1.14	1.31	1.26
18-25	Point Estimates	40.31	40.23	33.15	33.05	33.78	34.53	41.47	41.01	43.00	43.07
	SE1	0.46	0.47	1.62	1.62	1.76	1.82	1.58	1.57	1.44	1.45
	SE2	0.45	0.45	1.60	1.63	1.77	1.84	1.59	1.66	1.44	1.51
26-34	Point Estimates	33.43	33.37	24.92	25.55	35.58	34.99	32.36	32.07	38.86	38.87
	SE1	0.78	0.80	2.53	2.56	2.82	2.80	2.83	2.89	2.67	2.72
	SE2	0.77	0.72	2.54	2.31	2.82	2.85	2.82	2.66	2.66	2.65
35+	Point Estimates	22.57	22.58	14.98	14.71	21.41	21.51	24.56	24.39	25.46	25.45
	SE1	0.44	0.45	1.38	1.39	1.71	1.75	1.56	1.57	1.80	1.79
	SE2	0.41	0.40	1.36	1.34	1.65	1.56	1.56	1.48	1.80	1.73
<b>Alcohol Past Month</b>											
Total	Point Estimates	50.26	50.05	51.91	51.77	53.65	53.25	52.45	52.09	53.56	53.38
	SE1	0.37	0.39	1.21	1.25	1.56	1.59	1.19	1.22	1.42	1.44
	SE2	0.34	0.33	1.08	1.01	1.54	1.45	1.15	1.07	1.41	1.31
12-17	Point Estimates	17.82	17.70	14.97	14.85	16.27	16.46	18.52	18.11	18.78	18.80
	SE1	0.33	0.33	1.06	1.08	1.02	1.04	1.23	1.24	1.25	1.24
	SE2	0.33	0.32	1.09	1.11	1.04	1.03	1.22	1.22	1.26	1.27
18-25	Point Estimates	61.50	61.35	57.41	57.55	58.47	58.76	67.03	67.05	66.96	67.07
	SE1	0.49	0.50	1.81	1.85	1.94	1.91	1.72	1.86	1.90	1.89
	SE2	0.48	0.47	1.82	1.70	1.95	1.72	1.72	1.72	1.90	1.87
26-34	Point Estimates	60.27	60.24	55.97	55.98	62.09	62.48	61.07	60.50	71.22	71.23
	SE1	0.78	0.81	2.76	2.81	3.04	3.17	2.69	3.06	2.59	2.54
	SE2	0.78	0.73	2.73	2.55	3.00	3.17	2.66	2.68	2.58	2.41
35+	Point Estimates	50.97	50.69	56.40	56.17	56.57	55.84	52.91	52.48	52.73	52.46
	SE1	0.55	0.57	2.04	2.05	2.10	2.14	1.78	1.82	1.98	2.01
	SE2	0.51	0.48	1.79	1.57	2.10	2.08	1.75	1.67	1.99	1.93

(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: 2003 NSDUH (continued)**

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
<b>Cigarettes Past Month</b>									
Total	Point Estimates	25.71	25.44	30.26	30.00	26.95	27.28	27.59	27.19
	SE1	1.03	1.02	1.34	1.33	0.99	1.01	1.40	1.42
	SE2	1.03	0.98	1.33	1.27	0.96	0.90	1.33	1.24
12-17	Point Estimates	11.17	11.26	14.07	14.09	14.10	14.22	12.24	11.96
	SE1	1.11	1.12	1.21	1.22	1.02	1.03	1.06	1.01
	SE2	1.13	1.14	1.21	1.19	1.03	1.06	1.04	1.01
18-25	Point Estimates	39.70	39.89	45.03	44.81	44.32	44.49	40.50	40.27
	SE1	1.66	1.74	2.00	1.96	1.78	1.76	1.61	1.61
	SE2	1.60	1.66	1.98	1.78	1.78	1.73	1.61	1.55
26-34	Point Estimates	32.23	31.58	38.10	38.05	38.44	37.81	35.78	35.49
	SE1	2.66	2.65	3.58	3.57	2.88	2.87	2.55	2.65
	SE2	2.68	2.61	3.57	3.42	2.85	2.44	2.52	2.35
35+	Point Estimates	23.55	23.23	28.10	27.76	23.31	23.90	25.05	24.59
	SE1	1.30	1.35	1.72	1.70	1.25	1.32	2.16	2.15
	SE2	1.32	1.32	1.69	1.56	1.24	1.29	2.10	1.95
<b>Alcohol Past Month</b>									
Total	Point Estimates	54.12	53.20	53.52	53.43	50.80	51.24	46.86	46.46
	SE1	1.37	1.39	1.32	1.38	1.45	1.47	1.29	1.33
	SE2	1.31	1.17	1.30	1.26	1.46	1.39	1.21	1.11
12-17	Point Estimates	19.61	19.84	17.02	17.08	17.95	18.01	17.68	17.52
	SE1	1.19	1.27	1.14	1.16	0.95	0.97	1.15	1.12
	SE2	1.21	1.26	1.14	1.11	0.97	0.98	1.15	1.07
18-25	Point Estimates	66.08	65.87	64.26	64.37	63.39	63.66	56.66	56.25
	SE1	1.67	1.82	1.50	1.49	1.96	1.94	1.82	1.84
	SE2	1.66	1.78	1.49	1.36	1.96	1.81	1.79	1.65
26-34	Point Estimates	67.97	67.94	65.32	65.56	61.86	61.90	59.40	59.12
	SE1	2.76	3.11	2.28	2.37	3.39	3.27	2.46	2.49
	SE2	2.82	2.70	2.28	2.41	3.38	3.15	2.50	2.25
35+	Point Estimates	53.76	52.31	54.76	54.52	51.20	51.86	46.70	46.24
	SE1	2.04	2.02	1.89	1.96	2.07	2.10	1.97	2.05
	SE2	1.97	1.81	1.88	1.88	2.10	2.01	1.90	1.74

**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: 2003 NSDUH**

Variables		U.S.		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
<b>Marijuana Past Month</b>											
Total	Point Estimates	6.17	6.16	6.41	6.37	6.50	6.61	5.72	5.63	7.53	7.40
	SE1	0.14	0.14	0.51	0.50	0.62	0.65	0.51	0.49	0.67	0.66
	SE2	0.13	0.13	0.48	0.45	0.59	0.54	0.50	0.46	0.66	0.59
12-17	Point Estimates	7.87	7.89	8.02	7.98	6.95	7.01	7.29	7.19	9.67	9.53
	SE1	0.24	0.24	0.72	0.74	0.99	1.01	0.83	0.87	0.98	0.96
	SE2	0.24	0.24	0.73	0.76	1.00	1.03	0.83	0.86	0.98	0.95
18-25	Point Estimates	17.11	17.02	17.76	17.64	15.06	15.17	16.63	16.55	17.14	17.13
	SE1	0.37	0.37	1.51	1.51	1.13	1.16	1.44	1.45	1.44	1.45
	SE2	0.37	0.35	1.52	1.46	1.14	1.10	1.42	1.28	1.44	1.46
26-34	Point Estimates	8.37	8.41	9.40	9.44	9.34	9.56	8.22	7.85	9.26	9.21
	SE1	0.44	0.44	1.44	1.48	1.75	1.74	1.58	1.47	1.37	1.37
	SE2	0.43	0.41	1.38	1.29	1.76	1.67	1.57	1.45	1.36	1.30
35+	Point Estimates	2.98	2.96	2.65	2.61	4.34	4.47	2.38	2.35	4.69	4.54
	SE1	0.16	0.16	0.47	0.47	0.80	0.82	0.53	0.51	0.76	0.73
	SE2	0.15	0.15	0.46	0.45	0.77	0.72	0.53	0.52	0.76	0.73
<b>Cocaine Past Month</b>											
Total	Point Estimates	0.96	0.96	0.85	0.87	1.14	1.17	0.86	0.88	1.21	1.17
	SE1	0.06	0.06	0.16	0.16	0.16	0.17	0.23	0.25	0.35	0.33
	SE2	0.06	0.06	0.16	0.16	0.16	0.15	0.22	0.23	0.35	0.31
12-17	Point Estimates	0.61	0.61	0.43	0.43	0.58	0.60	0.48	0.48	0.45	0.45
	SE1	0.06	0.06	0.21	0.21	0.25	0.26	0.23	0.23	0.19	0.19
	SE2	0.06	0.06	0.21	0.21	0.25	0.26	0.23	0.23	0.19	0.19
18-25	Point Estimates	2.20	2.19	2.20	2.27	2.15	2.18	2.88	2.87	1.90	1.90
	SE1	0.13	0.13	0.47	0.49	0.50	0.53	0.48	0.49	0.51	0.51
	SE2	0.13	0.13	0.47	0.49	0.50	0.51	0.48	0.50	0.51	0.52
26-34	Point Estimates	1.48	1.48	2.07	2.13	1.62	1.61	1.58	1.63	0.75	0.75
	SE1	0.20	0.20	0.77	0.77	0.64	0.64	0.83	0.87	0.53	0.53
	SE2	0.20	0.20	0.76	0.77	0.65	0.64	0.83	0.83	0.53	0.54
35+	Point Estimates	0.63	0.62	0.29	0.27	0.95	0.99	0.29	0.32	1.30	1.23
	SE1	0.08	0.08	0.15	0.14	0.23	0.24	0.18	0.19	0.54	0.50
	SE2	0.08	0.07	0.14	0.14	0.23	0.23	0.17	0.19	0.54	0.47

(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: 2003 NSDUH (continued)**

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
<b>Marijuana Past Month</b>									
Total	Point Estimates	7.73	7.57	6.29	6.20	5.91	5.97	4.76	4.74
	SE1	0.64	0.63	0.43	0.44	0.50	0.50	0.41	0.41
	SE2	0.65	0.65	0.43	0.45	0.48	0.44	0.41	0.40
12-17	Point Estimates	8.14	8.20	8.47	8.52	7.60	7.78	6.84	6.87
	SE1	0.91	0.97	0.95	0.96	0.85	0.88	0.75	0.76
	SE2	0.94	0.96	0.95	0.97	0.86	0.88	0.75	0.75
18-25	Point Estimates	22.33	22.05	17.55	17.36	17.15	17.07	12.49	12.27
	SE1	1.48	1.50	1.37	1.37	1.62	1.63	1.13	1.14
	SE2	1.49	1.48	1.36	1.36	1.63	1.59	1.13	1.09
26-34	Point Estimates	9.71	9.47	7.91	7.95	10.57	10.37	7.81	8.03
	SE1	1.79	1.69	1.44	1.44	1.71	1.58	1.53	1.56
	SE2	1.81	1.77	1.44	1.49	1.72	1.55	1.54	1.60
35+	Point Estimates	4.19	4.05	3.16	3.08	2.58	2.68	1.47	1.45
	SE1	0.82	0.81	0.57	0.58	0.53	0.56	0.39	0.39
	SE2	0.81	0.79	0.58	0.60	0.52	0.52	0.40	0.38
<b>Cocaine Past Month</b>									
Total	Point Estimates	0.92	0.90	0.82	0.83	1.21	1.27	1.15	1.16
	SE1	0.20	0.20	0.18	0.18	0.23	0.26	0.23	0.23
	SE2	0.19	0.18	0.18	0.18	0.23	0.26	0.23	0.23
12-17	Point Estimates	0.28	0.29	0.60	0.59	0.32	0.30	1.47	1.50
	SE1	0.14	0.15	0.23	0.23	0.17	0.15	0.32	0.33
	SE2	0.14	0.15	0.23	0.23	0.17	0.15	0.32	0.33
18-25	Point Estimates	2.82	2.74	2.52	2.62	2.46	2.44	1.87	1.87
	SE1	0.45	0.46	0.53	0.54	0.57	0.56	0.45	0.46
	SE2	0.45	0.44	0.53	0.53	0.57	0.54	0.46	0.46
26-34	Point Estimates	1.39	1.40	0.29	0.29	2.14	2.14	2.25	2.26
	SE1	0.69	0.70	0.29	0.29	0.61	0.61	0.88	0.88
	SE2	0.68	0.65	0.29	0.29	0.61	0.60	0.88	0.87
35+	Point Estimates	0.51	0.50	0.61	0.61	0.92	1.02	0.59	0.59
	SE1	0.20	0.20	0.26	0.26	0.33	0.39	0.29	0.29
	SE2	0.20	0.20	0.26	0.26	0.33	0.39	0.28	0.28

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## **Appendix A: Technical Details About the Generalized Exponential Model**





# 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  $s$  being 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  $\ell_k, c_k$ , and  $u_k$  are prescribed real numbers. Let  $T_x$  denote the  $p$ -vector of control totals corresponding to predictor variables  $(x_1, \dots, x_p)$ . Then, the calibration constraints for the above minimization problem are

$$\sum_{k \in s} x_k d_k a_k = T_x. \quad (\text{A1.2})$$

The solution of the above minimization problem, if it exists, is given by a GEM with model parameters  $\lambda$ , 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  $\leq n$ , 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

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

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

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

and

$$a_k(\lambda) = \exp(x'_k \lambda).$$

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

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

By choosing the user-specified parameters  $\ell_k$ ,  $c_k$ , 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  $d_k = \text{med}\{d_k\} \pm 3 * \text{IQR}$ , if  $d_k$  is an extreme weight (where IQR is the interquartile range, and 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  $\rho$  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  $1 \leq \ell_1 < \rho^{-1} = c_1 < u_1$ , 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  $1 \leq \ell_3 < \rho^{-1} = c_3 < u_3$ .

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,  $\ell_2 = \ell_1 m_k, c_k = m_k, u_k = u_1 m_k$ , 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 poststratification, 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  $v^{\text{th}}$  iteration

$$\Gamma_{\phi v} = \text{diag}(d_k \phi_k^{(v)}), \phi_k^{(0)} = 1,$$

where

$$\phi_k^{(v)} = \left[ \frac{(u_k - a_k^{(v)})(a_k^{(v)} - l_k)}{(u_k - c_k)(c_k - l_k)} \right];$$

then, for Newton-Raphson iteration  $v$ , the value of the  $p$ -vector  $\lambda$  is adjusted as

$$\gamma^{(v)} = \gamma^{(v-1)} + (X' \Gamma_{\phi, v-1} X)^{-1} (T_x - \hat{T}_x^{(v-1)}),$$

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

The convergence criterion is based on the Euclidean distance  $\|T_x - \hat{T}_x^{(v)}\|$ . 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 surveys, constrained exponential models were used for poststratification and scaled constrained exponential models were used 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 ( $\rho^{-1}$ , the inverse of the overall response propensity) such that  $1 < \rho^{-1}a_k < \rho^{-1}u$ . This implies that choosing  $\ell$  in constrained exponential models as  $\rho$  ensures that the scaled adjustment factor for nonresponse is at least one.

## **Appendix B: Poststratification Control Totals**



## **Appendix B: Poststratification Control Totals**

For poststratification, quarterly State-specific totals for the target population (civilian, noninstitutionalized, aged 12 or older) are required for 120 demographic domains defined by Age, Race, Gender, and Hispanicity (6×5×2×2). 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 unadjusted 2000 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 2003, 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).

## **Appendix C: Imputation Methodology**





# 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 2003 National Survey on Drug Use and Health (NSDUH) 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.<sup>1</sup> 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 2003 NSDUH, 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

---

<sup>1</sup>Because the imputation of these demographic variables was not required for the main NSDUH 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 NSDUH, 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 2002, the predictive mean neighborhood (PMN) methodology was used for the 2003 NSDUH 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, and
- 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 NSDUH. 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 through 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 through 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 through 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 NSDUH, 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. (2004).

## **Appendix D: GEM Modeling Summary**



## 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 2003 National Survey on Drug Use and Health (NSDUH) 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) respondent person-level poststratification. The sampling weights after dwelling unit-level poststratification for this year were reasonably distributed and did not require the additional treatment of the extreme value adjustment step at the dwelling-unit level. Since the adaptive fitting strategy for choosing bounds introduced this year does not require the bounds to be as tight as possible (see Section 4.5), an extreme value adjustment step was performed after respondent person-level poststratification to further control the extreme values. 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 D.1b 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 nonextreme weight bounds set to provide the upper and lower limits for the generalized exponential model (GEM); 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, and for the list of realized final model covariates, see Exhibits D1.1 through 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 covariate. Note that: (1) not all variables or levels are present in all



**Table D Distribution of Weight Adjustment Factors and Weight Products for the 2003 NSDUH Person Weight (United States)**

	<i>sel.sdu.des</i> <sup>1</sup>		<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>	
Minimum	7	0.36	51	0.19	20	1.01	21	0.13	6	0.43	6	0.06	1	
1%	73	1.00	92	0.48	88	1.01	106	0.40	96	1.00	103	0.20	76	
5%	109	1.02	119	0.80	136	1.01	211	0.67	203	1.01	224	0.51	189	
10%	172	1.03	186	0.91	195	1.01	349	0.77	332	1.03	361	0.85	310	
25%	436	1.05	467	1.01	495	1.10	712	0.89	701	1.07	772	0.97	738	
Median	601	1.08	659	1.10	718	1.29	1,326	1.00	1,322	1.15	1,451	1.01	1,433	
75%	936	1.13	1,024	1.20	1,131	5.28	3,447	1.11	3,443	1.27	3,779	1.06	3,735	
90%	1,278	1.19	1,392	1.35	1,587	9.05	7,683	1.25	7,705	1.45	9,518	1.17	9,441	
95%	1,515	1.25	1,631	1.49	1,922	11.09	10,743	1.39	10,841	1.60	13,752	1.32	13,964	
99%	1,737	1.48	2,040	1.97	2,488	13.39	18,004	1.95	18,782	2.10	25,441	2.04	26,534	
Maximum	6,995	14.62	5,410	5.00	9,002	32.10	91,430	10.26	57,887	5.43	90,405	5.56	110,606	
<i>n</i>	143,485	130,60	130,605	130,602	130,602	81,631	81,631	81,631	81,631	67,784	67,784	67,784	67,784	
Max/Mean	10.18	-	7.17	-	10.67	-	31.60	-	19.88	-	25.78	-	31.54	

D-4

Note 1: Weight component 9 and weight products 1-9 are excluded because weight 9 = 1 for all selected dwelling units. Weight component 14 and weight products 1-14 are excluded because weight 14 = 1 for all respondents.

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.

<sup>1</sup> sel.sdu.des refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

stages of modeling; (2) the initial set of covariates, allowing for differences in States across model groups, 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.5 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: 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+<sup>1,4</sup>

### Gender

1: Male, 2: Female<sup>1</sup>

### Group Quarter Indicator

1: College Dorm, 2: Other Group Quarter, 3: Non-Group Quarter<sup>1</sup>

### Hispanicity

1: Hispanic, 2: Non-Hispanic<sup>1</sup>

### Percentage of Owner-Occupied Dwelling Units in Segment (% Owner)

1: 50% - 100%,<sup>1</sup> 2: 10% - >50%, 3: 0 - >10%

### Percentage of Segments That Are Black (% Black)

1: 50% - 100%, 2: 10% - >50%, 3: 0 - >10%<sup>1</sup>

### Percentage of Segments That Are Hispanic (% Hispanic)

1: 50% - 100%, 2: 10% - >50%, 3: 0 - >10%<sup>1</sup>

### Population Density

1: MSA 1,000,000 or more, 2: MSA less than 1,000,000, 3: Non-MSA urban, 4: Non-MSA rural<sup>1</sup>

### Quarter

1: Quarter 1, 2: Quarter 2, 3: Quarter 3, 4: Quarter 4<sup>1</sup>

### Race (3 levels)

1: White,<sup>1</sup> 2: Black, 3: Other

### Race (5 levels)

1: White,<sup>1</sup> 2: Black, 3: American Indian/Alaska Native, 4: Asian, 5: Two or More Races

### Relation to Householder

1: Householder or Spouse,<sup>1</sup> 2: Child, 3: Other Relative, 4: Non-Relative

### Segment-Combined Median Rent and Housing Value (Rent/Housing)<sup>2</sup>

1: First Quintile, 2: Second Quintile, 3: Third Quintile, 4: Fourth Quintile, 5: Fifth Quintile<sup>1</sup>

### States<sup>3</sup>

Model Group 1: 1: Connecticut, 2: Maine, 3: New Hampshire, 4: Rhode Island, 5: Vermont,  
6: Massachusetts<sup>1</sup>

Model Group 2: 1: New Jersey,<sup>1</sup> 2: New York, 3: Pennsylvania

Model Group 3: 1: Illinois, 2: Indiana,<sup>1</sup> 3: Michigan, 4: Wisconsin, 5: Ohio

Model Group 4: 1: Iowa, 2: Kansas, 3: Minnesota, 4: Missouri,<sup>1</sup> 5: Nebraska, 6: South Dakota,  
7: North Dakota

Model Group 5: 1: Delaware, 2: District of Columbia, 3: Georgia,<sup>1</sup> 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<sup>1</sup>

Model Group 7: 1: Arkansas,<sup>1</sup> 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<sup>1</sup>

Model Group 9: 1: Alaska, 2: Hawaii, 3: Oregon, 4: Washington,<sup>1</sup> 5: California

MSA = metropolitan statistical area

<sup>1</sup>The reference level for this variable. This is the level against which effects of other factor levels are measured.

<sup>2</sup>Segment-Combined Median Rent and Housing Value is a composite measure based on rent, housing value, and percent owner occupied.

<sup>3</sup>The States or district assigned to a particular model are based on Census divisions.

<sup>4</sup>50+ was further broken down into 50-64 and 65+ for Person-Level Poststratification Adjustment and Person-Level Extreme Value Adjustment.

Source: SAMHSA, Office of Applied Studies, National Survey of Drug Use and Health, 2003

## 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  $\times$  Race" and "Age  $\times$  Race  $\times$  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.

**Sing.** Singularity is the linear dependence of columns of realized values of the predictors in the model. Any variable that is a linear combination of other variables is either dropped from the model or collapsed with other variables.

**Conv.** If model is not convergent, dropping or collapsing of variables is performed.

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  $\times$  Age  $\times$  Race (3 levels), for Model Group 9, for the Person-Level Nonresponse Adjustment.

Three-Factor Effects	Comments
State $\times$ Age $\times$ Race (3 levels)	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,<sup>1</sup> 5: California

- **Age (years)**

1: 12-17, 2: 18-25, 3: 26-34, 4: 35-49, 5: 50+<sup>1</sup>

- **Race (3 levels)**


1: White,<sup>1</sup> 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 (5 levels) is defined this way:

Race (5 Level)	White	Black	Asian	American Indian/Alaska Native	Two or More Races
----------------	-------	-------	-------	----------------------------------	-------------------

 Indicates the reference-level set.


This is the cross-classification table for State × Race (5 levels):

State*Race (5 levels)	White	Black	Asian	American Indian/Alaska Native	Two or More Races
AK					
HI					
OR					
CA					
WA					

 Indicates the reference-level set.

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

State*Age * Race (3 levels)	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  $\times$  Race (3 levels)  $\times$  Age; that is, look at the one-factor and two-factor effects for State, Race (5 levels), and Age, and their accompanying information:

<b>One-Factor Effects</b>	<b>Comments</b>
State	All levels present.
Race (5 levels)	All levels present.
Age	All levels present.

<b>Two-Factor Effects</b>	<b>Comments</b>
State $\times$ Age	All levels present.
State $\times$ Race (5 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:

State*Race (5 levels)	White	Black	Asian	American Indian/Alaska Native	Two or More Races
AK					
HI					
OR					
CA					
WA					

 Indicates the reference-level set.


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

<b>Three-Factor Effects</b>	<b>Comments</b>
State $\times$ Age $\times$ Race (3 levels)	Coll. (2,1,2) & (2,1,3); hier. Repeat for all levels of age in State (2); hier. 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.

The reason for the note "Hier" in the three-factor effects is that collapsing was done on the two-factor interaction term State  $\times$  Race (5 levels). Because collapsing was done on this term, all three-factor crosses involving State  $\times$  Race must maintain this same collapsing scheme.

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

State*Age* Race (3 levels)	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 2003 NSDUH Person Weights (res.sdu.nr)**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>
<b>One-Factor Effects</b>		
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
<b>Two-Factor Effects</b>		
%Owner-Occupied × %Black	3 × 3	4
%Owner-Occupied × %Hispanic	3 × 3	4
%Owner-Occupied × Rent/housing	3 × 5	8
Rent/housing × %Black	3 × 5	8
Rent/housing × %Hispanic	3 × 5	8
State × Quarter	Model Specific	
State × Population 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	
<b>Three-Factor Effects</b>		
State × %Owner-Occupied × %Black	Model Specific	
State × %Owner-Occupied × %Hispanic	Model Specific	
State × %Owner-Occupied × Rent/housing	Model Specific	
State × Rent/house × %Black	Model Specific	
State × Rent/house × %Hispanic	Model Specific	

**Exhibit D.3 Covariates for 2003 NSDUH Person Weights (res.sdu.ps)**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>
<b>One-Factor Effects</b>		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Age	5	4
Race (5 levels)	5	4
Gender	2	1
Hispanicity	2	1
<b>Two-Factor Effects</b>		
Age × Race (3 levels)	5 × 3	8
Age × Hispanicity	5 × 2	4
Age × Gender	5 × 2	4
Race (3 levels) × Hispanicity	3 × 2	2
Race (3 levels) × Gender	3 × 2	2
Hispan × Gender	2 × 2	1
State × Quarter	Model Specific	
State × Age	Model Specific	
State × Race (5 levels)	Model Specific	
State × Hispanicity	Model Specific	
State × Gender	Model Specific	
<b>Three-Factor Effects</b>		
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8
Age × Race (3 levels) × Gender	5 × 3 × 2	8
Age × Hispanicity × Gender	5 × 2 × 2	4
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2
State × Age × Race (3 levels)	Model Specific	
State × Age × Hispanicity	Model Specific	
State × Age × Gender	Model Specific	
State × Race (3 levels) × Hispanicity	Model Specific	
State × Race (3 levels) × Gender	Model Specific	
State × Hispanicity × Gender	Model Specific	

**Exhibit D.4 Covariates for 2003 NSDUH Person Weights (sel.per.ps and res.per.nr)**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>
<b>One-Factor Effects</b>		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Age	5	4
Race (5 levels)	5	4
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
<b>Two-Factor Effects</b>		
Age × Race (3 levels)	5 × 3	8
Age × Hispanicity	5 × 2	4
Age × Gender	5 × 2	4
Race (3 levels) × Hispanicity	3 × 2	2
Race (3 levels) × Gender	3 × 2	2
Hispanicity × Gender	2 × 2	1
%Owner-Occupied × %Black	3 × 3	4
%Owner-Occupied × %Hispanicity	3 × 3	4
%Owner-Occupied × 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 (5 levels)	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	
<b>Three-Factor Effects</b>		
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8
Age × Race (3 levels) × Gender	5 × 3 × 2	8
Age × Hispanicity × Gender	5 × 2 × 2	4
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2
State × Age × Race (3 levels)	Model Specific	
State × Age × Hispanicity	Model Specific	
State × Age × Gender	Model Specific	
State × Race (3 levels) × Hispanicity	Model Specific	
State × Race (3 levels) × Gender	Model Specific	
State × Hispanicity × Gender	Model Specific	

**Exhibit D.5 Covariates for 2003 NSDUH Person Weights (res.per.ps and res.per.ev)**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>
<b>One-Factor Effects</b>		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Age	6	5
Race (5 levels)	5	4
Gender	2	1
Hispanicity	2	1
<b>Two-Factor Effects</b>		
Age × Race (3 levels)	6 × 3	10
Age × Hispanicity	6 × 2	5
Age × Gender	6 × 2	5
Race (3 levels) × Hispanicity	3 × 2	2
Race (3 levels) × Gender	3 × 2	2
Hispan × Gender	2 × 2	1
State × Quarter	Model Specific	
State × Age	Model Specific	
State × Race (5 levels)	Model Specific	
State × Hispanicity	Model Specific	
State × Gender	Model Specific	
<b>Three-Factor Effects</b>		
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10
Age × Race (3 levels) × Gender	6 × 3 × 2	10
Age × Hispanicity × Gender	6 × 2 × 2	5
Race (3 level) × Hispanicity × Gender	3 × 2 × 2	2
State × Age × Race (3 levels)	Model Specific	
State × Age × Hispanicity	Model Specific	
State × Age × Gender	Model Specific	
State × Race (3 levels) × Hispanicity	Model Specific	
State × Race (3 levels) × Gender	Model Specific	
State × Hispanicity × Gender	Model Specific	



**Appendix D1: Model Group 1: New England**  
(Connecticut, Maine, New Hampshire, Rhode Island, Vermont, Massachusetts)



**Table D.1a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 1: New England)**

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwisor			Nominal	Realized
<i>res.sdu.nr</i>	1.34%	0.92%	0.17%	1.65231	306	(1.08, 1.16)	(1.09, 1.16)
	0.82%	1.17%	0.22%	1.68866	112	(1.00, 2.65)	(1.00, 2.58)
						(1.05, 1.13)	(1.05, 1.05)
<i>res.sdu.ps</i>	0.82%	1.17%	0.22%	1.68866	232	(0.20, 1.38)	(0.20, 1.34)
	1.63%	2.88%	0.80%	1.83412	217	(0.20, 5.00)	(0.20, 5.00)
						(0.74, 1.45)	(0.75, 1.44)
<i>sel.per.ps</i>	2.81%	4.84%	0.94%	3.60081	332	(0.27, 2.30)	(0.27, 2.30)
	2.17%	5.77%	1.43%	3.75531	258	(0.20, 5.00)	(0.20, 5.00)
						(0.40, 2.40)	(0.40, 2.40)
<i>res.per.nr</i>	1.90%	5.48%	1.47%	3.82895	332	(1.00, 3.00)	(1.00, 3.00)
	1.49%	4.66%	1.06%	4.43274	213	(1.00, 5.00)	(1.00, 5.00)
						(1.00, 2.79)	(1.00, 2.79)
<i>res.per.ps</i>	1.53%	4.94%	1.21%	4.43274	267	(0.20, 2.11)	(0.20, 2.11)
	1.01%	3.66%	0.71%	4.55121	200	(0.20, 4.44)	(0.20, 4.44)
						(0.99, 3.18)	(0.99, 3.18)

<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight  
(Model Group 1: New England)**

	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>
Minimum	7	0.62	58	0.19	23	1.01	25	0.13	6	0.45	6	0.10	1
1%	101	1.00	106	0.34	78	1.01	94	0.20	50	0.96	51	0.20	24
5%	106	1.03	112	0.76	116	1.01	144	0.55	132	1.00	145	0.37	126
10%	109	1.05	117	0.89	132	1.01	181	0.71	173	1.00	191	0.80	181
25%	191	1.07	204	1.00	206	1.05	293	0.86	288	1.08	323	0.98	318
Median	232	1.09	258	1.10	301	1.22	753	0.99	712	1.14	762	1.02	747
75%	575	1.12	632	1.21	651	5.70	1,745	1.11	1,751	1.26	2,013	1.06	1,984
90%	1,016	1.15	1,135	1.35	1,201	8.67	4,772	1.26	4,367	1.48	5,424	1.18	5,355
95%	1,111	1.20	1,243	1.44	1,471	12.88	7,870	1.53	7,730	1.70	9,242	1.35	9,440
99%	1,144	1.27	1,328	1.89	1,887	16.97	14,305	2.72	14,726	2.78	20,267	2.49	20,724
Maximum	2,099	8.38	2,957	5.00	7,269	28.04	33,996	7.48	45,501	5.00	48,759	5.56	51,011
<i>n</i>	12,383	11,245	11,245	11,245	11,245	6,787	6,787	6,787	6,787	5,566	5,566	5,566	5,566
Max/Mean	5.12	-	6.55	-	14.56	-	19.12	-	25.98	-	22.83	-	23.89

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.

<sup>1</sup> *sel.sdu.des* refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

# Model Group 1 Overview

## Dwelling Unit Nonresponse

All 24 proposed one-factor effects were included in the model.

All the two-factor effects had some degree of variable collapsing or dropping except the percent Owner-occupied  $\times$  percent Black, percent Owner-occupied  $\times$  percent Hispanic, percent Owner-occupied  $\times$  Rent/housing, and State  $\times$  Quarter interaction. Out of 122 proposed variables, 78 were included.

Variable collapsing or dropping was present in all three-factor effects. Out of 160 proposed variables, only 10 were included.

In the final model, a total of 112 variables were included; see Exhibit D1.1.

## Dwelling Unit Poststratification

All 19 proposed one-factor effects and all 86 two-factor effects were included in the model.

For the three factor effects, variable collapsing was present in Age  $\times$  Race  $\times$  Hispanicity, Race  $\times$  Hispanicity  $\times$  Gender, and State  $\times$  Race  $\times$  Hispanicity due to singularity or convergence problem. All other interactions were kept in the model with the proposed levels. Out of 127 proposed variables, 112 were included.

In the final model, a total of 217 variables were included; see Exhibit D1.2.

## Selected Person-Level Poststratification

All 37 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Rent/housing  $\times$  percent Black, Rent/housing  $\times$  percent Hispanic, State  $\times$  percent Black, State  $\times$  Hispanicity, State  $\times$  percent Owner-occupied, and State  $\times$  Rent/housing interactions. Out of 168 proposed variables, 129 were included.

For three-factor effects, variable collapsing or dropping was present in all interactions except the Age  $\times$  Race  $\times$  Gender, Age  $\times$  Hispanicity  $\times$  Gender, State  $\times$  Age  $\times$  Gender, and State  $\times$  Race  $\times$  Gender interactions. Out of 127 proposed variables, 92 were included.

In the final model, a total of 258 variables were included; see Exhibit D1.3.

## **Respondent Person-Level Nonresponse**

All 37 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Race × Hispanicity, percent Owner-occupied × Rent/housing, Rent/housing × percent Black × percent Hispanicity, State × Race, State × percent Black, State × percent Hispanicity, State × percent Owner-occupied, and State × Rent/housing. Out of 168 proposed variables, 118 were included.

For three-factor effects, all interactions except State × Age × Gender were affected by variable collapsing or dropping. Out of 127 proposed variables, 58 were included.

In the final model, a total of 213 variables were included; see Exhibit D1.4.

## **Respondent Person-Level Poststratification**

All 20 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing was present in the Age × Race and State × Race. Out of 95 proposed variables, 92 were included.

For three-factor effects, variable collapsing or dropping was present in all interactions except Race × Hispanicity × Gender and State × Age × Gender. Out of 152 proposed variables, 88 were included.

In the final model, a total of 200 variables were included; see Exhibit D1.5.

**Exhibit D1.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),  
Model Group 1: New England**

<b>Variables</b>	<b>Level</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>24</b>	<b>24</b>	
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.
<b>Two-Factor Effects</b>		<b>122</b>	<b>78</b>	
%Owner-Occupied × %Black	3*3	4	4	All levels present.
%Owner-Occupied × %Hispanic	3*3	4	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	5	Drop (1,1), (2,1), (4,1); zero.
Rent/housing × %Hispanic	3*5	8	3	Drop (1,1/2), (2,1/2); zero. Drop (4,1); sing.
State × Quarter	6*4	15	15	All levels present.
State × Population Density	6*4	15	10	Drop (2/3/4/5,1); zero. Drop (4,3); sing.
State × Group Quarter	6*3	10	9	Coll. (1,2) & (1,1); conv.
State × %Black	6*3	10	4	Drop (2/3/4/5,1), (5,2); zero. Drop (2,2); sing.
State × %Hispanic	6*3	10	2	Keep (1/4,2), drop others; sing.
State × %Owner-Occupied	6*3	10	8	Drop (5,2/3); sing.
State × Rent/housing	6*5	20	6	Drop (1,1/2/3), (2,3/4), (3,1), (4,1), (5,4); zero. Drop (2,2), (3,4), (4,2), (5,1/2/3); sing.
<b>Three-Factor Effects</b>		<b>160</b>	<b>10</b>	
State × %Owner-Occupied × %Black	6*3*3	20	1	Keep (1,2,2), drop others; zero/sing./hier.
State × %Owner-Occupied × %Hispanic	6*3*3	20	1	Keep (5,3,2), drop others; zero/sing./hier.
State × %Owner-Occupied × Rent/housing	6*3*5	40	5	Keep (1,2,4), (2,2,1), (3,2,2), (3,3,3), (4,2,3), drop others; zero/sing./hier.
State × Rent/housing × %Black	6*3*5	40	1	Keep (1,4,2), drop others; zero/sing./hier.
State × Rent/housing × %Hispanic	6*3*5	40	2	Keep (1,4,2), (5,3,2), drop others; zero/sing./hier.
<b>Total</b>		<b>306</b>	<b>112</b>	

**Exhibit D1.2 Covariates for 2003 NSDUH Person Weights (res.sdu.ps),  
Model Group 1: New England**

<b>Variables</b>	<b>Level</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>19</b>	<b>19</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>86</b>	<b>86</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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 (5 levels)	6*5	20	20	All levels present.
State × Hispanicity	6*2	5	5	All levels present.
State × Gender	6*2	5	5	All levels present.
<b>Three-Factor Effects</b>		<b>127</b>	<b>112</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Coll. (1,2,1) & (1,3,1), repeat for each age level; conv.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	6*5*3	40	40	All levels present.
State × Age × Hispanicity	6*5*2	20	20	All levels present.
State × Age × Gender	6*5*2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	6*3*2	10	0	Drop all.
State × Race (3 levels) × Gender	6*3*2	10	10	All levels present.
State × Hispanicity × Gender	6*2*2	5	5	All levels present.
<b>Total</b>		<b>232</b>	<b>217</b>	

**Exhibit D1.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 1: New England**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>37</b>	<b>37</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>168</b>	<b>129</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × 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	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	4	Drop (1/2/4,1); zero. Coll. (3,1) & (3,2); conv.
Rent/housing × %Hispanic	3*5	8	3	Drop (1/2,*); zero. Drop (4,1); sing.
State × Quarter	6*4	15	15	All levels present.
State × Age	6*5	20	20	All levels present.
State × Race (5 levels)	6*5	20	19	Coll. (1,3) & (1,4); 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 (2/3/4/5,1), (5,2); zero. Drop (2,2); sing.
State × %Hispanic	6*3	10	2	Drop (2/3/5,1/2); zero. Drop (1/4,1); sing.
State × %Owner-Occupied	6*3	10	9	Drop (5,3); sing.
State × Rent/housing	6*5	20	7	Drop (1,1/2/3), (2,3/4), (3/4,1), (5,1/4); zero. Drop (2/4,2), (3,4), (5,3); sing.
<b>Three-Factor Effects</b>		<b>127</b>	<b>92</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Coll. (1,2,1) & (1,3,1), repeat for all age levels; hier.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); hier.
State × Age × Race (3 levels)	6*5*3	40	26	Coll. (1/2/3/5,4,2) & (1/2/3/5,4,3), (3,3,2) & (3,3,3); sing. Coll. (4,1/4,2) & (4,1/4,3), (5,1,2) & (5,1,3), (4,1,2) & (4,1,3); conv. Drop (1/2/3/4,4,2/3); conv. Drop (5,4,2/3); sing.
State × Age × Hispanicity	6*5*2	20	14	Drop (1/4,3/4,1); conv. Drop (5,3/4,1); sing.
State × Age × Gender	6*5*2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	6*3*2	10	1	Coll. (1,2,1) & (1,3,1), repeat for all states; hier. Drop (3,2/3,1); zero. Drop (1/4/5,2/3,1); conv.
State × Race (3 levels) × Gender	6*3*2	10	10	All levels present.
State × Hispanicity × Gender	6*2*2	5	4	Drop (2,1,1); conv.
<b>Total</b>		<b>332</b>	<b>258</b>	

**Exhibit D1.4 Covariates for 2003 NSDUH Person Weights (res.per.nr),  
Model Group 1: New England**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>37</b>	<b>37</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Housholder	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.
<b>Two-Factor Effects</b>		<b>168</b>	<b>118</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × 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	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	7	Drop (3,4); conv.
Rent/housing × %Black	3*5	8	5	Drop (1/2/4,1); zero.
Rent/housing × %Hispanic	3*5	8	3	Drop (1/2,1/2); zero. Drop (4,1); sing.
State × Quarter	6*4	15	15	All levels present.
State × Age	6*5	20	20	All levels present.
State × Race (5 levels)	6*5	20	15	Coll. (1,3) & (1,4); conv., repeat for state=3. Coll. (1,3/4) & (1,5), (3,3/4) & (3,5), (2,4) & (2,5); conv.
State × Hispanicity	6*2	5	5	All levels present.
State × Gender	6*2	5	5	All levels present.
State × %Black	6*3	10	2	Drop all except (1,1/2), (4,2); sing./zero/conv. Coll. (1,1/2); conv.
State × %Hispanic	6*3	10	1	Drop all except (4,2); sing./zero.
State × %Owner-Occupied	6*3	10	6	Drop (5,3); sing. Coll. (2,2) & (2,3); conv., repeat for state=3, 4
State × Rent/housing	6*5	20	6	Drop (1,1/2/3), (2/5,4), (3/4,1); zero. Drop (2,2/3), (3,4), (4,2), (5,1/3); sing. Drop (1,4); conv.
<b>Three-Factor-Effects</b>		<b>127</b>	<b>58</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Coll. (1,2,1) & (1.,3,1), repeat for all age levels; hier.
Age × Race (3 levels) × Gender	5*3*2	8	5	Coll (3,2/3,1) & (4,2/3,1); conv.
Age × Hispanicity × Gender	5*2*2	4	3	Drop (4,1,1); conv.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); hier.
State × Age × Race (3 levels)	6*5*3	40	10	Coll. (2,4,2) & (2,4,3), repeat for state=3, 5; sing. Coll. (3,3,2) & (3,3,3), (4,4,2) & (4,4,3); zero. Drop (4/5,4,2/3); sing. Drop (1,4,*), (2/4,2/3/4,*), (3,3/4,*); conv.
State × Age × Hispanicity	6*5*2	20	11	Coll. (3,3,1) & (3,4,1); sing. Drop (5,3,1); zero. Drop (5,4,1); sing. Drop (5,1/2,1), (1/4,4,1), (3,2/3/4,1); conv.
State × Age × Gender	5*5*2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	5*3*2	10	0	Drop all; conv. zero.
State × Race (3 levels) × Gender	5*3*2	10	0	Drop all; conv.
State × Hispanicity × Gender	5*2*2	5	4	Drop (5,1,1); conv.
<b>Total</b>		<b>332</b>	<b>213</b>	

**Exhibit D1.5 Covariates for 2003 NSDUH Person Weights (res.per.ps),  
Model Group 1: New England**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>20</b>	<b>20</b>	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>95</b>	<b>92</b>	
Age × Race (3 levels)	6*3	10	9	Coll. (5,2) & (5,3); conv.
Age × Hispanicity	6*2	5	5	All levels present.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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*6	25	25	All levels present.
State × Race (5 levels)	6*5	20	18	Coll. (4,2) & (4,5), (5,3) & (5,5); conv.
State × Hispanicity	6*2	5	5	All levels present.
State × Gender	6*2	5	5	All levels present.
<b>Three-Factor Effects</b>		<b>152</b>	<b>88</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	4	Coll. (5,2,1) & (5,3,1); hier. Coll. (1/2/3/4,2,1) & (1/2/3/4,3,1); conv. Drop (5,2/3,1); sing.
Age × Race (3 levels) × Gender	6*3*2	10	8	Coll. (5,2,1) & (5,3,1); hier. Drop (5,2/3,1); conv.
Age × Hispanicity × Gender	6*2*2	5	4	Drop (5,1,1); sing.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	6*5*3	50	15	Coll. (1,5,2) & (1,5,3), repeat for state=3, 4. Coll. (4,*2) & (4,*3); hier. Coll. (1,*2) & (1,*3), (2,1/2/3,2) & (2,1/2/3,3), repeat for state=3, 5, (5,2,2/3) & (5,3,2/3); conv. Coll. (2,4,2) & (2,4,3), repeat for state=3, 5; sing. Coll. (3,3,2) & (3,3,3); zero. Drop (2/3/4/5,5,2/3), (2,4,2/3); sing. Drop (1,5,2/3), (3/5,4,2/3), (4,4/5,2/3); conv.
State × Age × Hispanicity	6*6*2	25	12	Coll. (5,3,1) & (5,4,1); zero. Drop (1,4/5,1), (3,3,1), (4,4,1), (5,3/4,1); conv. Drop (2,4/5,1), (3,5,1); zero. Drop (2,3,1), (3,4,1), (4/5,5,1); sing. Drop (2,4/5,1), (3,5,1); zero.
State × Age × Gender	6*6*2	25	25	All levels present.
State × Race (3 levels) × Hispanicity	6*3*2	10	5	Coll. (1,2,1) & (1,3,1) repeat for state=5; conv. Coll. (4,2,1) & (4,3,1); hier. Coll. (2,2,1) & (2,3,1) repeat for state=3; zero.
State × Race (3 levels) × Gender	6*3*2	10	9	Coll. (4,2,1) & (4,3,1); hier.
State × Hispanicity × Gender	6*2*2	5	4	Drop (2,1,1); sing.
<b>Total</b>		<b>267</b>	<b>200</b>	





**Appendix D2: Model Group 2: Middle Atlantic**  
(New Jersey, New York, Pennsylvania)



**Table D.2a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 2: Middle Atlantic)**

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwisor			Nominal	Realized
<i>res.sdu.nr</i>	0.37%	0.43%	0.07%	1.10466	153	(1.03, 1.17)	(1.03, 1.17)
	1.40%	1.54%	0.14%	1.12082	79	(1.00, 3.77)	(1.00, 1.89)
						(1.06, 4.50)	(1.07, 4.33)
<i>res.sdu.ps</i>	1.40%	1.54%	0.14%	1.12082	127	(0.66, 1.36)	(0.67, 1.33)
	1.91%	3.52%	0.64%	1.17122	127	(0.24, 5.00)	(0.25, 4.87)
						(0.76, 2.23)	(0.78, 2.21)
<i>sel.per.ps</i>	3.90%	6.92%	1.58%	2.35058	196	(0.53, 1.20)	(0.53, 1.20)
	1.02%	3.30%	0.76%	2.44648	185	(0.27, 3.19)	(0.27, 3.17)
						(0.99, 2.42)	(0.99, 2.42)
<i>res.per.nr</i>	1.36%	3.67%	0.86%	2.50793	196	(1.00, 2.10)	(1.00, 2.10)
	1.50%	5.30%	0.75%	2.93224	180	(1.00, 3.33)	(1.00, 3.33)
						(1.31, 1.35)	(1.31, 1.35)
<i>res.per.ps</i>	1.58%	5.52%	0.86%	2.93224	147	(0.18, 1.45)	(0.18, 1.45)
	1.34%	5.40%	0.90%	3.13783	121	(0.10, 3.00)	(0.10, 2.95)
						(0.99, 1.49)	(0.99, 1.49)

<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight  
(Model Group 2: Middle Atlantic)**

	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>
Minimum	78	0.52	365	0.25	195	1.01	248	0.26	94	0.44	101	0.06	10
1%	495	1.02	518	0.71	507	1.01	532	0.49	426	1.00	472	0.10	86
5%	505	1.03	542	0.86	560	1.01	622	0.74	586	1.02	636	0.10	393
10%	512	1.04	567	0.93	585	1.01	705	0.81	687	1.06	745	0.76	643
25%	588	1.07	621	1.00	651	1.10	916	0.91	916	1.09	1,013	0.98	972
Median	705	1.12	797	1.07	848	1.19	1,385	1.00	1,439	1.17	1,618	1.01	1,610
75%	807	1.20	953	1.15	1,084	5.71	4,486	1.10	4,558	1.31	5,072	1.04	4,851
90%	1,174	1.26	1,392	1.28	1,433	9.66	8,539	1.23	8,582	1.49	10,968	1.13	10,934
95%	1,353	1.38	1,532	1.41	1,676	11.98	10,534	1.33	10,977	1.64	14,567	1.44	14,824
99%	1,414	1.57	1,648	1.89	2,249	12.94	18,597	1.68	18,771	2.10	27,577	2.62	29,459
Maximum	2,208	14.62	2,026	4.87	6,174	24.72	58,633	3.27	57,887	3.33	88,916	2.95	90,240
<i>n</i>	19,114	16,668	16,668	16,668	16,668	9,949	9,949	9,949	9,949	8,089	8,089	8,089	8,089
Max/Mean	2.97	-	2.37	-	6.60	-	17.68	-	17.23	-	21.52	-	21.84

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.

<sup>1</sup> sel.sdu.des refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons..

## **Model Group 2 Overview**

### **Dwelling Unit Nonresponse**

For one-factor effects, the levels of Group Quarter were collapsed due to convergence problem. Out of 21 proposed one-factor effects, 20 were included in the model.

For two-factor effects, variable collapsing or dropping was present in all two-factor effects except the percent Owner-occupied  $\times$  percent Black, Rent/housing  $\times$  percent Hispanic, State  $\times$  Quarter, State  $\times$  percent Black, and State  $\times$  percent Owner-occupied interactions. Out of 68 proposed variables, 53 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 64 proposed variables, only 6 were included in the model.

In the final model, a total of 79 variables were included; see Exhibit D2.1.

### **Dwelling Unit Poststratification**

All 16 proposed one-factor effects were included in the model.

All 47 proposed two-factor effects were included in the model.

All 64 three-factor effects were kept in the model.

In the final model, a total of 127 variables were included; see Exhibit D2.2.

### **Selected Person-Level Poststratification**

All 34 proposed one-factor effects were included in the model.

For two-factor effects, variable dropping was present in the percent Owner-occupied  $\times$  percent Hispanic, Rent/housing  $\times$  percent Hispanic, State  $\times$  Race, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 99 proposed variables, 89 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the interactions of Age  $\times$  Race  $\times$  Hispanicity. Out of 64 proposed variables, 62 were included in the model.

In the final model, a total of 185 variables were included; see Exhibit D2.3.

### **Respondent Person-Level Nonresponse**

All 34 proposed one-factor effects were included in the model.

For two-factor effects, variable dropping was present in the percent Owner-occupied  $\times$  percent Hispanicity, percent Owner-occupied  $\times$  Rent/housing, Rent/housing  $\times$  percent Black, State  $\times$  percent Hispanicity, and State  $\times$  Rent/housing interactions. Out of 99 proposed variables, 89 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity, State  $\times$  Age  $\times$  Race, State  $\times$  Race  $\times$  Hispanicity, State  $\times$  Race  $\times$  Gender, and State  $\times$  Hispanicity  $\times$  Gender interactions. Out of 64 proposed variables, 57 were included in the model.

In the final model, a total of 180 variables were included; see Exhibit D2.4.

### **Respondent Person-Level Poststratification**

All 17 proposed one-factor effects were included in the model.

For two-factor effects, variable dropping was present in the Age  $\times$  Race, Age  $\times$  Hispanicity, and State  $\times$  Race interactions. Out of 53 proposed variables, 48 were included in the model.

All three-factor effects except State  $\times$  Age  $\times$  Gender, State  $\times$  Race  $\times$  Gender, and State  $\times$  Hispanicity  $\times$  Gender were collapsed or dropped due to convergence or singularity problems. Out of 77 proposed variables, 56 were included in the model.

In the final model, a total of 121 variables were included; see Exhibit D2.5.

**Exhibit D2.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),  
Model Group 2: Middle Atlantic**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>21</b>	<b>20</b>	
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	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.
<b>Two-Factor Effects</b>		<b>68</b>	<b>53</b>	
%Owner-Occupied × %Black	3*3	4	4	All levels present.
%Owner-Occupied × %Hispanic	3*3	4	3	Drop (2,1); sing.
%Owner-Occupied × Rent/housing	3*5	8	7	Coll. (3,1) & (3,2); conv.
Rent/housing × %Black	3*5	8	8	All levels present.
Rent/housing × %Hispanic	3*5	8	7	Drop (2,1); zero.
State × Quarter	3*4	6	6	All levels present.
State × Population Density	3*4	6	4	Drop (3,2), (3,3); sing.
State × Group Quarter	3*3	4	2	Coll. (2,1) & (2,2), (3,1) & (3,2); hier.
State × %Black	3*3	4	4	All levels present.
State × %Hispanic	3*3	4	3	Drop (2,1); sing.
State × %Owner-Occupied	3*3	4	4	All levels present.
State × Rent/housing	3*5	8	1	Keep (3,4), drop others; sing./zero.
<b>Three-Factor Effects</b>		<b>64</b>	<b>6</b>	
State × %Owner-Occupied × %Black	3*3*3	8	4	Drop (2,3,1/2), (3,3,1/2); conv.
State × %Owner-Occupied × %Hispanic	3*3*3	8	2	Keep (2,2,2) & (3,2,2), drop others; sing./conv./zero/hier.
State × %Owner-Occupied × Rent/housing	3*3*5	16	0	Drop all; sing./conv./zero/hier.
State × Rent/housing × %Black	3*3*5	16	0	Drop all; sing./conv./zero/hier..
State × Rent/housing × %Hispanic	3*3*5	16	0	Drop all; sing./conv./zero/hier.
<b>Total</b>		<b>153</b>	<b>79</b>	



**Exhibit D2.2 Covariates for 2003 NSDUH Person Weights (res.sdu.ps),  
Model Group 2: Middle Atlantic**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>16</b>	<b>16</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>47</b>	<b>47</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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 (5 levels)	3*5	8	8	All levels present.
State × Hispanicity	3*2	2	2	All levels present.
State × Gender	3*2	2	2	All levels present.
<b>Three-Factor Effects</b>		<b>64</b>	<b>64</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	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 levels) × Hispanicity	3*3*2	4	4	All levels present.
State × Race (3 levels) × Gender	3*3*2	4	4	All levels present.
State × Hispanicity × Gender	3*2*2	2	2	All levels present.
<b>Total</b>		<b>127</b>	<b>127</b>	

**Exhibit D2.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 2: Middle Atlantic**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>34</b>	<b>34</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>99</b>	<b>89</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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	3	Drop (2,1); sing.
%Owner-Occupied × 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.
State × Quarter	3*4	6	6	All levels present.
State × Age	3*5	8	8	All levels present.
State × Race (5 levels)	3*5	8	8	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	4	All levels present.
State × %Hispanic	3*3	4	3	Drop (3,1); sing.
State × %Owner-Occupied	3*3	4	4	All levels present.
State × Rent/housing	3*5	8	1	Drop (2,3), (3,1/2/3); sing. Drop (2,1/2), (3,4); zero.
<b>Three-Factor Effects</b>		<b>64</b>	<b>62</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	6	Coll. (4,2,1) & (4,3,1); sing. Drop (4,2/3,1); conv..
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	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 levels) × Hispanicity	3*3*2	4	4	All levels present.
State × Race (3 levels) × Gender	3*3*2	4	4	All levels present.
State × Hispanicity × Gender	3*2*2	2	2	All levels present.
<b>Total</b>		<b>197</b>	<b>185</b>	

**Exhibit D2.4 Covariates for 2003 NSDUH Person Weights (res.per.nr),  
Model Group 2: Middle Atlantic**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>34</b>	<b>34</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>99</b>	<b>89</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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	3	Drop (2,1); sing.
%Owner-Occupied × 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.
State × Quarter	3*4	6	6	All levels present.
State × Age	3*5	8	8	All levels present.
State × Race (5 levels)	3*5	8	8	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	4	All levels present.
State × %Hispanic	3*3	4	3	Drop (3,1); sing.
State × %Owner-Occupied	3*3	4	4	All levels present.
State × Rent/housing	3*5	8	1	Drop (3,1/2/3), (2,3); sing. Drop (3,4), (2,1/2); zero.
<b>Three-Factor Effects</b>		<b>64</b>	<b>57</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	7	Coll. (4,2,1) & (4,3,1); sing.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	3*5*3	16	14	Coll. (2,4,2) & (2,4,3), (3,4,2) & (3/4,3); conv.
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 levels) × Hispanicity	3*3*2	4	2	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
State × Race (3 levels) × Gender	3*3*2	4	3	Coll. (2,2,1) & (2,3,1); conv.
State × Hispanicity × Gender	3*2*2	2	1	Drop (3,1,1); conv.
<b>Total</b>		<b>197</b>	<b>180</b>	

**Exhibit D2.5 Covariates for 2003 NSDUH Weights (res.per.ps),  
Model Group 2: Middle Atlantic**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>17</b>	<b>17</b>	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>53</b>	<b>48</b>	
Age × Race (3 levels)	6*3	10	8	Coll. (5,2) & (5,3); conv. Drop (5,2/3); conv.
Age × Hispanicity	6*2	5	4	Drop (5,1); conv.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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*6	10	10	All levels present.
State × Race (5 levels)	3*5	8	6	Coll. (2,3) & (2,4), (3,3) & (3,4); conv.
State × Hispanicity	3*2	2	2	All levels present.
State × Gender	3*2	2	2	All levels present.
<b>Three-Factor Effects</b>		<b>77</b>	<b>56</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	3	Coll. (5,2,1) & (5,3,1); sing. Coll. (1,2,1) & (1,3,1), repeat for age=2, 3, 4; conv. Drop (4/5,2/3,1); conv.
Age × Race (3 levels) × Gender	6*3*2	10	9	Coll. (5,2,1) & (5,3,1); conv.
Age × Hispanicity × Gender	6*2*2	5	4	Drop (5,1,1); conv.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race(3 levels)	3*6*3	20	13	Coll. (3,5,2) & (3,5,3); sing. Drop (3,5,2/3); conv. Coll. (2,*,2) & (2,*,3); conv.
State × Age × Hispanicity	3*6*2	10	8	Drop (3,5,1); sing. Drop (2,5,1); conv.
State × Age × Gender	3*6*2	10	10	All levels present.
State × Race (3 levels) × Hispanicity	3*3*2	4	2	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
State × Race (3 levels) × Gender	3*3*2	4	4	All levels present.
State × Hispanicity × Gender	3*2*2	2	2	All levels present.
<b>Total</b>		<b>147</b>	<b>121</b>	



**Appendix D3: Model Group 3: East North Central**  
(Illinois, Indiana, Michigan, Wisconsin, Ohio)



**Table D.3a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 3: East North Central)**

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwisor			Nominal	Realized
<i>res.sdu.nr</i>	1.20%	1.56%	0.08%	1.14851	255	(1.00, 1.38)	(1.00, 1.35)
	1.54%	1.90%	0.12%	1.13618	149	(1.00, 2.19)	(1.00, 2.12)
						(1.00, 1.74)	(1.01, 1.70)
<i>res.sdu.ps</i>	1.54%	1.90%	0.12%	1.13618	197	(0.57, 3.00)	(0.58, 3.00)
	1.99%	2.60%	0.33%	1.18034	193	(0.30, 4.85)	(0.30, 4.82)
						(0.75, 4.66)	(0.76, 4.66)
<i>sel.per.ps</i>	4.40%	6.54%	1.28%	2.34095	287	(0.40, 1.87)	(0.42, 1.87)
	1.83%	3.75%	0.57%	2.31638	260	(0.36, 4.78)	(0.36, 4.78)
						(0.42, 2.43)	(0.42, 2.37)
<i>res.per.nr</i>	1.81%	3.86%	0.62%	2.38320	287	(1.00, 2.56)	(1.00, 2.56)
	0.92%	2.53%	0.52%	2.63263	249	(1.00, 3.48)	(1.00, 3.45)
						(1.00, 1.93)	(1.00, 1.93)
<i>res.per.ps</i>	1.08%	2.78%	0.58%	2.63263	227	(0.20, 1.67)	(0.20, 1.67)
	0.94%	2.62%	0.49%	2.68948	190	(0.20, 4.40)	(0.20, 4.40)
						(0.31, 1.13)	(0.31, 1.11)

<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight  
(Model Group 3: East North Central)**

	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>
Minimum	101	0.70	291	0.30	160	1.01	191	0.22	103	0.60	103	0.09	21
1%	416	1.00	446	0.63	371	1.01	391	0.58	356	1.00	388	0.20	186
5%	426	1.03	467	0.88	485	1.01	533	0.77	511	1.02	564	0.82	526
10%	436	1.04	485	0.97	519	1.01	581	0.84	574	1.05	634	0.91	620
25%	479	1.05	520	1.04	568	1.09	683	0.93	694	1.10	785	0.99	782
Median	522	1.08	573	1.10	630	1.20	1,032	1.01	1,053	1.17	1,178	1.01	1,184
75%	599	1.13	662	1.16	744	5.28	3,279	1.09	3,373	1.28	3,851	1.02	3,820
90%	1,000	1.24	1,080	1.27	1,244	9.73	6,765	1.18	6,610	1.43	8,268	1.09	8,091
95%	1,127	1.31	1,217	1.37	1,421	11.45	7,840	1.26	7,753	1.54	10,616	1.27	10,791
99%	1,468	1.54	1,570	1.67	1,780	12.62	14,709	1.59	13,781	1.82	18,381	1.59	18,277
Maximum	2,100	4.02	1,669	4.88	5,780	28.96	30,987	4.78	36,142	3.45	43,318	4.40	53,723
<i>n</i>	26,799	24,050	24,050	24,050	24,050	15,446	15,446	15,446	15,446	12,727	12,727	12,727	12,727
Max/Mean	3.52	-	2.51	-	7.86	-	12.70	-	14.82	-	14.64	-	18.15

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.

<sup>1</sup> sel.sdu.des refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

## **Model Group 3 Overview**

### **Dwelling Unit Nonresponse**

All 23 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in State  $\times$  Group Quarter, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 104 proposed variables, 95 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 128 proposed variables, 31 were included in the model.

In the final model, a total of 149 variables were included; see Exhibit D3.1.

### **Dwelling Unit Poststratification**

All 18 proposed one-factor effects were included in the model.

All 73 two-factor effects were kept in the model.

For three factor effects, variable collapsing was present in the State  $\times$  Age  $\times$  Race interaction. Out of 106 proposed variables, 102 were included in the model.

In the final model, a total of 193 variables were included; see Exhibit D3.2.

### **Selected Person-Level Poststratification**

All 36 proposed one-factor effects were included in the model.

For two-factor effects, variable dropping was present in the State  $\times$  Hispanicity and State  $\times$  Rent/housing interactions. Out of 145 proposed variables, 138 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity, State  $\times$  Age  $\times$  Race, State  $\times$  Race  $\times$  Hispanicity, State  $\times$  Race  $\times$  Hispanicity, and State  $\times$  Race  $\times$  Gender interactions. Out of 128 proposed variables, 86 were included in the model.

In the final model, a total of 260 variables were included; see Exhibit D3.3.

### **Respondent Person-Level Nonresponse**

All 36 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the State  $\times$  percent Hispanic and State  $\times$  Rent/housing interactions. Out of 145 proposed variables, 138 were included in the model.

For three-factor effects, all levels are present for the Age  $\times$  Race  $\times$  Gender, Age  $\times$  Hispanicity  $\times$  Gender, Race  $\times$  Hispanicity  $\times$  Gender, State  $\times$  Age  $\times$  Gender, and State  $\times$  Hispanicity  $\times$  Gender interactions. All the others were affected by variable collapsing or dropping. Out of 84 proposed variables, 75 were included in the model.

In the final model, a total of 249 variables were included; see Exhibit D3.4.

### **Respondent Person-Level Poststratification**

All 19 proposed one-factor effects were included in the model.

For two-factor effects, collapsing was present in Race  $\times$  Hispanicity and State  $\times$  Race. Out of 81 proposed variables, 78 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity, Race  $\times$  Hispanicity  $\times$  Gender, State  $\times$  Age  $\times$  Race, State  $\times$  Age  $\times$  Hispanicity, and State  $\times$  Race  $\times$  Hispanicity interactions. Out of 127 proposed variables, 93 were included in the model.

In the final model, a total of 190 variables were included; see Exhibit D3.5.

**Exhibit D3.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),  
Model Group 3: East North Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>23</b>	<b>23</b>	
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.
<b>Two-Factor Effects</b>		<b>104</b>	<b>95</b>	
%Owner-Occupied × %Black	3*3	4	4	All levels present.
%Owner-Occupied × %Hispanic	3*3	4	4	All levels present.
%Owner-Occupied × 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	5*4	12	12	All levels present.
State × Population Density	5*4	12	12	All levels present.
State × Group Quarter	5*3	8	6	Drop (4,2); zero cnts. Coll. (3,1)&(3,2); conv.
State × %Black	5*3	8	8	All levels present.
State × %Hispanic	5*3	8	6	Drop (4,1); zero cnts. Coll. (5,1)&(5,2); sing.
State × %Owner-Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	11	Drop (1,3/4), repeat for (3/4/5,4); ref zero.
<b>Three-Factor Effects</b>		<b>128</b>	<b>31</b>	
State × %Owner-Occupied × %Black	5*3*3	16	6	Drop (4,3,1); zero cnts. Drop (4,*,*); sing. Coll. (1,*,1)&(1,*,2), repeat for state=3, 5; conv.
State × %Owner-Occupied × %Hispanic	5*3*3	16	3	Drop (4,3,*), (4,2,1), (3,3,*)&(5,3,*); zero cnts. Drop (5,2,1), (3,2,1), (4,2,2); ref zero. Drop (1,3,*); sing. Coll. (1,2,1)&(1,2,2); conv.
State × %Owner-Occupied × Rent/housing	5*3*5	32	12	Drop (1,*,3/4), repeat for (3/4/5,*,4); ref zero. Drop (1,3,2), (3,3,1), (4,3,2)&(4,2,1); zero cnts. Drop (5,3,2/3), (3,2/3,3), (4,3,1), Coll. (5,2,2)&(5,2,3); sing.
State × Rent/housing × %Black	5*3*5	32	6	Drop (1,1,1), (4,1,*); zero cnts. Drop (4,2/3,*); sing. Drop (1,3/4,*), repeat for (3/4/5, 4,*); ref zero. Drop (1,1,2), (4,2,2/3), (5,1,1/2), Coll. (1,2,1)&(1,2,2), repeat for state=3,5. Coll. (3,1,1)&(3,1,2); conv.
State × Rent/housing × %Hispanic	5*3*5	32	4	Drop (1,3/4,*), repeat for (3/4/5, 4,*); ref zero. Drop (5,1,1), (5,2,1), repeat for state=3, (4,*,1); zero cnts. Drop (1,1/2,*), (5,2,2), (5,3,*); sing. Drop (4,1,2), (4,3,2); conv.
<b>Total</b>		<b>255</b>	<b>149</b>	

**Exhibit D3.2 Covariates for 2003 NSDUH Person Weights (res.sdu.ps),  
Model Group 3: East North Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>18</b>	<b>18</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>73</b>	<b>73</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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 (5 levels)	5*5	16	16	All levels present.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
<b>Three-Factor Effects</b>		<b>106</b>	<b>102</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	5*5*3	32	28	Coll. (*,1,2)&(*,1 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 levels) × Hispanicity	5*3*2	8	8	All levels present.
State × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
<b>Total</b>		<b>197</b>	<b>193</b>	

**Exhibit D3.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 3: East North Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>36</b>	<b>36</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>145</b>	<b>138</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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	4	All levels present.
%Owner-Occupied × 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	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race (5 levels)	5*5	16	16	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	6	Coll. (4,1)&(4,2), (5,1)&(5,2); zero.
State × %Owner-Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	11	Drop (*,4), (4,3); zero
<b>Three-Factor Effects</b>		<b>128</b>	<b>86</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	5	Drop (4,*,*), Coll (3,2,1)&(3,3,1); conv.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	5*5*3	32	21	Coll. (1,1,2)&(1,1,3), Repeat for state=3,4,5 Coll. (1,2,2)&(1,2,3), Repeat for state=3,4,5. Coll. (1,4,2)&(1,4,3), Repeat for state=5. Coll. (5,3,2)&(5,3,3); conv.
State × Age × Hispanicity	5*5*2	16	12	Drop (*,4,1); sing, conv.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5*3*2	8	7	Coll. (5,2,1)&(5,3,1); conv.
State × Race (3 levels) × 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.
<b>Total</b>		<b>287</b>	<b>260</b>	

**Exhibit D3.4 Covariates for 2003 NSDUH Person Weights (res.per.nr),  
Model Group 3: East North Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>36</b>	<b>36</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>145</b>	<b>138</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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	4	All levels present.
%Owner-Occupied × 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	5*4	12	12	All levels present.
State × Age	5*5	16	16	All levels present.
State × Race (5 levels)	5*5	16	16	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	6	Coll. (4,1)&(4,2), (5,1)&(5,2); zero.
State × %Owner-Occupied	5*3	8	8	All levels present.
State × Rent/housing	5*5	16	11	Drop (*,4), (4,3); zero.
<b>Three-Factor Effects</b>		<b>84</b>	<b>75</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	5	Coll. (4,2,1)&(4,3,1); ref zero. Repeat for Age=2,3; conv.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	5*5*3	32	12	Coll. (1,1,2)&(1,1,3), repeat for all states and all age levels. Drop (4,*,*); conv.
State × Age × Hispanicity	5*5*2	16	15	Drop (4,4,1); sing.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5*3*2	8	2	Coll. (1,2,1)&(1,3,1), repeat for all states. Drop (4,*,*), Drop (5,*,*); conv.
State × Race (3 levels) × 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.
<b>Total</b>		<b>287</b>	<b>249</b>	

**Exhibit D3.5 Covariates for 2003 NSDUH Person Weights (res.per.ps),  
Model Group 3: East North Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>19</b>	<b>19</b>	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>81</b>	<b>78</b>	
Age × Race (3 levels)	6*3	10	10	All levels present.
Age × Hispanicity	6*2	5	5	All levels present.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	1	Coll. (2,1)&(3,1); conv.
Race (3 levels) × 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*6	20	20	All levels present.
State × Race (5 levels)	5*5	16	14	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.
<b>Three-Factor Effects</b>		<b>127</b>	<b>93</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	5	Coll. (1,2,1)&(1,3,1), repeat for age levels; conv
Age × Race (3 levels) × Gender	6*3*2	10	10	All levels present.
Age × Hispanicity × Gender	6*2*2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1)&(3,1,1); conv.
State × Age × Race (3 levels)	5*6*3	40	27	Drop (*,5,2/3), Coll. (4,1,2)&(4,1,3), repeat for all age levels, coll. (5,4,2)&(5,4,3); conv
State × Age × Hispanicity	5*6*2	20	12	Drop (*,5,1), (*,4,1); conv.
State × Age × Gender	5*6*2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	5*3*2	8	1	Coll. (1,2,1)&(1,3,1), repeat for all States; conv. Drop (1,2/3,1), (4,2/3,1) (5,2/3,1); conv.
State × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
<b>Total</b>		<b>227</b>	<b>190</b>	





**Appendix D4: Model Group 4: West North Central**  
(Iowa, Kansas, Minnesota, Missouri, Nebraska, South Dakota, North Dakota)



**Table D.4a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 4: West North Central)**

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwisor			Nominal	Realized
<i>res.sdu.nr</i>	6.46%	6.39%	0.22%	1.34341	357	(1.00, 1.24)	(1.00, 1.23)
	2.87%	1.09%	0.03%	1.35130	137	(1.00, 1.49)	(1.00, 1.47)
						(1.00, 1.20)	(1.00, 1.19)
<i>res.sdu.ps</i>	2.87%	1.09%	0.03%	1.35130	267	(0.30, 3.00)	(0.30, 3.00)
	3.08%	3.68%	0.64%	1.41683	249	(0.30, 4.60)	(0.30, 4.55)
						(0.40, 2.35)	(0.40, 2.26)
<i>sel.per.ps</i>	4.17%	6.04%	1.29%	2.97497	377	(0.20, 2.64)	(0.20, 2.64)
	1.66%	3.83%	0.86%	3.17118	301	(0.20, 4.89)	(0.20, 4.79)
						(0.61, 3.79)	(0.61, 3.79)
<i>res.per.nr</i>	1.77%	4.31%	0.95%	3.24472	377	(1.00, 1.78)	(1.00, 1.78)
	2.01%	4.99%	1.10%	3.54463	248	(1.00, 5.00)	(1.00, 5.00)
						(1.01, 3.13)	(1.01, 2.72)
<i>res.per.ps</i>	2.03%	4.99%	1.14%	3.54463	307	(0.20, 2.85)	(0.20, 2.85)
	1.31%	3.83%	0.99%	3.64279	209	(0.20, 3.78)	(0.20, 3.77)
						(0.99, 1.11)	(0.99, 1.11)

<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight  
(Model Group 4: West North Central)**

	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>
Minimum	80	0.92	83	0.25	30	1.01	41	0.13	14	0.43	30	0.09	9
1%	129	0.96	134	0.41	94	1.01	111	0.28	91	0.92	96	0.21	73
5%	138	1.00	147	0.81	151	1.01	187	0.58	174	1.00	186	0.72	173
10%	147	1.02	155	0.92	162	1.01	223	0.71	218	1.00	233	0.88	219
25%	198	1.04	204	0.99	215	1.12	509	0.87	475	1.04	504	0.96	489
Median	555	1.06	600	1.06	626	1.38	1,013	0.99	990	1.10	1,079	1.01	1,099
75%	909	1.09	952	1.18	1,022	5.17	2,227	1.13	2,238	1.18	2,446	1.05	2,463
90%	984	1.11	1,068	1.33	1,223	9.10	6,284	1.31	6,030	1.35	6,845	1.14	6,883
95%	1,098	1.13	1,155	1.48	1,347	11.55	7,647	1.50	8,952	1.56	10,604	1.23	10,710
99%	1,138	1.18	1,277	1.98	1,637	12.89	15,416	2.43	16,416	2.56	21,190	1.82	21,652
Maximum	1,214	3.09	1,438	4.55	4,402	32.10	39,267	10.26	27,424	5.00	39,968	3.77	46,917
<i>n</i>	12,595	11,845	11,845	11,845	11,845	7,219	7,219	7,219	7,219	6,266	6,266	6,266	6,266
Max/Mean	2.18	-	2.42	-	6.73	-	18.03	-	12.30	-	15.55	-	18.26

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.

<sup>1</sup> sel.sdu.des refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

## **Model Group 4 Overview**

### **Dwelling Unit Nonresponse**

All 25 proposed one-factor effects were included in the model.

Variable collapsing or dropping was present in all two-factor effects except the percent Owner-occupied  $\times$  Rent/housing and State  $\times$  Quarter. Out of 140 proposed variables, 94 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 192 proposed variables, 18 were included in the model.

In the final model, a total of 137 variables were included; see Exhibit D4.1.

### **Dwelling Unit Poststratification**

All 20 proposed one-factor effects were included in the model.

Variable collapsing or dropping was present in Race  $\times$  Hispanicity. Out of 99 proposed two-factor variables, 98 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity, Race  $\times$  Hispanicity  $\times$  Gender, State  $\times$  Age  $\times$  Race, State  $\times$  Age  $\times$  Hispanicity, State  $\times$  Race  $\times$  Hispanicity, and State  $\times$  Race  $\times$  Gender interactions. Out of 148 proposed variables, 131 were included in the model.

In the final model, a total of 249 variables were included; see Exhibit D4.2.

### **Selected Person-Level Poststratification**

All 38 proposed one-factor effects were included in the model.

For two-factor effects, variable dropping was present in the percent Owner-occupied  $\times$  percent Black, Owner-occupied  $\times$  percent Hispanic, Rent/housing  $\times$  percent Black, Rent/housing  $\times$  percent Hispanic, State  $\times$  Race, State  $\times$  percent Black, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 191 proposed variables, 159 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age  $\times$  Race  $\times$  Gender, Age  $\times$  Hispanicity  $\times$  Gender, and State  $\times$  Age  $\times$  Gender. Out of 148 proposed variables, 104 were included in the model.

In the final model, a total of 301 variables were included; see Exhibit D4.3.

## **Respondent Person-Level Nonresponse**

All 38 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Race  $\times$  Hispanicity, percent Owner-occupied  $\times$  percent Black, Owner-occupied  $\times$  percent Hispanic, Rent/housing  $\times$  percent Black, Rent/housing  $\times$  percent Hispanic, State  $\times$  Race, State  $\times$  percent Black, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 191 proposed variables, 146 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age  $\times$  Hispanicity  $\times$  Gender and State  $\times$  Age  $\times$  Gender interactions. Out of 148 proposed variables, 64 were included in the model.

In the final model, a total of 248 variables were included; see Exhibit D4.4.

## **Respondent Person-Level Poststratification**

All 21 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the State  $\times$  Race interaction. Out of 109 proposed variables, 97 were included in the model.

For three-factor effects, all levels are present for the Age  $\times$  Hispanicity  $\times$  Gender and State  $\times$  Age  $\times$  Gender interactions. All the others were affected by variable collapsing or dropping. Out of 177 proposed variables, 91 were included in the model.

In the final model, a total of 209 variables were included; see Exhibit D4.5.

**Exhibit D4.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),  
Model Group 4: West North Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>25</b>	<b>25</b>	
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 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.
<b>Two-Factor Effects</b>		<b>140</b>	<b>94</b>	
%Owner-Occupied × %Black	3*3	4	3	Drop (3,1); zero cnts.
%Owner-Occupied × %Hispanic	3*3	4	2	Drop (*,1); zero cnts.
%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 (2,1) & (3,1) ; zero cnts. Drop (4,1); ref zero. Drop (1,1); sing.
State × Quarter	7*4	18	18	All levels present.
State × Population Density	7*4	18	14	Drop (1,1), repeat for state=5,6,7; zero cnts
State × Group Quarter	7*3	12	3	Coll. (1,1) & (1,2) & (3,1) & (3,2), repeat for states (2) & (5), (6) & (7); zero/sing/conv.
State × %Black	7*3	12	6	Drop (1,1), repeat for states=3,6,7; zero cnts. Drop (6,2), (7,2); conv.
State × %Hispanic	7*3	12	3	Drop (1,1), repeat for states=3,5,6,7. Drop (6,2), (7,2) ; zero cnts. Coll. (2,1) & (2,2) ; sing.
State × %Owner-Occupied	7*3	12	11	Coll. (1,2) & (1,3); conv.
State × Rent/housing	7*5	24	15	Drop (1,4), (3,*), (6,4); zero cnts. Drop (1,3), (5,4), (6,3); ref zero.
<b>Three-Factor Effects</b>		<b>192</b>	<b>18</b>	
State × %Owner-Occupied × %Black	7*3*3	24	2	Drop (1,2/3,1), repeat for states=2,3,6,7. Drop (5,3,1), (5,2,2); zero cnts. Drop (3,3,2), (3,2,2), (5,3,2), (5,2,1); sing. Drop (6,2/3, 2), (7,2/3,2); hier. Drop (1,2/3,2); conv.
State × %Owner-Occupied × %Hispanic	7*3*3	24	1	Coll. (1,2,2) & (1,3,2) Drop (2,*,*) Heir. Drop (1,2/3,1) , repeat for states=3,5,6,7. Drop (3,2,2), (6,2/3,2), (7,2/3,2); zero cnts. Drop (5,2/3,2); ref zero. Drop (3,3,2); sing.
State × %Owner-Occupied × Rent/housing	7*3*5	48	10	Drop (1,*,*); zero/heir./conv. Drop (2,3,1), (2,3,3), (2,2,2), (3,*,*), (5,2/3,1/2/3), (6,3,2), (6,2,1), (7,3,2), (7,3,4), (7,2,4). zero cnts. Drop (5,2/3,4), (6,2/3,3). ref zero Drop (2,3,2), (2,3,4), (2,2,4), (7,2,2), Coll. (7,3,1), & (7,2,1); sing.
State × Rent/housing × %Black	7*3*5	48	3	Drop (1,*,1), repeat for states=3,6,7. Drop (1,4,2), (2,1/2,1), (3,*,*), (5,1,1/2), (6, 4,1/2); zero cnts. Drop (1,3,2), (5,4,1/2), (6,3,2); ref zero. Drop (7,*,2), (6,1,2), (6,2,2); heir. Drop (2,2,2), (2,4,1/2), (5,2/3,1/2); sing. Drop (1,1,2), (1,2,2); conv.
State × Rent/housing × %Hispanic	7*3*5	48	2	Drop (1,*,1), repeat for states=3,5,6,7, Drop (3,*,*), Drop (1,4,2), (2,2,1/2), (6,*,2), (7,*,2); zero cnts. Drop (1,3,2), (2,4,1/2), (5,*,2); ref zero. Drop (1,1,2), (1,2,2); sing. Coll. (2,1,1) & (2,1,2), (2,3,1) & (2,3,2); heir.
<b>Total</b>		<b>357</b>	<b>137</b>	



**Exhibit D4.2 Covariates for 2003 NSDUH Person Weights (res.sdu.ps),  
Model Group 4: West North Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>20</b>	<b>20</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>99</b>	<b>98</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × 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 (5 levels)	7*5	24	24	All levels present.
State × Hispanicity	7*2	6	6	All levels present.
State × Gender	7*2	6	6	All levels present.
<b>Three-Factor Effects</b>		<b>148</b>	<b>131</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Coll. (1,2,1) & (1,3,1), repeat for all age levels; heir.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); heir.
State × Age × Race (3 levels)	7*5*3	48	47	Coll. (7,2,2) & (7,2,3); conv.
State × Age × Hispanicity	7*5*2	24	23	Drop (7,4,1); conv.
State × Age × Gender	7*5*2	24	24	All levels present.
State × Race (3 levels) × Hispanicity	7*3*2	12	3	Coll. (1,2,1) & (1,3,1), repeat for all states; heir. Drop (6,*,*) & (7,*,*), Coll (1,2/3,1) & (3,2/3,1); conv.
State × Race (3 levels) × Gender	7*3*2	12	11	Coll. (7,2,1) & (7,3,1); conv.
State × Hispanicity × Gender	7*2*2	6	6	All levels present.
<b>Total</b>		<b>267</b>	<b>249</b>	

**Exhibit D4.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 4: West North Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>38</b>	<b>38</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>191</b>	<b>159</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner-Occupied × %Black	3*3	4	3	Coll. (3,1) & (3,2); zero.
%Owner-Occupied × %Hispanic	3*3	4	2	Coll. (1,1) & (1,2), (2,1) & (2,2); zero.
%Owner-Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	7	Coll. (1,1) & (1,2); zero.
Rent/housing × %Hispanic	3*5	8	4	Coll. (1,1) & (1,2), repeat for all Rent/housing levels; zero.
State × Quarter	7*4	18	18	All levels present.
State × Age	7*5	24	24	All levels present.
State × Race (5 levels)	7*5	24	22	Coll. (2,3) & (2,4), (7,2) & (7,5); 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	Coll. (1,1) & (1,2), repeat for st=3,6,7; zero.
State × %Hispanic	7*3	12	3	Coll. (1,1) & (1,2), repeat for st=3. Drop (5,*), (6,*), (7,*); zero. Coll (2,1) & (2,2); sing.
State × %Owner-Occupied	7*3	12	12	All levels present.
State × Rent/housing	7*5	24	15	Drop (3,*); zero. Drop (1,3), (1,4), (5,4), (6,3), (6,4); ref zero.
<b>Three-Factor Effects</b>		<b>148</b>	<b>104</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	3	Coll. (1,2,1) & (1,3,1), repeat for all age levels; sing zero. Drop (4,*,*); conv.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); zero.
State × Age × Race (3 levels)	7*5*3	48	34	Coll. (1,4,2) & (1,4,3), repeat for state=2,5,6,7. Coll. (6,3,2) & (6,3,3), repeat for state=7; zero. Coll. (7,1,2) & (7,1,3), (7,2,2) & (7,2,3), (3,*2) & (3,*3), Drop (7,4,2/3); conv.
State × Age × Hispanicity	7*5*2	24	15	Drop (1,4,1), repeat for state=3,6,7, (6,3,1), (7,3,1); zero. Drop (5,4,1); sing. Drop (2,4,1), (7,2,1); conv.
State × Race (3 levels) × Hispanicity	7*5*2	24	24	All levels present.
State × Race (3 levels) × Gender	7*3*2	12	0	Drop all; conv.
State × Hispanicity × Gender	7*3*2	12	10	Coll. (6,2,1) & (6,3,1); ref zero. Coll. (7,2,1) & (7,3,1); conv.
State × Hispanicity × Gender	7*2*2	6	5	Coll. (6,1,1) & (7,1,1); conv.
<b>Total</b>		<b>377</b>	<b>301</b>	

**Exhibit D4.4 Covariates for 2003 NSDUH Person Weights (res.per.nr),  
Model Group 4: West North Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>38</b>	<b>38</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>191</b>	<b>146</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner-Occupied × %Black	3*3	4	3	Coll. (3,1) & (3,2); zero.
%Owner-Occupied × %Hispanic	3*3	4	2	Drop (*,1); zero.
%Owner-Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	7	Coll. (1,1) & (1,2); zero.
Rent/housing × %Hispanic	3*5	8	4	Drop (*,1); zero.
State × Quarter	7*4	18	18	All levels present.
State × Age	7*5	24	24	All levels present.
State × Race (5 levels)	7*5	24	12	Coll. (1,3) & (1,4) & (1,5), repeat for all states except 7. Coll. (7,2) & (7,5), (7,3) & (7,4); 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	Coll. (1,1) & (1,2), Repeat for state=3,6,7; zero.
State × %Hispanic	7*3	12	1	Keep (2,2); zero conv.
State × %Owner-Occupied	7*3	12	12	All levels present.
State × Rent/housing	7*5	24	15	Drop (3,*), (1,3), (1,4), (5,4), (6,3), (6,4); zero.
<b>Three-Factor Effects</b>		<b>148</b>	<b>64</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	0	Drop all; zero, conv.
Age × Race (3 levels) × Gender	5*3*2	8	7	Coll. (4,2,1) & (4,3,1); conv.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	0	Drop all; zero, conv.
State × Age × Race (3 levels)	7*5*3	48	9	Coll. (1,1,2) & (1,1,3), repeat for all states and all age levels. Coll. state (2)& (5), Keep (2/5, 1, 2/3), Drop (6,*,*), (7,*,*); zero conv.
State × Age × Hispanicity	7*5*2	24	12	Drop (*,4,1) except for state=2. Drop (1,2,1), (1,3,1) (3,3,1), (7,3,1) (6,3,1), Coll. (6,*,*), & (7,*,*); zero, conv.
State × Age × Gender	7*5*2	24	24	All levels present.
State × Race (3 levels) × Hispanicity	7*3*2	12	0	Drop all; zero, conv.
State × Race (3 levels) × Gender	7*3*2	12	4	Coll. (1,2,1) & (1,3,1), repeat for all states. Drop (5,*), Coll. (6,*), & (7,*); conv.
State × Hispanicity × Gender	7*2*2	6	4	Drop (6,1,1) & (7,1,1); stats.
<b>Total</b>		<b>377</b>	<b>248</b>	

**Exhibit D4.5 Covariates for 2003 NSDUH Person Weights (res.per.ps),  
Model Group 4: West North Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>21</b>	<b>21</b>	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>109</b>	<b>97</b>	
Age × Race (3 levels)	6*3	10	10	All levels present.
Age × Hispanicity	6*2	5	5	All levels present.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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*6	30	30	All levels present.
State × Race (5 levels)	7*5	24	12	Coll. (1,3) & (1,4) & (1,5), repeat for all states; stats
State × Hispanicity	7*2	6	6	All levels present.
State × Gender	7*2	6	6	All levels present.
<b>Three-Factor Effects</b>		<b>177</b>	<b>91</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	0	Drop all; conv.
Age × Race (3 levels) × Gender	6*3*2	10	9	Coll. (5,2,1) & (5,3,1); zero.
Age × Hispanicity × Gender	6*2*2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	7*6*3	60	21	Coll. (1,1,2) & (1,1,3), repeat for all states and all age levels, conv. Drop (*,5,2/3), Drop (1,4,2/3) Repeat for state =2,3; conv.
State × Age × Hispanicity	7*6*2	30	11	Drop (6,*,*), (7,*,*), (*,5,1), (*,4,1), (5,3,1); conv.
State × Age × Gender	7*6*2	30	30	All levels present.
State × Race (3 levels) × Hispanicity	7*3*2	12	0	Drop all; conv.
State × Race (3 levels) × Gender	7*3*2	12	10	Coll. (2,2,1) & (2,3,1), (6,2,1) & (6,3,1); conv.
State × Hispanicity × Gender	7*2*2	6	4	Drop (6,1,1) & (7,1,1); conv.
<b>Total</b>		<b>307</b>	<b>209</b>	



**Appendix D5: Model Group 5: South Atlantic**  
(Delaware, District of Columbia, Georgia, Maryland, North Carolina, South  
Carolina, Virginia, West Virginia, Florida)



**Table D.5a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 5: South Atlantic)**

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwisor			Nominal	Realized
<i>res.sdu.nr</i>	2.68%	3.43%	0.54%	1.44205	459	(1.00, 1.38)	(1.00, 1.38)
	2.48%	3.16%	0.17%	1.42527	220	(1.00, 2.38)	(1.00, 2.00)
						(1.00, 1.56)	(1.00, 1.47)
<i>res.sdu.ps</i>	2.48%	3.16%	0.17%	1.42528	337	(0.34, 1.61)	(0.35, 1.58)
	1.43%	2.02%	0.30%	1.50385	336	(0.20, 4.28)	(0.20, 4.22)
						(0.82, 2.02)	(0.83, 2.00)
<i>sel.per.ps</i>	2.69%	4.51%	0.94%	2.68552	467	(0.20, 2.80)	(0.20, 2.80)
	1.69%	3.52%	0.78%	2.78156	393	(0.20, 4.45)	(0.20, 4.43)
						(0.50, 4.22)	(0.50, 4.22)
<i>res.per.nr</i>	1.62%	3.50%	0.80%	2.88912	467	(1.00, 2.99)	(1.00, 2.98)
	1.11%	3.00%	0.73%	3.14020	360	(1.00, 5.00)	(1.00, 5.00)
						(1.00, 1.92)	(1.00, 1.91)
<i>res.per.ps</i>	1.22%	3.13%	0.81%	3.14020	387	(0.20, 2.15)	(0.20, 2.15)
	0.99%	3.11%	0.58%	3.20682	314	(0.20, 4.98)	(0.20, 4.98)
						(0.99, 4.04)	(0.99, 4.04)

<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight  
(Model Group 5: South Atlantic)**

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	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>		<i>res.per.ev</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>	14 <sup>6</sup>	1-14 <sup>6</sup>
Minimum	36	0.60	61	0.15	20	1.01	24	0.11	11	0.33	11	0.04	3	0.44	3
1%	64	0.95	73	0.49	70	1.01	79	0.43	70	0.95	74	0.12	59	0.79	54
5%	69	1.01	85	0.77	92	1.01	161	0.68	152	1.00	159	0.67	134	0.94	133
10%	103	1.03	118	0.88	118	1.01	295	0.76	276	1.01	311	0.87	254	0.98	255
25%	281	1.06	299	0.99	337	1.09	781	0.87	750	1.04	824	0.96	819	0.99	819
Median	699	1.10	771	1.10	856	1.30	1,369	0.98	1,336	1.12	1,457	1.01	1,474	1.00	1,474
75%	1,130	1.16	1,217	1.23	1,276	6.19	4,312	1.10	4,089	1.24	4,089	1.07	4,014	1.01	4,028
90%	1,364	1.22	1,525	1.36	1,767	9.84	10,156	1.27	9,521	1.43	11,107	1.17	11,163	1.02	11,206
95%	1,428	1.25	1,620	1.48	2,032	12.20	12,840	1.42	12,690	1.62	15,829	1.24	15,559	1.03	15,702
99%	1,846	1.40	1,956	1.88	2,587	16.17	22,907	1.96	24,023	2.45	34,140	1.90	33,436	1.14	33,419
Maximum	2,273	9.89	2,839	6.87	10,757	21.15	52,005	5.61	54,694	10.99	72,245	4.95	93,311	8.00	82,599
<i>n</i>	25,702	23,072	23,072	23,071	23,071	12,848	12,848	12,848	12,848	10,894	10,894	10,894	10,894	10,894	10,894
Max/Mean	3.14	-	3.52	-	11.90	-	15.18	-	16.06	-	17.99	-	23.23	-	20.56

Note 1: Weight component 9 and weight products 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.

<sup>1</sup> sel.sdu.des refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

# Model Group 5 Overview

## Dwelling Unit Nonresponse

All 27 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Rent/housing  $\times$  percent Hispanic, State  $\times$  Population Density, State  $\times$  Group Quarter, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 176 proposed variables, 138 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Many factors were excluded due to zero sample sizes or exact linear combinations. Out of 256 proposed variables, 55 were included in the model.

In the final model, a total of 220 variables were included; see Exhibit D5.1.

## Dwelling Unit Poststratification

All 22 proposed one-factor effects were included in the model.

Out of 125 proposed two-factor effects, 124 were included in the model. The factor collapsed was within State by race, where North Carolina collapsed Native American and Asian.

All 190 three-factor effects were included in the model.

In the final model, a total of 336 variables were included; see Exhibit D5.2.

## Selected Person-Level Poststratification

All 40 proposed one-factor effects were included in the model.

For two-factor effects, variable dropping was present in the percent Owner-occupied  $\times$  percent Hispanic, State  $\times$  Race, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 237 proposed variables, 209 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity, State  $\times$  Age  $\times$  Race, State  $\times$  Age  $\times$  Hispanicity, State  $\times$  Race  $\times$  Hispanicity, and State  $\times$  Hispanicity  $\times$  Gender. Out of 190 proposed variables, 144 were included in the model.

In the final model, a total of 393 variables were included; see Exhibit D5.3.

## **Respondent Person-Level Nonresponse**

All 40 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the percent Owner-occupied  $\times$  percent Hispanic, State  $\times$  Race, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 237 proposed variables, 206 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the State  $\times$  Age  $\times$  Gender interaction. Out of 190 proposed variables, 114 were included in the model.

In the final model, a total of 360 variables were included; see Exhibit D5.4.

## **Respondent Person-Level Poststratification**

All 23 proposed one-factor effects were included in the model.

All two-factor effects are present except the Age  $\times$  Race, Race  $\times$  Hispanicity, and State  $\times$  Race interactions. Out of 137 proposed variables, 127 were included in the model.

For three-factor effects, all levels are present except for the Age  $\times$  Hispanicity  $\times$  Gender and State  $\times$  Age  $\times$  Gender interactions. All the others were affected by variable collapsing or dropping. Out of 227 proposed variables, 164 were included in the model.

In the final model, a total of 314 variables were included; see Exhibit D5.5.

**Exhibit D5.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),  
Model Group 5: South Atlantic**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>27</b>	<b>27</b>	
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.
<b>Two-Factor Effects</b>		<b>176</b>	<b>138</b>	
%Owner-Occupied × %Black	3*3	4	4	All levels present.
%Owner-Occupied × %Hispanic	3*3	4	4	All levels present.
%Owner-Occupied × 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	Coll. (1,2) & (2,2); sing. Drop (1,1); zero.
State × Quarter	9*4	24	24	All levels present.
State × Population Density	9*4	24	19	Drop (1,1), (2,*), (8,1); zero.
State × Group Quarter	9*3	16	11	Coll. (1,1) & (2,1), (1,2) & (2,2); conv, sing. Drop (4,*); zero. Drop (8,1); sing.
State × %Black	9*3	16	16	All levels present.
State × %Hispanic	9*3	16	8	Drop (4,2), (5,1), (6,1), (7,1), (8,*), (9,1); zero/sing. Drop (6,2); conv.
State × %Owner-Occupied	9*3	16	16	All levels present.
State × Rent/housing	9*5	32	14	Keep (1,2), (1,3), (1,4), (2,4), (4,3), (4,4), (5,1), (5,2), (6,1), (7,1), (8,1), (9,1), (9,2), (9,3). Drop remainder; zero/sing.
<b>Three-Factor Effects</b>		<b>256</b>	<b>55</b>	
State × %Owner-Occupied × %Black	9*3*3	32	21	Coll. (5,2,1) & (5,2,2), (6,3,1) & (6,3,2), (7,2,2) & (7,3,2); conv. Drop (1,3,*), (4,3,2), (5,3,*), (7,* ,1) & (8,2,1); zero/sing.
State × %Owner-Occupied × %Hispanic	9*3*3	32	8	Coll. (7,2,2) & (7,2,3); conv. Keep (1,2,2), (2,* ,2), (4,3,2), (5,3,2), (9,* ,2) Drop (5,2,2) & (6,3,2); conv. Drop remainder; zero/sing.
State × %Owner-Occupied × Rent/housing	9*3*5	64	10	Keep (2,3,4), (4,2,4), (4,3,4), (5,2,1), (5,3,1), (6,2,1), (9,2,2), (9,2,3), (9,3,2), (9,3,3). Drop remainder; zero/sing.
State × Rent/housing × %Black	9*3*5	64	12	Keep (1,3,2), (1,4,2), (4,4,*), (5,1,*), (6,1,*), (9,2,*), (9,3,*). Drop remainder; zero/sing.
State × Rent/housing × %Hispanic	9*3*5	64	4	Keep (1,2,2), (6,1,2), (9,2,2), (9,3,2). Drop (6,1,2); conv. Drop remainder; zero/sing.
<b>Total</b>		<b>459</b>	<b>220</b>	

**Exhibit D5.2 Covariates for 2003 NSDUH Person Weights (res.sdu.ps),  
Model Group 5: South Atlantic**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>22</b>	<b>22</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>125</b>	<b>124</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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 (5 levels)	9*5	32	31	Coll. (5,3) & (5,4); conv.
State × Hispanicity	9*2	8	8	All levels present.
State × Gender	9*2	8	8	All levels present.
<b>Three-Factor Effects</b>		<b>190</b>	<b>190</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	9*5*3	64	64	All levels present.
State × Age × Hispanicity	9*5*2	32	32	All levels present.
State × Age × Gender	9*5*2	32	32	All levels present.
State × Race (3 levels) × Hispanicity	9*3*2	16	16	All levels present.
State × Race (3 levels) × Gender	9*3*2	16	16	All levels present.
State × Hispanicity × Gender	9*2*2	8	8	All levels present.
<b>Total</b>		<b>337</b>	<b>336</b>	

**Exhibit D5.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 5: South Atlantic**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>40</b>	<b>40</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>237</b>	<b>209</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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	3	Drop (1,1); zero.
%Owner-Occupied × 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	9*4	24	24	All levels present.
State × Age	9*5	32	32	All levels present.
State × Race (5 levels)	9*5	32	30	Coll. (4,3) & (4,4); zero. Coll. (5,3) & (5,4); conv.
State × Hispanicity	9*2	8	8	All levels present.
State × Gender	9*2	8	8	All levels present.
State × %Black	9*3	16	16	All levels present.
State × %Hispanic	9*3	16	9	Drop (2,1) & (4,1); sing. Drop (5,1), (6,1), (7,1) & (8,*); zero.
State × %Owner-Occupied	9*3	16	16	All levels present.
State × Rent/housing	9*5	32	14	Drop (1,1), (1,2), (1,3), (2,1), (4,1), (4,2), (5,3), (6,3), (6,4), (7,2), (8,3), (8,4); zero. Drop (5,4), (6,2), (7,3), (7,4), (8,2) & (9,4); sing.
<b>Three-Factor Effects</b>		<b>190</b>	<b>144</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	6	Drop (4,*1); conv.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	9*5*3	64	32	Coll. (1,1,2) & (1,1,3); conv. Repeat for all levels of age and State.
State × Age × Hispanicity	9*5*2	32	28	Drop (5,4), (6,4) & (8,3); sing. Drop (8,4); zero.
State × Age × Gender	9*5*2	32	32	All levels present.
State × Race (3 levels) × Hispanicity	9*3*2	16	9	Coll. (1,2,1), (2,2,1) & (4,2,1), (1,3,1), (2,3,1) & (4,3,1), (5,2,1) & (5,3,1), (6,2,1) & (6,3,1), (8,2,1) & (8,3,1); conv.
State × Race (3 levels) × Gender	9*3*2	16	16	All levels present.
State × Hispanicity × Gender	9*2*2	8	7	Coll. (7,1,1) & (8,1,1); conv.
<b>Total</b>		<b>467</b>	<b>393</b>	

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

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>40</b>	<b>40</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>237</b>	<b>206</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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	3	Drop (1,1); zero.
%Owner-Occupied × 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	9*4	24	24	All levels present.
State × Age	9*5	32	32	All levels present.
State × Race (5 levels)	9*5	32	28	Coll. (5,3) & (5,5); zero. Coll. (8,3), (8,4), (8,5) conv.
State × Hispanicity	9*2	8	8	All levels present.
State × Gender	9*2	8	8	All levels present.
State × %Black	9*3	16	16	All levels present.
State × %Hispanic	9*3	16	9	Drop (1,1), (4,1); sing. Drop (5,1), (6,1), (7,1), (8,*); zero.
State × %Owner-Occupied	9*3	16	16	All levels present.
State × Rent/housing	9*5	32	12	Coll. (9,1) & (9,2); conv. Drop (5,4), (6,2), (8,2) & (9,4); sing. Drop (1,1), (2,1), (2,2), (2,3), (4,1), (4,2), (5,3), (6,3), (6,4), (7,2), (8,3), (8,4); zero. Drop (8,1); conv.
<b>Three-Factor Effects</b>		<b>190</b>	<b>114</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	9*5*3	64	28	Coll. (1,1,2) & (1,1,3); conv. Repeat for all States, ages.
State × Age × Hispanicity	9*5*2	32	17	Coll. (7,1,*) & (8,1,*); conv. Repeat for all levels of age. Coll. (1,1,1), (2,1,1), (4,1,1); conv. Repeat for all levels of age. Drop (5,4,1), (6,4,1) & (8,3,1); sing. Drop (8,4,1); zero. Drop (6,1,1), (6,2,1), (6,3,1); conv.
State × Age × Gender	9*5*2	32	32	All levels present.
State × Race (3 levels) × Hispanicity	9*3*2	16	1	Coll. (7,1,2) & (7,1,3); conv. Drop remainder; conv.
State × Race (3 levels) × Gender	9*3*2	16	8	Coll. (1,2,1) & (1,3,1); conv. Repeat for all States.
State × Hispanicity × Gender	9*2*2	8	6	Coll. (1,1,1), (2,1,1) & (4,1,1); conv.
<b>Total</b>		<b>467</b>	<b>360</b>	

**Exhibit D5.5 Covariates for 2003 NSDUH Person Weights (res.per.ps),**

**Model Group 5: South Atlantic**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>23</b>	<b>23</b>	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>137</b>	<b>127</b>	
Age × Race (3 levels)	6*3	10	9	Coll (5,2) & (5,3); conv
Age × Hispanicity	6*2	5	5	All levels present.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	1	Coll (2,1) & (3,1); conv.
Race (3 levels) × 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*6	40	40	All levels present.
State × Race (5 levels)	9*5	32	24	Coll (1,3) & (1,4), repeat for all states; conv.
State × Hispanicity	9*2	8	8	All levels present.
State × Gender	9*2	8	8	All levels present.
<b>Three-Factor Effects</b>		<b>227</b>	<b>164</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	6	Coll (2,2,1) & (2,3,1); do same for Age=3,4,5; conv.
Age × Race (3 levels) × Gender	6*3*2	10	9	Coll (5,2,1) & (5,3,1); heir.
Age × Hispanicity × Gender	6*2*2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	9*6*3	80	56	Coll (1,5,2) & (1,5,3), repeat for all states; zero/conv./heir. Drop (8,5,2/3); zero. Coll (2,4,2) & (2,4,3), (4,2,2) & (4,2,3), (7,4,2) & (7,4,3); sing./conv. Coll (5,*2) & (5,*3), Do same for ST=6,8; conv.
State × Age × Hispanicity	9*6*2	40	20	Drop (5,5,1) do same for state=6,7,8. Drop (5,4,1) same for state=6,8; zero. Drop (4,5,1), (7,4,1); sing. Drop (9,5,1) do same for state=1,2. Drop (9,4,1) do same for state=1,2, 4. Drop (2,3,1). Coll (7,1,1) & (8,1,1), do same for Age=2,3; conv.
State × Age × Gender	9*6*2	40	40	All levels present.
State × Race (3 levels) × Hispanicity	9*3*2	16	7	Coll (8,2,1) & (8,3,1); zero. Coll (1,2,1) & (1,3,1) for all except state=9. Coll (2,2/3,1) & (4,2/3,1). Coll (5,2/3,1) & (5,2/3,1). conv.
State × Race (3 levels) × Gender	9*3*2	16	14	Coll (6,2,1) & (6,3,1), (8,2,1) & (8,3,1); conv.
State × Hispanicity × Gender	9*2*2	8	6	Coll (2,1,1) & (4,1,1), (7,1,1) & (8,1,1); conv.
<b>Total</b>		<b>387</b>	<b>314</b>	





**Appendix D6: Model Group 6: East South Central**  
(Alabama, Kentucky, Mississippi, Tennessee)



**Table D.6a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 6: East South Central)**

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwisor			Nominal	Realized
<i>res.sdu.nr</i>	0.73%	0.93%	0.03%	1.35200	204	(1.01, 1.08)	(1.01, 1.08)
	0.43%	0.55%	0.00%	1.35118	96	(1.00, 1.20)	(1.00, 1.20)
						(1.00, 1.08)	(1.00, 1.00)
<i>res.sdu.ps</i>	0.43%	0.55%	0.00%	1.35118	162	(0.82, 1.72)	(0.83, 1.72)
	1.84%	3.28%	0.77%	1.19936	145	(0.20, 5.00)	(0.20, 4.99)
						(0.30, 1.25)	(1.03, 1.23)
<i>sel.per.ps</i>	3.49%	8.61%	2.61%	2.50235	241	(0.20, 2.88)	(0.20, 2.88)
	1.71%	5.64%	0.87%	2.48894	179	(0.20, 5.00)	(0.20, 4.99)
						(0.99, 2.91)	(0.99, 2.91)
<i>res.per.nr</i>	1.69%	4.40%	0.84%	2.57192	241	(1.00, 2.40)	(1.00, 2.40)
	1.86%	6.67%	1.10%	2.88213	157	(1.00, 5.00)	(1.00, 4.99)
						(1.00, 1.41)	(1.00, 1.41)
<i>res.per.ps</i>	1.95%	6.93%	1.27%	2.88213	187	(0.45, 1.60)	(0.45, 1.60)
	0.99%	3.20%	0.51%	2.87531	113	(0.24, 4.04)	(0.25, 4.01)
						(0.90, 1.08)	(0.90, 1.08)

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<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight  
(Model Group 6: East South Central)**

	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>
Minimum	204	0.98	311	0.20	89	1.01	91	0.14	38	0.47	38	0.18	16
1%	410	1.00	431	0.37	339	1.01	367	0.31	234	1.00	271	0.45	149
5%	419	1.01	454	0.64	519	1.01	602	0.64	582	1.00	623	0.86	621
10%	510	1.02	533	0.77	591	1.01	726	0.73	715	1.01	775	0.91	780
25%	638	1.04	676	0.91	710	1.07	983	0.86	967	1.06	1,069	0.98	1,079
Median	828	1.06	921	1.06	907	1.30	1,494	1.01	1,512	1.13	1,661	1.01	1,684
75%	1,033	1.08	1,098	1.19	1,133	4.97	4,511	1.16	4,302	1.26	4,781	1.04	4,780
90%	1,171	1.12	1,251	1.42	1,379	9.48	7,727	1.35	8,177	1.44	9,436	1.08	9,475
95%	1,199	1.15	1,301	1.60	1,613	12.10	11,936	1.50	12,724	1.67	16,978	1.12	16,338
99%	5,099	1.19	5,410	2.35	3,000	14.00	16,642	2.17	19,644	2.29	25,412	1.46	27,050
Maximum	5,099	3.83	5,410	4.99	4,841	19.59	54,278	6.72	29,755	4.99	46,909	4.01	54,208
<i>n</i>	7,413	6,950	6,950	6,949	6,949	4,213	4,213	4,213	4,213	3,542	3,542	3,542	3,542
Max/Mean	5.73	-	5.70	-	4.95	-	16.45	-	8.82	-	11.69	-	13.51

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.

<sup>1</sup> *sel.sdu.des* refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

## **Model Group 6 Overview**

### **Dwelling Unit Nonresponse**

For one-factor effects, the level of 50-100 percent of Segments that are Hispanic was dropped due to the zero sample size. Out of 22 proposed one-factor effects, 21 were included in the model.

Variable collapsing or dropping was present in all two-factor effects except the percent Owner-occupied  $\times$  percent Black, percent Owner-occupied  $\times$  Rent/housing, Rent/housing  $\times$  percent Black, State  $\times$  Quarter, and State  $\times$  percent Black interactions. Out of 86 proposed variables, 58 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 96 proposed variables, 17 were included in the model.

In the final model, a total of 96 variables were included; see Exhibit D6.1.

### **Dwelling Unit Poststratification**

All 17 proposed one-factor effects were included in the model.

57 out of 60 proposed two-factor effects were included in the model, due to collapsing in the State  $\times$  Race interaction.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity, State  $\times$  Age  $\times$  Hispanicity, and State  $\times$  Race  $\times$  Hispanicity interactions. Out of 85 proposed variables, 71 were included in the model.

In the final model, a total of 145 variables were included; see Exhibit D6.2.

### **Selected Person-Level Poststratification**

For one-factor effects, College Dorm had to be collapsed with Other Group Quarter due to convergence problems and the level of 50-100 percent of Segments that are Hispanic was dropped due to the zero sample size. Race level American Indian/Alaskan Native had to be collapsed with Asian. Out of 35 proposed one-factor effects, 32 were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Age  $\times$  Hispanicity, Race  $\times$  Hispanicity, percent Owner-occupied  $\times$  percent Hispanic, Rent/housing  $\times$  percent Hispanic, State  $\times$  Race, State  $\times$  percent Hispanic, State  $\times$  percent Owner-occupied, and State  $\times$  Rent/housing interactions. Out of 122 proposed variables, 96 were included in the model.

For three-factor effects, all levels are present for the State × Age × Gender, and State × Hispanicity × Gender interactions. All the others were affected by variable collapsing or dropping. Out of 85 proposed variables, 51 were included in the model.

In the final model, a total of 179 variables were included; see Exhibit D6.3.

### **Respondent Person-Level Nonresponse**

For one-factor effects, the level of 50-100 percent of Segments that are Hispanic was dropped due to the zero sample size. Out of 35 proposed one-factor effects, 34 were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Age × Race, Race × Hispanicity, percent Owner-occupied × percent Hispanic, Rent/housing × percent Hispanic, State × Race, State × percent Hispanic, State × Hispanicity, State × percent Owner-occupied, and State × Rent/housing interactions. Out of 122 proposed variables, 92 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the State × Age × Gender interaction. Out of 85 proposed variables, 31 were included in the model.

In the final model, a total of 157 variables were included; see Exhibit D6.4.

### **Respondent Person-Level Poststratification**

All 18 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Age × Hispanicity, Age × Race, Race × Hispanicity, and State × Race interactions. Out of 67 proposed variables, 57 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. None of the Age × Race × Hispanicity, Race × Hispanicity × Gender, State × Age × Hispanicity, and State × Race × Hispanicity was kept in the model. Out of 102 proposed variables, 38 were included in the model.

In the final model, a total of 113 variables were included; see Exhibit D6.5.

**Exhibit D6.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),**

**Model Group 6: East South Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>22</b>	<b>21</b>	
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); zero.
%Owner-Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>86</b>	<b>58</b>	
%Owner-Occupied × %Black	3*3	4	4	All levels present.
%Owner-Occupied × %Hispanic	3*3	4	2	Drop (2/3,1); zero.
%Owner-Occupied × 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 (3,2), drop others; zero/sing.
State × Quarter	4*4	9	9	All levels present.
State × Population Density	4*4	9	6	Drop (1/3,1); zero. Drop (2,1); sing.
State × Group Quarter	4*3	6	2	Keep (1,1/2), drop others; zero/sing.
State × %Black	4*3	6	6	All levels present
State × %Hispanic	4*3	6	0	Drop all; zero, sing.
State × %Owner-Occupied	4*3	6	4	Drop (2/3,2); sing.
State × Rent/housing	4*5	12	8	Drop (3,*); zero/sing.
<b>Three-Factor Effects</b>		<b>96</b>	<b>17</b>	
State × %Owner-Occupied × %Black	4*3*3	12	6	Keep (1/2/3,2,1/2), drop others; zero/sing./conv.
State × %Owner-Occupied × %Hispanic	4*3*3	12	0	Drop all; zero, sing.
State × %Owner-Occupied × Rent/housing	4*3*5	24	1	Keep (1,2,1), drop others; zero/sing./conv.
State × Rent/housing × %Black	4*3*5	24	10	Drop (1,4, 2), (2,3,1), (2,4,1/2); sing. Drop ( (2,1/2,1); zero. Drop (3,*,*); zero/sing..
State × Rent/housing × %Hispanic	4*3*5	24	0	Drop all; zero/sing.
<b>Total</b>		<b>204</b>	<b>96</b>	



**Exhibit D6.2 Covariates for 2003 NSDUH Person Weights(res.sdu.ps),  
Model Group 6: East South Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>17</b>	<b>17</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>60</b>	<b>57</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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 (5 levels)	4*5	12	9	Coll. (1,3) & (1,4); conv. Repeat for all States.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
<b>Three-Factor Effects</b>		<b>85</b>	<b>71</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	3	Coll. (1,* ,1) & (2,* ,1); zero cnts, conv. Coll. (3,2,1) & (3,3,1), (4,2,1) & (4,3,1); conv.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	4*5*3	24	24	All levels present.
State × Age × Hispanicity	4*5*2	12	8	Coll. (1,1,1) & (3,1,1); conv. Repeat for all levels of age.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4*3*2	6	1	Coll. (1,2,1) & (1,3,1); conv. Drop (2,* ,1), (3,3,1); zero. Drop (3,2,1); conv.
State × Race (3 levels) × Gender	4*3*2	6	6	All levels present.
State × Hispanicity × Gender	4*2*2	3	3	All levels present.
<b>Total</b>		<b>162</b>	<b>145</b>	

**Exhibit D6.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 6: East South Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>35</b>	<b>32</b>	
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 (5 levels)	5	4	3	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. (2) & (3); conv.
%Black	3	2	2	All levels present.
%Hispanic	3	2	1	Drop (1); zero.
%Owner-Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>122</b>	<b>96</b>	
Age × Race (3 levels)	5*3	8	8	All levels present.
Age × Hispanicity	5*2	4	2	Drop (3,1), (4,1) ; conv.
Age × Gender	5*2	4	4	All levels present.
Race (3 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × 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	0	Drop all; heir./zero.
%Owner-Occupied × 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	2	Drop (2,2) & (4,2); zero. Drop (*,1); heir.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race (5 levels)	4*5	12	9	Coll (*,3) and (*,4); zero/conv.
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	0	Drop all; zero heir.
State × %Owner-Occupied	4*3	6	5	Coll (3,2) & (3,3); sing.
State × Rent/housing	4*5	12	9	Drop (3,3), (3,4), (3,5), coll (3,1) & (3,2); zero.
<b>Three-Factor Effects</b>		<b>85</b>	<b>51</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	2	Drop (3,*,1), (4,*,1). Coll (1,2,1) & (1,3,1), (2,2,1) & (2,3,1); heir.
Age × Race (3 levels) × Gender	5*3*2	8	7	Coll (4,2,1) & (4,3,1); zero.
Age × Hispanicity × Gender	5*2*2	4	2	Drop (3,1,1), (4,1,1); heir
Race (3 levels) × Hispanicity × Gender	3*2*2	2	0	Drop all. Conv.
State × Age × Race (3 levels)	4*5*3	24	14	Coll (1,1,2) & (1,1,3), do the same for age=2,3,4. Do the same for state=3. Coll (2,1,2) & (2,1,3), (2,2,2) & (2,2,3), conv.
State × Age × Hispanicity	4*5*2	12	6	Drop (*,3,1), (*,4,1); heir.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4*3*2	6	1	Drop (1,2/3,1), (2,2/3,1); zero conv. Coll (3,2,1) & (3,3,1); ref zero.
State × Race (3 levels) × 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.
<b>Total</b>		<b>242</b>	<b>179</b>	

**Exhibit D6.4 Covariates for 2003 NSDUH Person Weights (res.per.nr),  
Model Group 6: East South Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>35</b>	<b>34</b>	
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 (5 levels)	5	4	4	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	1	Drop (1); zero.
%Owner-Occupied	3	2	2	All levels present.
Rent/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>122</b>	<b>92</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × 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	1	Drop (1,3), (2,*); zero.
%Owner-Occupied × 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	Drop (*,1), (2,2), & (4,2); zero. Drop (3,2); sing.
State × Quarter	4*4	9	9	All levels present.
State × Age	4*5	12	12	All levels present.
State × Race (5 levels)	4*5	12	7	Coll. (1,3) & (1,4) & (1,5); (2,3) & (2,4) & (2,5), (3,2) & (3,3) & (3,4) & (3,5); conv.
State × Hispanicity	4*2	3	2	Coll. (1,1) & (3,1); conv.
State × Gender	4*2	3	1	All levels present.
State × %Black	4*3	6	6	All levels present.
State × %Hispanic	4*3	6	0	Drop (2,2); sing. Drop remainder; zero.
State × %Owner-Occupied	4*3	6	5	Drop (3,3); sing.
State × Rent/housing	4*5	12	9	Drop (3,4); zero. Drop (3,1) & (3,3); sing.
<b>Three-Factor Effects</b>		<b>85</b>	<b>31</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	0	Drop all.
Age × Race (3 levels) × Gender	5*3*2	8	5	Coll. (4,2,1) & (4,3,1); hier. Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
Age × Hispanicity × Gender	5*2*2	4	2	Drop (3,1,1); conv. Drop (4,1,1); sing.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	0	Drop all; sing.
State × Age × Race (3 levels)	4*5*3	24	9	Coll. (1,1,2) & (1,1,3); conv. Repeat for all levels of State and age. Coll. (2,3,*) & (2,4,*) conv; drop (1,4,2/3), (2,4,2/3) conv.
State × Age × Hispanicity	4*5*2	12	0	Drop all.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4*3*2	6	0	Drop (1,3,1); sing. Drop (2,2,1); zero. Drop remainder; conv.
State × Race (3 levels) × Gender	4*3*2	6	3	Coll. (1,1,2) & (1,1,3); conv. Repeat for all levels of State and age.
State × Hispanicity × Gender	4*2*2	3	0	Drop all.
<b>Total</b>		<b>242</b>	<b>157</b>	

**Exhibit D6.5 Covariates for 2003 NSDUH Person Weights (res.per.ps),  
Model Group 6: East South Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>18</b>	<b>18</b>	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>67</b>	<b>57</b>	
Age × Race (3 levels)	6*3	10	7	Coll. (5,2) & (5,3) sing.; coll. (4,2) & (4,3), (3,2) & (3,3) conv.
Age × Hispanicity	6*2	5	3	Drop (5,1) sing.; Drop (4,1) conv.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × 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*6	15	15	All levels present.
State × Race (5 levels)	4*5	12	8	Coll. (1,3) & (1,4), (2,3) & (2,4), (3,2) & (3,4) & (3,5) conv.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
<b>Three-Factor Effects</b>		<b>102</b>	<b>38</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	0	Drop all.
Age × Race (3 levels) × Gender	6*3*2	10	4	Coll. (*,2,1) & (*,3,1); conv.; Drop (5,2/3,1); conv.
Age × Hispanicity × Gender	6*2*2	5	3	Drop (4,1,1), (5,1,1); hier.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	0	Drop all.
State × Age × Race (3 levels)	4*6*3	30	12	Coll. (*,*,2) & (*,*,3); conv.; Drop (*,5,2/3); conv.
State × Age × Hispanicity	4*6*2	15	0	Drop all.
State × Age × Gender	4*6*2	15	14	Drop (1,5,1); conv.
State × Race (3 levels) × Hispanicity	4*3*2	6	0	Drop all.
State × Race (3 levels) × Gender	4*3*2	6	3	Coll. (*,2,1) & (*,3,1); conv.
State × Hispanicity × Gender	4*2*2	3	2	Drop (2,1,1); conv.
<b>Total</b>		<b>187</b>	<b>113</b>	



**Appendix D7: Model Group 7: West South Central**  
(Arkansas, Louisiana, Oklahoma, Texas)



Table D.7a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 7: West South Central)

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwinsor			Nominal	Realized
<i>res.sdu.nr</i>	1.06%	1.28%	0.23%	1.08863	204	(1.06, 1.40)	(1.06, 1.40)
	0.89%	1.12%	0.00%	1.08329	117	(1.00, 1.49)	(1.00, 1.49)
						(1.03, 1.10)	(1.03, 1.10)
<i>res.sdu.ps</i>	0.89%	1.12%	0.00%	1.08329	162	(0.49, 1.41)	(0.50, 1.37)
	1.03%	1.63%	0.32%	1.11763	161	(0.20, 5.00)	(0.21, 5.00)
						(0.98, 2.00)	(0.99, 2.00)
<i>sel.per.ps</i>	3.02%	4.79%	0.98%	2.01737	242	(0.69, 3.00)	(0.69, 2.71)
	1.06%	2.25%	0.36%	2.09336	213	(0.31, 4.86)	(0.31, 3.84)
						(0.66, 1.77)	(0.66, 1.77)
<i>res.per.nr</i>	1.05%	1.78%	0.21%	2.11128	242	(1.00, 1.40)	(1.00, 1.40)
	1.30%	2.09%	0.27%	2.38400	199	(1.00, 4.52)	(1.00, 4.50)
						(1.20, 1.30)	(1.20, 1.30)
<i>res.per.ps</i>	1.27%	2.13%	0.30%	2.38400	187	(0.20, 2.36)	(0.20, 2.35)
	0.62%	1.64%	0.30%	2.46310	148	(0.20, 4.16)	(0.20, 4.16)
						(0.95, 5.00)	(0.96, 0.96)

<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight (Model Group 7: West South Central)**

	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>
Minimum	11	0.52	428	0.21	99	1.01	109	0.20	33	0.52	34	0.16	10
1%	434	1.00	448	0.48	315	1.01	348	0.49	273	1.00	293	0.20	173
5%	441	1.01	461	0.80	508	1.01	601	0.69	557	1.01	608	0.60	478
10%	449	1.02	473	0.96	573	1.01	768	0.76	737	1.02	801	0.86	715
25%	658	1.04	726	1.06	794	1.16	1,226	0.87	1,161	1.05	1,268	0.97	1,254
Median	926	1.06	987	1.13	1,120	1.30	1,737	0.99	1,796	1.13	1,971	1.02	2,011
75%	1,091	1.08	1,166	1.24	1,327	5.05	5,430	1.11	5,174	1.24	5,611	1.09	5,452
90%	1,161	1.13	1,236	1.36	1,497	8.28	7,939	1.25	8,468	1.41	10,429	1.17	10,590
95%	1,179	1.15	1,280	1.50	1,602	10.01	11,786	1.36	11,555	1.55	14,480	1.20	14,601
99%	1,211	1.21	1,365	2.12	1,976	11.61	15,005	1.89	16,534	2.06	23,315	1.49	23,098
Maximum	3,732	1.49	1,950	5.00	5,744	18.71	28,295	3.92	28,117	4.50	39,202	4.16	47,674
<i>n</i>	12,045	11,295	11,295	11,295	11,295	7,460	7,460	7,460	7,460	6,302	6,302	6,302	6,302
Max/Mean	4.23	-	2.07	-	5.32	-	8.14	-	8.03	-	9.46	-	11.50

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.

<sup>1</sup> sel.sdu.des refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

## **Model Group 7 Overview**

### **Dwelling Unit Nonresponse**

For one-factor effects, College Dorm had to be collapsed with Other Group Quarter due to convergence problems. Out of 22 proposed one-factor effects, 21 were included in the model.

For two-factor effects, variable collapsing and dropping was present in the State  $\times$  Population Density, State  $\times$  Group Quarter, State  $\times$  percent Hispanic, State  $\times$  percent Owner-occupied, and State  $\times$  Rent/housing. Out of 86 proposed variables, 72 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 96 proposed variables, 24 were included in the model.

In the final model, a total of 117 variables were included; see Exhibit D7.1.

### **Dwelling Unit Poststratification**

All 17 proposed one-factor effects were included in the model.

All 60 proposed two-factor effects were included in the model.

For three-factor effects, variable collapsing was present in the State  $\times$  Race  $\times$  Hispanicity interaction. Out of 85 proposed variables, 84 were included in the model.

In the final model, a total of 161 variables were included; see Exhibit D7.2.

### **Selected Person-Level Poststratification**

For one-factor effects, College Dorm had to be collapsed with Other Group Quarter due to convergence problems. Out of 35 proposed one-factor effects, 34 were included in the model.

For two-factor effects, variable dropping was present in the Race  $\times$  percent Hispanicity, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 122 proposed variables, 112 were included in the model.

For three-factor effects, all levels are present for the Age  $\times$  Race  $\times$  Gender, Age  $\times$  Hispanicity  $\times$  Gender, and State  $\times$  Age  $\times$  Gender interactions. All the others were affected by variable collapsing or dropping. Out of 85 proposed variables, 67 were included in the model.

In the final model, a total of 213 variables were included; see Exhibit D7.3.

## **Respondent Person-Level Nonresponse**

For one-factor effects, College Dorm had to be collapsed with Other Group Quarter due to its zero sample size. Out of 35 proposed one-factor effects, 34 were included in the model.

For two-factor effects, variable collapsing or dropping was present in the State  $\times$  percent Hispanic and State  $\times$  Rent/housing interactions. Out of 122 proposed variables, 113 were included in the model.

For three-factor effects, all levels are present for the Age  $\times$  Race  $\times$  Gender, Age  $\times$  Hispanicity  $\times$  Gender, Race  $\times$  Hispanicity  $\times$  Gender, State  $\times$  Age  $\times$  Gender, and State  $\times$  Hispanicity  $\times$  Gender interactions. All the others were affected by variable collapsing or dropping. Out of 85 proposed variables, 52 were included in the model.

In the final model, a total of 199 variables were included; see Exhibit D7.4.

## **Respondent Person-Level Poststratification**

All 18 proposed one-factor effects were included in the model.

All 67 proposed one-factor effects were included in the model.

For three-factor effects, all levels are present for the Age  $\times$  Race  $\times$  Gender, Age  $\times$  Hispanicity  $\times$  Gender, State  $\times$  Age  $\times$  Gender, and State  $\times$  Race  $\times$  Gender interactions. All the others were affected by variable collapsing or dropping. Out of 102 proposed variables, 63 were included in the model.

In the final model, a total of 148 variables were included; see Exhibit D7.5.

**Exhibit D7.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),  
Model Group 7: West South Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>22</b>	<b>21</b>	
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.
<b>Two-Factor Effects</b>		<b>86</b>	<b>72</b>	
%Owner-occupied × %Black	3*3	4	4	All levels present.
%Owner-occupied × %Hispanic	3*3	4	4	All levels present.
%Owner-occupied × 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 × Population Density	4*4	9	7	Drop (2,1); sing. Drop (3,1); zero.
State × Group Quarter	4*3	6	3	Coll. (1/2/3,1) & (1/2/3,2); hier.
State × %Black	4*3	6	6	All levels present.
State × %Hispanic	4*3	6	3	Drop (2,1), (3,1); zero. Drop (4,1); sing.
State × %Owner-Occupied	4*3	6	5	Drop (3,4); zero.
State × Rent/housing	4*5	12	7	Drop (4,4), (2,3), (2,4), (3,2), (3,3); sing.
<b>Three-Factor Effects</b>		<b>96</b>	<b>24</b>	
State × %Owner-Occupied × %Black	4*3*3	12	9	Drop (3,3,1), (3,3,2), (2,3,2); sing.
State × %Owner-Occupied × %Hispanic	4*3*3	12	3	Keep (2,2,2), (4,2/3,2).
State × %Owner-Occupied × Rent/housing	4*3*5	24	3	Keep (3,2,1), (4,2,2), (2,3,1); sing.
State × Rent/housing × %Black	4*3*5	24	7	Keep (2,1,1), (3,1,1/2), (4,2,2), (4,3,1/2); sing. Coll. (4,1,1) & (4,2,1); sing.
State × Rent/housing × %Hispanic	4*3*5	24	2	Keep (4,2,1/2); sing.
<b>Total</b>		<b>204</b>	<b>117</b>	

**Exhibit D7.2 Covariates for 2003 NSDUH Person Weights (res.sdu.ps),  
Model Group 7: West South Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>17</b>	<b>17</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>60</b>	<b>60</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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 (5 levels)	4*5	12	12	All levels present.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
<b>Three-Factor Effects</b>		<b>85</b>	<b>84</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	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 levels) × Hispanicity	4*3*2	6	5	Coll. (2,2,1) & (2,3,1); conv.
State × Race (3 levels) × Gender	4*3*2	6	6	All levels present.
State × Hispanicity × Gender	4*2*2	3	3	All levels present.
<b>Total</b>		<b>162</b>	<b>161</b>	

**Exhibit D7.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 7: West South Central**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>35</b>	<b>34</b>	
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 (5 levels)	5	4	4	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); zero.
%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.
<b>Two-Factor Effects</b>		<b>122</b>	<b>112</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × 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	4	All levels present.
%Owner-Occupied × 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 (5 levels)	4*5	12	12	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	3	Drop (2,1), (3,1); zero. Drop (4,1); sing.
State × %Owner-Occupied	4*3	6	6	All levels present.
State × Rent/housing	4*5	12	6	Drop (3,4); zero. Drop (4,4), (2,3), (2,4), (3,2), (3,3); sing.
<b>Three-Factor Effects</b>		<b>85</b>	<b>67</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Coll. (1/2/3/4,2,1) & (1/2/3/4,3,1); hier
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); hier.
State × Age × Race (3 levels)	4*5*3	24	18	Coll. (3,3,2) & (3,3,3); sing. Coll. (2,1/2,2) & (2,1/2,3), (3,1/2,2) & (3,1/2,3); (2,1/2/4,2) & (2,1/2/4,3), (2,1/2,2) & (3,1/2,3); conv.
State × Age × Hispanicity	4*5*2	12	11	Drop (3,4,1); sing.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4*3*2	6	2	Coll. (1/2/3,2,1) & (1/2/3,3,1); hier. Drop (2,2/3,1); conv.
State × Race (3 levels) × Gender	4*3*2	6	5	Coll. (2,2,1) & (2,3,1); conv.
State × Hispanicity × Gender	4*2*2	3	2	Drop (2,1,1); conv.
<b>Total</b>		<b>242</b>	<b>213</b>	

**Exhibit D7.4 Covariates for 2003 NSDUH Person Weights (res.per.nr),  
Model Group 7: West South Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>35</b>	<b>34</b>	
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 (5 levels)	5	4	4	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); zero.
%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.
<b>Two-Factor Effects</b>		<b>122</b>	<b>113</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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	4	All levels present.
%Owner-Occupied × 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 (5 levels)	4*5	12	12	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	3	Drop (2/3,1); zero. Drop (4,1); sing.
State × %Owner-Occupied	4*3	6	6	All levels present.
State × Rent/housing	4*5	12	6	Drop (3,4); zero. Drop (4,4), (2,3/4), (3,2/3); sing.
<b>Three-Factor Effects</b>		<b>85</b>	<b>52</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	0	Drop all.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	4*5*3	24	19	Coll. (3,3,2) & (3,3,3); sing. Coll. (2,1/2/3/4,2) & (2,1/2/3/4,3); conv.
State × Age × Hispanicity	4*5*2	12	0	Drop all.
State × Age × Gender	4*5*2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4*3*2	6	0	Drop all.
State × Race (3 levels) × Gender	4*3*2	6	4	Coll. (2/3,2,1) & (2/3,3,1); conv.
State × Hispanicity × Gender	4*2*2	3	3	All levels present.
<b>Total</b>		<b>242</b>	<b>199</b>	

**Exhibit D7.5 Covariates for 2003 NSDUH Person Weights (res.per.ps),  
Model Group 7: West South Central**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>18</b>	<b>18</b>	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>67</b>	<b>67</b>	
Age × Race (3 levels)	6*3	10	10	All levels present.
Age × Hispanicity	6*2	5	5	All levels present.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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*6	15	15	All levels present.
State × Race (5 levels)	4*5	12	12	All levels present.
State × Hispanicity	4*2	3	3	All levels present.
State × Gender	4*2	3	3	All levels present.
<b>Three-Factor Effects</b>		<b>102</b>	<b>63</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	0	Drop all; zero/sing./conv.
Age × Race (3 levels) × Gender	6*3*2	10	10	All levels present.
Age × Hispanicity × Gender	6*2*2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Drop (3,1,1); conv.
State × Age × Race (3 levels)	4*6*3	30	10	Coll. (2,1/2/3/4/5,2) & (2,1/2/3/4/5,3); sing./conv. Coll. (4,1/2/3/4/5,2) & (4,1/2/3/4/5,3); conv. Drop (3,*,*); sing./conv.
State × Age × Hispanicity	4*6*2	15	12	Drop (2,5,1), (3,4/5,1); sing.
State × Age × Gender	4*6*2	15	15	All levels present.
State × Race (3 levels) × Hispanicity	4*3*2	6	2	Coll. (2,2,1) & (2,3,1); zero. Coll. (3,2,1) & (3,3,1); conv. Drop (4,*,*); conv.
State × Race (3 levels) × Gender	4*3*2	6	6	All levels present.
State × Hispanicity × Gender	4*2*2	3	2	Drop (2,1,1); conv.
<b>Total</b>		<b>187</b>	<b>148</b>	





**Appendix D8: Model Group 8: Mountain**  
(Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming, Arizona)



**Table D.8a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 8: Mountain)**

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwisor			Nominal	Realized
<i>res.sdu.nr</i>	1.86%	2.71%	0.35%	1.48336	408	(1.01, 1.10)	(1.01, 1.10)
	0.81%	0.67%	0.02%	1.47374	124	(1.00, 1.40)	(1.00, 1.40)
						(1.01, 1.11)	(1.01, 1.10)
<i>res.sdu.ps</i>	0.81%	0.67%	0.02%	1.47374	302	(0.28, 1.46)	(0.29, 1.41)
	2.60%	3.75%	0.60%	1.59725	279	(0.20, 5.00)	(0.20, 4.80)
						(0.44, 1.73)	(0.47, 1.67)
<i>sel.per.ps</i>	4.33%	6.00%	1.33%	2.95198	422	(0.20, 2.00)	(0.24, 2.00)
	1.61%	2.72%	0.38%	3.45071	299	(0.20, 2.00)	(0.21, 2.00)
						(0.90, 2.75)	(0.90, 2.75)
<i>res.per.nr</i>	1.72%	2.82%	0.43%	3.49762	422	(1.00, 2.15)	(1.00, 2.13)
	0.95%	1.58%	0.16%	3.99665	297	(1.00, 2.15)	(1.00, 2.14)
						(1.20, 1.81)	(1.20, 1.81)
<i>res.per.ps</i>	1.07%	2.11%	0.24%	3.99665	347	(0.20, 1.30)	(0.20, 1.30)
	1.61%	4.67%	0.69%	4.48259	238	(0.20, 2.50)	(0.20, 2.50)
						(0.80, 1.14)	(0.80, 1.14)

<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight (Model Group 8: Mountain)**

	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>
Minimum	39	0.50	81	0.20	21	1.01	21	0.20	17	0.54	17	0.10	7
1%	95	0.98	100	0.46	89	1.01	95	0.38	90	0.97	96	0.20	76
5%	103	1.01	107	0.80	115	1.01	152	0.57	154	1.00	170	0.32	138
10%	107	1.02	113	0.90	132	1.01	229	0.72	227	1.02	249	0.70	216
25%	228	1.04	240	1.00	239	1.09	412	0.87	410	1.05	442	0.94	408
Median	345	1.06	360	1.11	422	1.34	927	1.02	882	1.12	953	1.01	933
75%	622	1.08	650	1.24	775	4.74	1,936	1.15	1,963	1.25	2,228	1.10	2,205
90%	835	1.11	918	1.44	1,130	7.91	4,575	1.34	4,355	1.44	5,057	1.30	5,076
95%	1,012	1.14	1,077	1.62	1,359	10.86	6,330	1.55	6,437	1.57	7,772	1.41	8,154
99%	1,322	1.21	1,412	2.28	1,868	12.80	12,805	1.92	14,043	1.93	17,950	1.94	17,140
Maximum	3,018	2.26	2,917	4.80	5,519	25.69	27,178	4.86	41,461	4.51	60,796	2.50	83,961
<i>n</i>	13,800	13,033	13,033	13,033	13,033	8,571	8,571	8,571	8,571	7,260	7,260	7,260	7,260
Max/Mean	6.77	-	6.17	-	10.04	-	15.28	-	22.76	-	28.27	-	39.04

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.

<sup>1</sup> *sel.sdu.des* refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

# Model Group 8 Overview

## Dwelling Unit Nonresponse

For one-factor effects, College Dorm had to be collapsed with Other Group Quarter due to convergence problems. Out of 26 proposed one-factor effects, 25 were included in the model.

For two-factor effects, all levels were present in the percent Owner-occupied  $\times$  percent Hispanic and State  $\times$  Quarter interactions. All the others were affected by variable collapsing or dropping. Out of 158 proposed variables, 99 were included in the model.

All 224 proposed three-factor effects were dropped.

In the final model, a total of 124 variables were included; see Exhibit D8.1.

## Dwelling Unit Poststratification

All 21 proposed one-factor effects were included in the model.

All 112 proposed two-factor effects were included in the model.

For three-factor effects, variable collapsing was present in the Age  $\times$  Race  $\times$  Hispanicity, State  $\times$  Age  $\times$  Race, State  $\times$  Race  $\times$  Hispanicity, and State  $\times$  Race  $\times$  Gender interactions. Out of 169 proposed variables, 146 were included in the model.

In the final model, a total of 279 variables were included; see Exhibit D8.2.

## Selected Person-Level Poststratification

All 39 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the percent Owner-occupied  $\times$  percent Black, Rent/housing  $\times$  percent Black, State  $\times$  Race, State  $\times$  Hispanicity, State  $\times$  percent Black, State  $\times$  percent Owner-occupied, and State  $\times$  Rent/housing interactions. Out of 214 proposed variables, 160 were included in the model.

For three-factor effects, all levels are present in the Age  $\times$  Hispanicity  $\times$  Gender and State  $\times$  Age  $\times$  Gender interactions. All the others were affected by variable collapsing or dropping. Out of 169 proposed variables, 100 were included in the model.

In the final model, a total of 299 variables were included; see Exhibit D8.3.

## **Respondent Person-Level Nonresponse**

All 39 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the percent Owner-occupied  $\times$  percent Black, percent Owner-occupied  $\times$  Rent/housing, Rent/housing  $\times$  percent Black, State  $\times$  Race, State  $\times$  percent Black, State  $\times$  percent Hispanic, State  $\times$  percent Owner-occupied, and State  $\times$  Rent/housing interactions. Out of 214 proposed variables, 164 were included in the model.

For three-factor effects, all levels are present in the Age  $\times$  Hispanicity  $\times$  Gender, State  $\times$  Age  $\times$  Gender, and State  $\times$  Hispanicity  $\times$  Gender interactions. All the others were affected by variable collapsing or dropping. Out of 169 proposed variables, 94 were included in the model.

In the final model, a total of 297 variables were included; see Exhibit D8.4.

## **Respondent Person-Level Poststratification**

All 22 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing was present in the State  $\times$  Race interaction. Out of 123 proposed variables, 120 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age  $\times$  Hispanicity  $\times$  Gender and State  $\times$  Hispanicity  $\times$  Gender interactions. Out of 202 proposed variables, 96 were included in the model.

In the final model, a total of 238 variables were included; see Exhibit D8.5.

**Exhibit D8.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),  
Model Group 8: Mountain**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>26</b>	<b>25</b>	
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.
<b>Two-Factor Effects</b>		<b>158</b>	<b>99</b>	
%Owner-Occupied × %Black	3*3	4	2	Drop (3,1); zero. Drop (2,1); sing.
%Owner-Occupied × %Hispanic	3*3	4	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	7	Coll. (3,2) & (3,3); conv.
Rent/housing × %Black	3*5	8	3	Drop (1,1), (1,2), (2,1), (3,1), (4,1); zero. Drop (2,2); conv.
Rent/housing × %Hispanic	3*5	8	7	Drop (1,1); zero.
State × Quarter	8*4	21	21	All levels present.
State × Population Density	8*4	21	16	Drop (2/3/4/5/7,1); zero.
State × Group Quarter	8*3	14	1	Coll. (*,1) & (*2); hier. Drop (2/4/7,*); zero. Drop (1/3/5,*); conv.
State × %Black	8*3	14	2	Drop(1/3/4/5/6/7,1), (1/3/6,2); zero. Drop (4/5/7,2); conv.
State × %Hispanic	8*3	14	11	Drop (3,1), (6,1), (7,1); zero.
State × %Owner-Occupied	8*3	14	12	Drop (3,3); sing. Coll. (7,2) & (7,3); conv.
State × Rent/housing	8*5	28	13	Drop(1/4/5,1), (3/4/5,2), (3/4/7,3), (3/6/7,4); zero. Drop (3,1), (7,2), (6,3); sing.
<b>Three-Factor Effects</b>		<b>224</b>	<b>0</b>	
State × %Owner-Occupied × %Black	8*3*3	28	0	Drop all.
State × %Owner-Occupied × %Hispanic	8*3*3	28	0	Drop all.
State × %Owner-Occupied × Rent/housing	8*3*5	56	0	Drop all.
State × Rent/housing × %Black	8*3*5	56	0	Drop all.
State × Rent/housing × %Hispanic	8*3*5	56	0	Drop all.
<b>Total</b>		<b>408</b>	<b>124</b>	



**Exhibit D8.2 Covariates for 2003 NSDUH Person Weights (res.sdu.ps),  
Model Group 8: Mountain**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>21</b>	<b>21</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>112</b>	<b>112</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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 (5 levels)	8*5	28	28	All levels present.
State × Hispanicity	8*2	7	7	All levels present.
State × Gender	8*2	7	7	All levels present.
<b>Three-Factor Effects</b>		<b>169</b>	<b>146</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Coll. (1/2/3/4,2,1) & (1/2/3/4,3,1); conv.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	8*5*3	56	45	Coll. (4,1,2) & (4,1,3); zero; Coll. (6,3,2) & (6,3,3); conv. Coll. (3/7/8,2,2) & (3/7/8,2,3); conv. Repeat for age=3,4.
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 levels) × Hispanicity	8*3*2	14	8	Coll. (3/4,2,1) & (3/4,3,1); zero. Coll. (6/7/8, 2,1) & (2/6/7/8,3,1); conv.
State × Race (3 levels) × Gender	8*3*2	14	12	Coll. (3/8,2,1) & (3/8,3,1); conv.
State × Hispanicity × Gender	8*2*2	7	7	All levels present.
<b>Total</b>		<b>302</b>	<b>279</b>	

**Exhibit D8.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 8: Mountain**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>39</b>	<b>39</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>214</b>	<b>160</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner-Occupied × %Black	3*3	4	2	Drop (3,1); zero. Drop (2,1); sing.
%Owner-Occupied × %Hispanic	3*3	4	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	4	Drop (1,1), (1,2), (2,1), (4,1); zero.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	8*4	21	21	All levels present.
State × Age	8*5	28	28	All levels present.
State × Race (5 levels)	8*5	28	18	Coll. (1/3/6/7, 3) & (1/3/6/7,4), (3/6/7,2) & (3/6/7,5), (2,2) & (2,3) & (2,4), (5,4) & (5,5); conv.
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), (3,1/2), (5,1), (6,1/2), (7,1); zero cnt.
State × %Hispanic	8*3	14	11	Drop (3,1), (6,1), (7,1); zero.
State × %Owner-Occupied	8*3	14	7	Drop (3,2); sing; Coll. (1/2/4/5/6/7,2) & (1/2/4/5/6/7,3); conv.
State × Rent/housing	8*5	28	12	Drop (1,1), (3,2/3/4), (5,1/2), (4,1/2/3), (6,4), (7,3/4); zero. Drop (3,1), (6,3), (7,2); sing. Drop (2,4); conv.
<b>Three-Factor Effects</b>		<b>169</b>	<b>100</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	1	Coll. (1,*1) & (2,*1), drop remainder; conv.
Age × Race (3 levels) × Gender	5*3*2	8	3	Coll. (2/3/4,2,1) & (2/3/4,3,1); zero. Drop (1,*1); conv.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	8*5*3	56	24	Coll. (2/4/5/6,1,2) & (2/4/5/6,1,3), repeat for age=1,2,3,4. Coll. (1,1/2/4,2) & (1,1/2/4,3). Coll. (3,2/3/4,2) & (3,2/3/4,3). Coll.(7,1,2) & (7,1,3). Drop remainder; sing./zero/conv.
State × Age × Hispanicity	8*5*2	28	22	Drop (3,4,1); zero. Drop (6,4,1); sing. Drop (7,3/4,1), (3,3,1); conv. Coll. (3,1,1) & (3,2,1); conv.
State × Age × Gender	8*5*2	28	28	All levels present.
State × Race (3 levels) × Hispanicity	8*3*2	14	5	Coll. (6/7,2,1) & (6/7,3,1); zero. Drop (2/3,2,1); zero. Coll. (2/4/5,2,1) & (2/4/5,3,1); conv. Drop (2/3,3,1); conv.
State × Race (3 levels) × Gender	8*3*2	14	6	Coll. (3/6,2,1) & (3/6,3,1); zero. Coll. (1/2/4/5,2,1) & (1/2/4/5,3,1); conv. Drop (7,**) ; conv.
State × Hispanicity × Gender	8*2*2	7	6	Drop (3,1,1); conv.
<b>Total</b>		<b>422</b>	<b>299</b>	

**Exhibit D8.4 Covariates for 2003 NSDUH Person Weights (res.per.nr),  
Model Group 8: Mountain**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>39</b>	<b>39</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>214</b>	<b>164</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × Gender	3*2	2	2	All levels present.
Hispanicity × Gender	2*2	1	1	All levels present.
%Owner-Occupied × %Black	3*3	4	2	Drop (3,1); zero. Drop (2,1); sing.
%Owner-Occupied × %Hispanic	3*3	4	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	7	Coll. (2,1) & (3,1); conv.
Rent/housing × %Black	3*5	8	3	Drop (1,1), (1,2), (2,1), (3,1), (4,1); zero.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	8*4	21	21	All levels present.
State × Age	8*5	28	28	All levels present.
State × Race (5 levels)	8*5	28	20	Coll. (1,2) & (1,5); conv. Repeat for all states. Coll. (1,3) & (1,4); conv.
State × Hispanicity	8*2	7	7	All levels present.
State × Gender	8*2	7	7	All levels present.
State × %Black	8*3	14	4	Drop (2/3/6,*), (5/7,1); zero. Drop (4,1), (7,2); sing.
State × %Hispanic	8*3	14	9	Coll. (2,1) & (2,2), (4,1) & (4,2); conv. Drop (3/6/7,1); zero.
State × %Owner-Occupied	8*3	14	10	Coll. (2/3/6/7,2) & (2/3/6/7,3); conv.
State × Rent/housing	8*5	28	13	Drop (1,1), (3,2/3/4), (4,1/2/3) (5,1/2), (7,3/4), (6,4); zero. Drop (3,1), (6,3), (7,2); sing.
<b>Three-Factor Effects</b>		<b>169</b>	<b>94</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Drop (4,2,1); zero. Coll.(3,2,1) & (3,3,1); sing. Coll. (1/2,2,1) & (1/2,3,1); conv.
Age × Race (3 levels) × Gender	5*3*2	8	3	Coll. (1,2,1) & (1,3,1); conv. Repeat for all age levels. Drop (4,*,*); conv.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	8*5*3	56	12	Coll. (1,1/2/3/4,2) & (1,1/2/3/4,3); (4,1/2/3/4,2) & (4,1/2/3/4,3), (2,1/2,2) & (2,1/2,3), (2,3,3) & (2,4,3); (5,3,2) & (5,3,3); conv. Drop (2,3,2); zero. Drop all age*race for state=3,5,6,7.
State × Age × Hispanicity	8*5*2	28	24	Drop (3,3/4,1); zero. Drop (6,4,1); sing. Drop (3,2,1); conv.
State × Age × Gender	8*5*2	28	28	All levels present.
State × Race (3 levels) × Hispanicity	8*3*2	14	6	Drop (2/3/6/7, 2,1); zero. Coll. (1/5,2,1) & (1/5,3,1); conv. Drop (4,*,*); conv.
State × Race (3 levels) × Gender	8*3*2	14	5	Drop (3/6,2,1); zero. Coll. (1/2/4/5/7, 2,1) & (1/2/4/5/7,3,1); conv.
State × Hispanicity × Gender	8*2*2	7	7	All levels present.
<b>Total</b>		<b>422</b>	<b>297</b>	

**Exhibit D8.5 Covariates for 2003 NSDUH Person Weights (res.per.ps),  
Model Group 8: Mountain**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>22</b>	<b>22</b>	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>123</b>	<b>120</b>	
Age × Race (3 levels)	6*3	10	10	All levels present.
Age × Hispanicity	6*2	5	5	All levels present.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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*6	35	35	All levels present.
State × Race (5 levels)	8*5	28	25	Coll. (3,2) & (3,5), (3,3) & (3,4), (7,2) & (7,5); conv.
State × Hispanicity	8*2	7	7	All levels present.
State × Gender	8*2	7	7	All levels present.
<b>Three-Factor Effects</b>		<b>202</b>	<b>96</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	0	Drop all; sing, conv.
Age × Race (3 levels) × Gender	6*3*2	10	4	Coll. (1/2/3/4), 2,1) & (1/2/3/4, 3,1), drop (5,* ,1); conv.
Age × Hispanicity × Gender	6*2*2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	8*6*3	70	26	Drop (* ,5,*), (7,3,*), (7,4,*), coll. (1,1/2/3/4,2) & (1,1/2/3/4,3), repeat for all states; sing./zero/conv.
State × Age × Hispanicity	8*6*2	35	18	Drop (1/2/4/5,5,1), (3,3/4,1), (6,* ,1), (7,* ,1); sing, zero/conv.
State × Age × Gender	8*6*2	35	28	Drop (* ,5,1); sing, zero, conv.
State × Race (3 levels) × Hispanicity	8*3*2	14	0	Drop all; sing./zero, conv.
State × Race (3 levels) × Gender	8*3*2	14	7	Coll. (1,2,1) & (1,3,1), repeat for all states; conv.
State × Hispanicity × Gender	8*2*2	7	7	All levels present.
<b>Total</b>		<b>347</b>	<b>238</b>	



**Appendix D9: Model Group 9: Pacific**  
(Alaska, Hawaii, Oregon, Washington, California)



**Table D.9a 2003 NSDUH Person Weight GEM Modeling Summary (Model Group 9: Pacific)**

Modeling Step <sup>1</sup>	Extreme Weight Proportions			UWE <sup>2</sup>	# XVAR <sup>3</sup>	Bounds <sup>4</sup>	
	Unweighted	Weighted	Outwisor			Nominal	Realized
<i>res.sdu.nr</i>	3.84%	5.83%	0.36%	1.38387	255	(1.01, 1.29)	(1.01, 1.28)
	2.19%	3.18%	0.18%	1.41946	121	(1.00, 4.38)	(1.00, 4.24)
						(1.01, 1.19)	(1.01, 1.19)
<i>res.sdu.ps</i>	2.19%	3.18%	0.18%	1.41947	197	(0.24, 2.90)	(0.25, 2.89)
	1.36%	2.43%	0.57%	1.45889	196	(0.24, 4.92)	(0.25, 4.91)
						(0.72, 2.33)	(0.74, 2.30)
<i>sel.per.ps</i>	2.97%	5.85%	1.35%	2.68351	287	(0.67, 1.80)	(0.68, 1.80)
	1.44%	3.10%	0.54%	2.75514	248	(0.40, 2.91)	(0.41, 2.91)
						(0.60, 1.84)	(0.60, 1.83)
<i>res.per.nr</i>	1.49%	3.18%	0.58%	2.81474	287	(1.00, 2.20)	(1.00, 2.20)
	1.72%	4.38%	0.72%	3.30862	236	(1.00, 3.50)	(1.00, 3.42)
						(1.30, 1.34)	(1.30, 1.30)
<i>res.per.ps</i>	1.76%	4.26%	0.81%	3.30862	227	(0.20, 1.80)	(0.20, 1.70)
	0.72%	2.36%	0.39%	3.46276	182	(0.20, 2.75)	(0.20, 2.67)
						(0.90, 1.05)	(0.90, 0.90)

<sup>1</sup> For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.

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

<sup>3</sup> Number of proposed covariates on top line, and number finalized after modeling.

<sup>4</sup> 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 for the 2003 NSDUH Person Weight  
(Model Group 9: Pacific)**

	<i>sel.sdu.des</i> <sup>1</sup>	<i>res.sdu.nr</i> <sup>1</sup>		<i>res.sdu.ps</i> <sup>1</sup>		<i>sel.per.des</i> <sup>1</sup>		<i>sel.per.ps</i> <sup>1</sup>		<i>res.per.nr</i> <sup>1</sup>		<i>res.per.ps</i> <sup>1</sup>	
	1-6 <sup>2</sup>	7 <sup>3</sup>	1-7 <sup>3</sup>	8 <sup>4</sup>	1-8 <sup>4</sup>	10 <sup>5</sup>	1-10 <sup>5</sup>	11 <sup>5</sup>	1-11 <sup>5</sup>	12 <sup>6</sup>	1-12 <sup>6</sup>	13 <sup>6</sup>	1-13 <sup>6</sup>
Minimum	32	0.36	57	0.22	33	1.01	34	0.30	46	0.66	47	0.10	11
1%	87	1.00	95	0.52	96	1.01	112	0.56	103	1.00	115	0.20	97
5%	105	1.02	113	0.82	123	1.01	168	0.71	165	1.01	186	0.21	177
10%	136	1.03	143	0.93	150	1.01	248	0.78	253	1.03	275	0.70	260
25%	225	1.06	263	1.03	291	1.18	931	0.89	889	1.07	1,006	0.97	798
Median	1,248	1.08	1,073	1.12	1,310	1.33	2,086	1.00	2,081	1.15	2,293	1.04	2,341
75%	1,537	1.14	1,686	1.23	1,910	5.31	5,154	1.11	4,699	1.31	5,022	1.12	4,919
90%	1,705	1.21	1,927	1.39	2,217	7.36	11,192	1.26	11,602	1.52	14,493	1.32	14,956
95%	1,744	1.32	2,110	1.52	2,472	10.74	16,029	1.42	16,505	1.67	21,307	1.43	21,822
99%	1,828	1.59	2,711	1.96	3,176	13.13	23,677	1.81	26,431	2.29	38,515	1.69	38,405
Maximum	6,995	10.85	4,168	4.91	9,002	18.86	91,430	3.18	52,653	3.42	90,405	2.67	110,606
<i>n</i>	14,511	13,128	13,128	13,127	13,127	8,934	8,934	8,934	8,934	7,264	7,264	7,264	7,264
Max/Mean	7.00	-	3.77	-	7.17	-	21.67	-	12.31	-	17.18	-	21.02

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.

<sup>1</sup> sel.sdu.des refers to selected screener dwelling 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.

<sup>2</sup> Based on eligible dwelling units.

<sup>3</sup> Based on screener-complete dwelling units.

<sup>4</sup> Based on screener-complete dwelling units, occupants verified eligible.

<sup>5</sup> Based on selected persons.

<sup>6</sup> Based on questionnaire-complete persons.

# Model Group 9 Overview

## Dwelling Unit Nonresponse

All 23 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Rent/housing  $\times$  percent Black, State  $\times$  Population Density, State  $\times$  Group Quarter, State  $\times$  percent Black, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions. Out of 104 proposed variables, 76 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 128 proposed variables, 22 were included in the model.

In the final model, a total of 121 variables were included; see Exhibit D9.1.

## Dwelling Unit Poststratification

All 18 proposed one-factor effects were included in the model.

All 73 proposed two-factor effects were included in the model.

For three-factor effects, all the variables were kept in the model except black Hispanic was collapsed with Other Hispanic in Oregon due to the zero sample. Out of 106 proposed variables, 105 were included in the model.

In the final model, a total of 196 variables were included; see Exhibit D9.2.

## Selected Person-Level Poststratification

All 36 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the Rent/housing  $\times$  percent Black, Race  $\times$  Hispanicity, State  $\times$  percent Black, State  $\times$  percent Hispanic, State  $\times$  percent Owner-occupied, and State  $\times$  Rent/housing interactions. Out of 145 proposed variables, 122 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity and State  $\times$  Race  $\times$  Hispanicity due to hierarchical rule, State  $\times$  Age  $\times$  Race due to convergent problems. Out of 106 proposed variables, 90 were included in the model.

In the final model, a total of 248 variables were included; see Exhibit D9.3.

## **Respondent Person-Level Nonresponse**

All 36 proposed one-factor effects were included in the model.

For two-factor effects, variable collapsing or dropping was present in the percent Rent/housing  $\times$  percent Black, State  $\times$  percent Black, State  $\times$  percent Hispanic, and State  $\times$  Rent/housing interactions and State  $\times$  percent of Owner-occupied. Out of 145 proposed variables, 124 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity, State  $\times$  Age  $\times$  Race, State  $\times$  Age  $\times$  Hispanicity, State  $\times$  Race  $\times$  Hispanicity, and State  $\times$  Race  $\times$  Gender interactions. Out of 106 proposed variables, 76 were included in the model.

In the final model, a total of 236 variables were included; see Exhibit D9.4.

## **Respondent Person-Level Poststratification**

All 19 proposed one-factor effects were included in the model.

For two-factor effects, Black was collapsed with Other for Hispanicity and Native Indian was collapsed with Asian in the state of California. Out of 81 proposed variables, 79 were included in the model.

For three-factor effects, variable collapsing or dropping was present in the Age  $\times$  Race  $\times$  Hispanicity, Race  $\times$  Hispanicity  $\times$  Gender, Age  $\times$  Race  $\times$  Gender, State  $\times$  Age  $\times$  Race, State  $\times$  Age  $\times$  Hispanicity, State  $\times$  Age  $\times$  Gender, and State  $\times$  Race  $\times$  Gender. None of State  $\times$  Race  $\times$  Hispanicity interactions were kept due to convergent problem. Out of 127 proposed variables, 84 were included in the model.

In the final model, a total of 182 variables were included; see Exhibit D9.5.

**Exhibit D9.1 Covariates for 2003 NSDUH Person Weights (res.sdu.nr),  
Model Group 9: Pacific**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>23</b>	<b>23</b>	
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.
<b>Two-Factor Effects</b>		<b>104</b>	<b>76</b>	
%Owner-Occupied × %Black	3*3	4	4	All levels present.
%Owner-Occupied × %Hispanic	3*3	4	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	5	Drop (1,1), (2,1); zero. Drop (4,1); sing.
Rent/housing × %Hispanic	3*5	8	8	All levels present.
State × Quarter	5*4	12	12	All levels present.
State × Population Density	5*4	12	10	Drop (1,1), (2,1); zero
State × Group Quarter	5*3	8	3	Drop (3,2); zero. Drop (3,1); conv. Coll. (1,1) & (1,2), (2,1) & (2,2), (5,1) & (5,2); conv.
State × %Black	5*3	8	4	Drop (1,1), (2,1), (3,1); zero. Drop (5,1); sing.
State × %Hispanic	5*3	8	5	Drop (1,1), (2,1); zero. Drop (5,1); sing.
State × %Owner-Occupied	5*3	8	7	Drop (5,3); sing.
State × Rent/housing	5*5	16	6	Drop (2,1), (2,4), (3,2), (3,3), (3,4), (5,1); zero. Drop (1,4), (3,1), (4,3), (4,4); sing.
<b>Three-Factor Effects</b>		<b>128</b>	<b>22</b>	
State × %Owner-Occupied × %Black	5*3*3	16	5	Drop (1, *, 1), (2, *, 1), ((3, *, 1); zero. Drop others; sing./conv.
State × %Owner-Occupied × %Hispanic	5*3*3	16	10	Drop (1, *, 1), (2, *, 1), (3,3,1); zero. Drop (5,3,1); sing.
State × %Owner-Occupied × Rent/housing	5*3*5	32	3	Keep (1,2,1), (2,2,1), (2,3,1). Drop others; zero/sing./conv.
State × Rent/housing × %Black	5*3*5	32	1	Keep (1,2,2). Drop others; zero/sing./conv.
State × Rent/housing × %Hispanic	5*3*5	32	3	Keep (1,2,2), (2,2,2), (2,3,2). Drop others; zero/sing./conv.
<b>Total</b>		<b>255</b>	<b>121</b>	

**Exhibit D9.2 Covariates for 2003 NSDUH Person Weights (res.sdu.ps),  
Model Group 9: Pacific**

<b>Variables</b>	<b>Levels</b>	<b>Proposed</b>	<b>Final</b>	<b>Comments</b>
<b>One-Factor Effects</b>		<b>18</b>	<b>18</b>	
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 (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>73</b>	<b>73</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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 (5 levels)	5*5	16	16	All levels present.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
<b>Three-Factor-Effects</b>		<b>106</b>	<b>105</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	8	All levels present.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	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 levels) × Hispanicity	5*3*2	8	7	Coll. (3,2,1) & (3,3,1) zero.
State × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
<b>Total</b>		<b>197</b>	<b>196</b>	

**Exhibit D9.3 Covariates for 2003 NSDUH Person Weights (sel.per.ps),  
Model Group 9: Pacific**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>36</b>	<b>36</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>145</b>	<b>122</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1) conv.
Race (3 levels) × 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	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	5	Drop (1,1), (2,1); zero. Drop (4,1); sing.
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 (5 levels)	5*5	16	15	Coll. (2,3) & (2,4); 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), (3,1); zero; Drop (5,1); sing.
State × %Hispanic	5*3	8	5	Drop (1,1), (2,1); zero; Drop (5,1); sing.
State × %Owner-Occupied	5*3	8	7	Drop (2,3); sing.
State × Rent/housing	5*5	16	6	Drop (2,1), (2,4), (3,2), (3,3), (3,4), (5,1); zero; Drop (1,3), (1,4), (2,3), (3,1); sing.
<b>Three-Factor Effects</b>		<b>106</b>	<b>90</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Coll. (*,2,1) & (*,3,1), repeat for all age levels; hier.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (3,1,1); hier.
State × Age × Race (3 levels)	5*5*3	32	25	Coll. (1,4,2) & (1,4,3), (2,3,2) & (2,3,3), (2,4,2) & (2,4,3); sing. Coll. (3,*2) & (3,*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 levels) × Hispanicity	5*3*2	8	4	Coll. (1,2,1) & (1,3,1), repeat for all states; hier.
State × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
<b>Total</b>		<b>287</b>	<b>248</b>	

**Exhibit D9.4 Covariates for 2003 NSDUH Person Weights(res.per.nr),  
Model Group 9: Pacific**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>36</b>	<b>36</b>	
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 (5 levels)	5	4	4	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/housing Value	5	4	4	All levels present.
<b>Two-Factor Effects</b>		<b>145</b>	<b>124</b>	
Age × Race (3 levels)	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 levels) × Hispanicity	3*2	2	2	All levels present.
Race (3 levels) × 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	4	All levels present.
%Owner-Occupied × Rent/housing	3*5	8	8	All levels present.
Rent/housing × %Black	3*5	8	5	Drop (1,1), (2,1); zero; drop (4,1); sing.
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 (5 levels)	5*5	16	16	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), (3,1); zero; Drop (5,1); sing.
State × %Hispanic	5*3	8	5	Drop (1,1), (2,1); zero; Drop (5,1) sing.
State × %Owner-Occupied	5*3	8	7	Drop (2,3); sing.
State × Rent/housing	5*5	16	6	Drop (2,1), (2,4), (3,2), (3,3), (3,4), (5,1); zero; Drop (1,3), (1,4), (2,3), (3,1); sing.
<b>Three-Factor Effects</b>		<b>106</b>	<b>76</b>	
Age × Race (3 levels) × Hispanicity	5*3*2	8	4	Coll. (4,2,1) & (4,3,1); sing. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
Age × Race (3 levels) × Gender	5*3*2	8	8	All levels present.
Age × Hispanicity × Gender	5*2*2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	2	All levels present.
State × Age × Race (3 levels)	5*5*3	32	12	Coll. (1,1,2) & (1,1,3), repeat for all state and age levels; sing./conv. Drop (3,*,*); conv.
State × Age × Hispanicity	5*5*2	16	15	Coll. (2,1,1) & (2,2,1); conv.
State × Age × Gender	5*5*2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5*3*2	8	5	Drop (2,2,1), (3,2,1); zero; Drop (3,3,1); conv.
State × Race (3 levels) × Gender	5*3*2	8	6	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
<b>Total</b>		<b>287</b>	<b>236</b>	

**Exhibit D9.5 Covariates for 2003 NSDUH Person Weights (res.per.ps),  
Model Group 9: Pacific**

Variables	Levels	Proposed	Final	Comments
<b>One-Factor Effects</b>		<b>19</b>	<b>19</b>	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
<b>Two-Factor Effects</b>		<b>81</b>	<b>79</b>	
Age × Race (3 levels)	6*3	10	10	All levels present.
Age × Hispanicity	6*2	5	5	All levels present.
Age × Gender	6*2	5	5	All levels present.
Race (3 levels) × Hispanicity	3*2	2	1	Coll. (2,1) & (3,1); conv.
Race (3 levels) × 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*6	20	20	All levels present.
State × Race (5 levels)	5*5	16	15	Coll. (5,3) & (5,4); conv.
State × Hispanicity	5*2	4	4	All levels present.
State × Gender	5*2	4	4	All levels present.
<b>Three-Factor Effects</b>		<b>127</b>	<b>84</b>	
Age × Race (3 levels) × Hispanicity	6*3*2	10	4	Coll. (1,2,1) & (1,3,1), repeat for all age levels; hier. Drop (5,2/3,1); conv.
Age × Race (3 levels) × Gender	6*3*2	10	9	Coll. (5,2,1) & (5,3,1); conv.
Age × Hispanicity × Gender	6*2*2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3*2*2	2	1	Coll. (2,1,1) & (2,3,1); conv.
State × Age × Race (3 levels)	5*6*3	40	23	Coll. (1,4,2) & (1,4,3), (2,*2) & (2,*3), (3,*2) & (3,*3); conv. Drop (*,5,2), (*,5,3); conv.
State × Age × Hispanicity	5*6*2	20	16	Drop (*,5,1); conv.
State × Age × Gender	5*6*2	20	16	Drop (*,5,1); conv.
State × Race (3 levels) × Hispanicity	5*3*2	8	0	Drop all.
State × Race (3 levels) × Gender	5*3*2	8	6	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	5*2*2	4	4	All levels present.
<b>Total</b>		<b>227</b>	<b>182</b>	





## **Appendix E: Evaluation of Calibration Weights: Response Rates**



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**Table E 2003 NSDUH Weighted Response Rates: United States, District of Columbia, and the 50 States**

Domain	Dwelling Unit					Person Level		Interview Response Rate	
	Selected DUs	Eligible DUs	Completed DUs	Eligibility Rate	Screening Rate	Selected Persons	Respondents	Weight 1-10 <sup>1</sup>	Weight 1-11 <sup>2</sup>
United States	170,762	143,485	130,605	84.16%	90.72%	81,631	67,784	77.39%	77.40%
Alabama	2,071	1,712	1,558	82.59%	91.14%	1,029	879	79.60%	79.56%
Alaska	2,314	1,814	1,666	78.29%	91.97%	1,098	883	75.00%	75.95%
Arizona	2,159	1,757	1,662	76.61%	94.64%	1,057	897	81.20%	79.71%
Arkansas	2,258	1,850	1,767	81.69%	95.53%	1,092	922	79.84%	79.27%
California	7,687	6,858	6,015	86.71%	86.86%	4,471	3,600	73.76%	73.62%
Colorado	2,225	1,855	1,709	83.11%	92.06%	1,103	911	78.79%	79.43%
Connecticut	2,623	2,288	2,073	87.11%	90.56%	1,128	933	76.25%	77.06%
Delaware	2,419	1,936	1,774	77.52%	91.59%	1,105	911	75.12%	76.42%
District of Columbia	3,692	3,078	2,576	83.49%	83.69%	1,116	949	80.38%	80.17%
Florida	10,451	8,453	7,575	78.88%	89.77%	4,414	3,541	73.68%	73.92%
Georgia	2,112	1,734	1,612	82.31%	92.81%	1,088	902	79.46%	79.80%
Hawaii	2,259	1,953	1,767	86.59%	90.25%	1,142	928	73.21%	72.38%
Idaho	1,998	1,596	1,509	79.05%	94.45%	1,112	912	77.63%	77.62%
Illinois	9,163	8,128	6,803	88.80%	83.45%	4,652	3,711	74.36%	74.63%
Indiana	2,046	1,741	1,637	85.04%	94.11%	1,082	903	79.37%	80.10%
Iowa	2,035	1,829	1,721	89.84%	94.16%	993	884	85.81%	86.53%
Kansas	2,042	1,744	1,638	85.50%	93.94%	1,041	875	81.11%	79.81%
Kentucky	2,266	1,991	1,878	88.28%	94.25%	1,102	908	75.69%	74.53%
Louisiana	2,084	1,757	1,637	84.70%	93.12%	1,095	943	81.80%	81.56%
Maine	2,827	2,240	2,045	79.13%	91.21%	1,094	928	82.07%	81.95%
Maryland	1,899	1,673	1,475	88.10%	88.04%	1,000	863	82.58%	82.83%
Massachusetts	2,413	2,129	1,878	88.05%	88.16%	1,220	964	75.04%	73.91%
Michigan	9,000	7,447	6,709	81.95%	90.14%	4,353	3,667	79.06%	78.89%
Minnesota	2,029	1,801	1,673	89.22%	92.73%	1,052	909	82.14%	81.88%
Mississippi	2,196	1,732	1,650	79.16%	95.33%	1,078	899	78.81%	78.17%

DU = dwelling unit

(continued)

<sup>1</sup> Includes DU-level and person-level design weights, DU nonresponse adjustment, and DU poststratification<sup>2</sup> Includes a selected person poststratification weight.

**Table E 2003 NSDUH 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 <sup>1</sup>	Weight 1-11 <sup>2</sup>
Missouri	2,495	2,042	1,912	81.73%	93.64%	1,105	932	81.99%	81.80%
Montana	2,384	1,871	1,766	78.55%	94.40%	1,068	911	79.57%	80.29%
Nebraska	1,996	1,716	1,622	85.97%	94.51%	1,071	918	79.62%	79.79%
Nevada	2,071	1,751	1,663	85.37%	94.91%	1,072	902	79.78%	80.24%
New Hampshire	2,015	1,688	1,568	83.17%	92.94%	1,112	910	76.29%	76.92%
New Jersey	2,564	2,287	1,981	89.19%	86.56%	1,126	883	72.97%	73.51%
New Mexico	2,260	1,822	1,740	80.94%	95.42%	1,132	944	77.03%	77.60%
New York	9,973	8,575	7,205	86.04%	83.97%	4,609	3,634	71.96%	71.91%
North Carolina	2,239	1,852	1,753	82.67%	94.65%	1,086	904	79.21%	78.28%
North Dakota	2,072	1,714	1,619	82.88%	94.57%	977	867	87.43%	86.98%
Ohio	8,874	7,690	7,246	86.62%	94.17%	4,313	3,559	75.91%	76.06%
Oklahoma	2,455	1,972	1,812	80.20%	91.80%	1,042	871	78.62%	77.76%
Oregon	2,102	1,853	1,760	88.24%	94.94%	1,095	912	79.79%	79.19%
Pennsylvania	9,866	8,252	7,482	83.16%	90.76%	4,214	3,572	80.56%	80.18%
Rhode Island	2,255	1,991	1,772	88.52%	88.58%	1,141	914	75.20%	74.30%
South Carolina	2,205	1,807	1,723	81.62%	95.45%	1,109	920	79.64%	79.03%
South Dakota	2,154	1,749	1,660	81.64%	94.78%	980	881	86.26%	86.49%
Tennessee	2,290	1,978	1,864	87.76%	94.27%	1,004	856	79.89%	80.49%
Texas	7,901	6,466	6,079	81.76%	94.03%	4,231	3,566	79.14%	79.34%
Utah	1,623	1,392	1,325	84.47%	95.14%	995	898	87.98%	87.79%
Vermont	2,638	2,047	1,909	77.40%	93.19%	1,092	917	79.87%	80.01%
Virginia	2,168	1,908	1,667	87.17%	87.33%	1,076	907	78.61%	79.08%
Washington	2,475	2,033	1,920	81.85%	94.43%	1,128	941	78.65%	79.22%
West Virginia	2,923	2,384	2,236	81.77%	93.83%	1,058	871	78.86%	78.51%
Wisconsin	2,282	1,793	1,655	76.73%	92.28%	1,046	887	77.76%	78.31%
Wyoming	2,214	1,756	1,659	79.26%	94.48%	1,032	885	84.33%	84.07%

DU = dwelling unit

<sup>1</sup> Includes DU-level and person-level design weights, DU nonresponse adjustment, and DU poststratification

<sup>2</sup> Includes a selected person poststratification weight.

**Appendix F: Evaluation of Calibration Weights: Dwelling  
Unit-Level Percentages of Extreme Values and Outwinsors**





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**Table F 2003 NSDUH Dwelling Unit–Level Percentages of Extreme Values and Outwinors: United States, District of Columbia, and the 50 States**

Domain	n	Before nr <sup>1</sup> (Weight1*…*Weight6)			After nr & Before ps <sup>2</sup> (Weight1*…*Weight7)			After ps (Weight1*…*Weight8)		
		Unweighted	Weighted <sup>3</sup>	Outwinor <sup>4</sup>	Unweighted	Weighted <sup>3</sup>	Outwinor <sup>4</sup>	Unweighted	Weighted <sup>3</sup>	Outwinor <sup>4</sup>
United States	130,605	2.13%	2.69%	0.35%	1.62%	1.93%	0.15%	1.86%	2.69%	0.60%
Alabama	1,558	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.54%	3.12%	0.77%
Alaska	1,666	0.36%	0.62%	0.15%	1.98%	3.23%	0.39%	1.26%	2.50%	0.34%
Arizona	1,662	1.14%	3.45%	0.03%	0.00%	0.00%	0.00%	1.81%	4.55%	0.58%
Arkansas	1,767	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.79%	1.17%	0.12%
California	6,015	4.47%	4.98%	0.41%	2.96%	3.29%	0.21%	1.61%	2.81%	0.73%
Colorado	1,709	0.47%	1.15%	0.54%	1.40%	1.24%	0.09%	2.52%	3.14%	0.67%
Connecticut	2,073	0.39%	0.90%	0.37%	0.63%	0.76%	0.00%	1.45%	2.21%	0.72%
Delaware	1,774	1.69%	3.02%	1.34%	5.86%	6.35%	0.51%	1.07%	2.21%	0.29%
District of Columbia	2,576	0.19%	0.08%	0.01%	0.00%	0.00%	0.00%	0.78%	1.56%	0.26%
Florida	7,575	3.91%	5.98%	1.33%	3.04%	3.40%	0.14%	1.80%	1.75%	0.30%
Georgia	1,612	0.87%	0.76%	0.06%	5.96%	7.45%	0.51%	1.12%	1.43%	0.24%
Hawaii	1,767	0.17%	0.03%	0.00%	0.00%	0.00%	0.00%	2.09%	3.40%	0.83%
Idaho	1,509	4.31%	4.55%	0.39%	2.58%	2.57%	0.14%	3.58%	4.91%	1.05%
Illinois	6,803	1.10%	1.10%	0.04%	2.98%	3.43%	0.38%	0.68%	1.28%	0.14%
Indiana	1,637	0.06%	0.01%	0.01%	0.00%	0.00%	0.00%	2.75%	3.56%	1.03%
Iowa	1,721	0.17%	0.04%	0.06%	0.00%	0.00%	0.00%	3.78%	5.58%	1.60%
Kansas	1,638	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.17%	3.10%	0.83%
Kentucky	1,878	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.33%	1.87%	0.58%
Louisiana	1,637	0.00%	0.00%	0.00%	1.34%	1.72%	0.07%	1.22%	1.56%	0.46%
Maine	2,045	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.37%	2.49%	0.56%
Maryland	1,475	0.00%	0.00%	0.00%	3.46%	4.12%	0.55%	1.42%	3.52%	0.92%
Massachusetts	1,878	0.27%	0.54%	0.16%	0.75%	1.43%	0.49%	1.70%	3.88%	1.20%
Michigan	6,709	0.79%	0.74%	0.08%	0.85%	0.94%	0.05%	2.55%	2.74%	0.53%
Minnesota	1,673	9.38%	9.70%	0.69%	0.00%	0.00%	0.00%	1.20%	2.38%	0.40%
Mississippi	1,650	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.27%	5.78%	1.50%

<sup>1</sup> nr = nonresponse adjustment.

<sup>2</sup> ps = poststratification adjustment.

<sup>3</sup> Weighted extreme value percentage =  $100 * \sum_k w_{ek} / \sum_k w_k$ , where  $w_{ek}$  denotes the weight for extreme values and  $w_k$  denotes the weight for both extreme values and non-extreme values.

<sup>4</sup> Outwinor weight percentage =  $100 * \sum_k (w_{ek} - b_k) / \sum_k w_k$ , where  $b_k$  denotes the cutoff point for defining the extreme weight.

(continued)

**Table F 2003 NSDUH Dwelling Unit–Level Percentages of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States (continued)**

Domain	n	Before nr <sup>1</sup> (Weight1*...*Weight6)			After nr & Before ps <sup>2</sup> (Weight1*...*Weight7)			After ps (Weight1*...*Weight8)		
		Unweighted	Weighted <sup>3</sup>	Outwinsor <sup>4</sup>	Unweighted	Weighted <sup>3</sup>	Outwinsor <sup>4</sup>	Unweighted	Weighted <sup>3</sup>	Outwinsor <sup>4</sup>
Missouri	1,912	8.53%	9.41%	0.40%	0.42%	0.56%	0.02%	3.03%	3.75%	0.70%
Montana	1,766	0.57%	0.65%	0.00%	0.57%	0.65%	0.00%	4.53%	4.31%	1.14%
Nebraska	1,622	4.25%	4.56%	0.17%	1.73%	1.61%	0.06%	1.42%	1.92%	0.35%
Nevada	1,663	0.90%	1.91%	0.97%	0.96%	1.04%	0.03%	1.14%	2.22%	0.39%
New Hampshire	1,568	0.51%	1.24%	0.15%	0.51%	1.05%	0.00%	0.19%	0.56%	0.14%
New Jersey	1,981	0.10%	0.04%	0.04%	1.06%	0.90%	0.00%	2.47%	4.85%	0.89%
New Mexico	1,740	6.67%	7.32%	0.79%	0.00%	0.00%	0.00%	1.49%	2.92%	0.54%
New York	7,205	0.17%	0.24%	0.15%	0.74%	1.02%	0.15%	1.68%	3.29%	0.73%
North Carolina	1,753	0.17%	0.03%	0.07%	0.17%	0.11%	0.02%	2.00%	2.94%	0.87%
North Dakota	1,619	10.19%	11.71%	0.97%	8.59%	10.15%	0.56%	5.31%	7.48%	2.50%
Ohio	7,246	0.19%	0.24%	0.05%	0.35%	0.30%	0.00%	2.43%	2.64%	0.41%
Oklahoma	1,812	2.10%	1.56%	0.17%	0.00%	0.00%	0.00%	1.60%	3.81%	0.65%
Oregon	1,760	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.40%	0.84%	0.18%
Pennsylvania	7,482	0.64%	0.93%	0.21%	2.13%	2.67%	0.36%	1.99%	3.00%	0.42%
Rhode Island	1,772	1.58%	1.03%	0.28%	3.22%	3.37%	0.34%	0.90%	2.89%	1.12%
South Carolina	1,723	10.62%	13.06%	1.14%	3.89%	4.71%	0.36%	1.16%	1.87%	0.63%
South Dakota	1,660	12.53%	13.56%	1.28%	9.94%	10.34%	0.38%	3.67%	6.47%	1.79%
Tennessee	1,864	2.74%	2.53%	0.12%	1.61%	1.49%	0.01%	1.39%	3.23%	0.77%
Texas	6,079	1.35%	1.72%	0.43%	1.30%	1.32%	0.08%	0.87%	1.34%	0.34%
Utah	1,325	0.38%	1.14%	0.58%	0.00%	0.00%	0.00%	2.04%	3.76%	1.11%
Vermont	1,909	5.34%	5.60%	0.25%	0.00%	0.00%	0.00%	1.73%	2.07%	0.29%
Virginia	1,667	0.24%	1.22%	0.72%	0.24%	0.49%	0.00%	0.60%	1.06%	0.21%
Washington	1,920	11.77%	15.13%	1.47%	4.01%	5.17%	0.27%	0.94%	1.24%	0.25%
West Virginia	2,236	2.91%	2.26%	0.29%	0.00%	0.00%	0.00%	1.88%	3.09%	0.37%
Wisconsin	1,655	8.76%	9.25%	1.06%	5.14%	6.30%	0.68%	2.48%	4.02%	1.12%
Wyoming	1,659	0.24%	0.09%	0.09%	0.96%	0.87%	0.02%	3.62%	5.81%	1.75%

<sup>1</sup> nr = nonresponse adjustment.

<sup>2</sup> ps = poststratification adjustment.

<sup>3</sup> Weighted extreme value percentage =  $100 * \sum_k w_{ek} / \sum_k w_k$ , where  $w_{ek}$  denotes the weight for extreme values and  $w_k$  denotes the weight for both extreme values and non-extreme values.

<sup>4</sup> Outwinsor weight percentage =  $100 * \sum_k (w_{ek} - b_k) / \sum_k w_k$ , where  $b_k$  denotes the cutoff point for defining the extreme weight.



## **Appendix G: Evaluation of Calibration Weights: Person-Level Percentages of Extreme Values and Outwinsors**



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**Table G.1 2003 NSDUH Selected Person-Level Percentages of Extreme Values and Outwinors: United States, District of Columbia, and the 50 States**

Domain	n	Before sel.per.ps <sup>1</sup> (Weight1*...*Weight10)			After sel.per.ps <sup>1</sup> (Weight1*...*Weight11)		
		Unweighted	Weighted <sup>2</sup>	Outwinor <sup>3</sup>	Unweighted	Weighted <sup>2</sup>	Outwinor <sup>3</sup>
United States	81,631	3.61%	5.99%	1.40%	1.72%	3.60%	0.71%
Alabama	1,029	3.21%	6.51%	1.71%	0.78%	2.39%	0.55%
Alaska	1,098	3.83%	6.23%	1.46%	2.19%	4.04%	0.89%
Arizona	1,057	2.27%	5.22%	1.11%	1.23%	2.75%	0.26%
Arkansas	1,092	3.30%	5.46%	1.38%	1.19%	1.69%	0.55%
California	4,471	3.13%	6.69%	1.59%	1.48%	3.54%	0.64%
Colorado	1,103	3.08%	4.30%	0.55%	1.63%	2.64%	0.31%
Connecticut	1,128	3.37%	5.25%	0.89%	2.13%	5.02%	1.21%
Delaware	1,105	2.53%	5.97%	1.70%	1.45%	3.38%	1.05%
District of Columbia	1,116	3.32%	5.84%	1.10%	2.06%	5.88%	1.51%
Florida	4,414	2.90%	6.62%	1.43%	1.25%	3.42%	0.65%
Georgia	1,088	2.67%	3.68%	0.68%	1.65%	2.73%	0.81%
Hawaii	1,142	3.85%	6.29%	1.49%	0.88%	2.10%	0.61%
Idaho	1,112	6.12%	9.91%	3.58%	1.35%	2.28%	0.49%
Illinois	4,652	2.30%	4.59%	0.81%	1.98%	3.72%	0.52%
Indiana	1,082	5.55%	7.37%	1.91%	2.22%	3.99%	0.84%
Iowa	993	4.43%	8.92%	3.25%	2.42%	4.85%	1.57%
Kansas	1,041	2.98%	4.02%	0.70%	1.83%	3.00%	0.80%
Kentucky	1,102	2.72%	2.67%	0.51%	1.72%	2.86%	0.67%
Louisiana	1,095	3.29%	5.52%	1.03%	2.19%	3.80%	0.65%
Maine	1,094	4.66%	7.75%	1.78%	1.01%	0.89%	0.27%
Maryland	1,000	1.70%	4.83%	1.29%	0.90%	2.93%	0.41%
Massachusetts	1,220	2.46%	5.10%	1.44%	4.10%	8.63%	2.34%
Michigan	4,353	5.21%	7.35%	1.39%	2.89%	6.63%	1.07%
Minnesota	1,052	2.47%	4.04%	0.79%	2.00%	5.50%	1.05%
Mississippi	1,078	6.22%	14.87%	4.88%	1.76%	3.63%	1.09%

<sup>1</sup> Before sel.per.ps (Weight1\*...\*Weight10) and after sel.per.ps (Weight1\*...\*Weight11) used demographic variables from screener data for all selected persons.

(continued)

<sup>2</sup> Weighted extreme value percentage =  $100 * \sum_k w_{ek} / \sum_k w_k$ , where  $w_{ek}$  denotes the weight for extreme values and  $w_k$  denotes the weight for both extreme values and non-extreme values.

<sup>3</sup> Outwinor weight percentage =  $100 * \sum_k (w_{ek} - b_k) / \sum_k w_k$ , where  $b_k$  denotes the cutoff point for defining the extreme weight.



**Table G.1 2003 NSDUH Selected Person-Level Percentages of Extreme Values and Outwinors: United States, District of Columbia, and the 50 States (continued)**

Domain	n	Before sel.per.ps <sup>1</sup> (Weight1*...*Weight10)			After sel.per.ps <sup>1</sup> (Weight1*...*Weight11)		
		Unweighted	Weighted <sup>2</sup>	Outwinor <sup>3</sup>	Unweighted	Weighted <sup>2</sup>	Outwinor <sup>3</sup>
Missouri	1,105	4.80%	7.98%	1.45%	1.54%	3.50%	0.68%
Montana	1,068	9.36%	10.54%	2.61%	3.46%	3.62%	0.52%
Nebraska	1,071	1.96%	3.92%	0.84%	1.49%	2.77%	0.58%
Nevada	1,072	2.52%	4.16%	0.84%	2.05%	4.45%	0.76%
New Hampshire	1,112	0.99%	1.96%	0.26%	1.26%	2.21%	0.35%
New Jersey	1,126	4.17%	8.43%	1.82%	2.93%	6.91%	1.23%
New Mexico	1,132	1.94%	3.56%	1.01%	1.41%	2.58%	0.52%
New York	4,609	3.99%	7.58%	1.85%	1.43%	3.45%	1.05%
North Carolina	1,086	1.29%	2.71%	0.61%	1.01%	2.23%	0.93%
North Dakota	977	5.94%	8.64%	1.75%	1.94%	2.94%	0.82%
Ohio	4,313	5.56%	7.36%	1.90%	1.97%	3.14%	0.43%
Oklahoma	1,042	1.73%	4.59%	1.08%	1.44%	3.40%	0.67%
Oregon	1,095	0.82%	1.30%	0.27%	0.55%	0.55%	0.09%
Pennsylvania	4,214	3.49%	5.24%	1.35%	0.95%	1.88%	0.29%
Rhode Island	1,141	1.84%	2.91%	0.98%	2.02%	5.05%	0.83%
South Carolina	1,109	1.44%	2.53%	0.68%	2.16%	3.35%	0.64%
South Dakota	980	6.63%	9.08%	3.41%	2.45%	4.13%	1.27%
Tennessee	1,004	3.78%	12.95%	4.09%	3.49%	11.79%	1.34%
Texas	4,231	3.43%	4.90%	0.97%	0.43%	0.80%	0.04%
Utah	995	4.92%	10.82%	2.92%	0.50%	1.04%	0.25%
Vermont	1,092	4.21%	5.60%	1.35%	1.47%	2.01%	0.53%
Virginia	1,076	1.67%	1.84%	0.43%	1.95%	5.58%	0.96%
Washington	1,128	2.75%	3.37%	0.68%	1.24%	1.61%	0.13%
West Virginia	1,058	4.63%	7.43%	1.44%	2.55%	4.80%	1.08%
Wisconsin	1,046	5.35%	8.80%	1.84%	2.58%	3.51%	0.89%
Wyoming	1,032	5.62%	9.06%	2.14%	2.71%	4.08%	0.69%

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<sup>1</sup> Before sel.per.ps (Weight1\*...\*Weight10) and after sel.per.ps (Weight1\*...\*Weight11) used demographic variables from screener data for all selected persons.

<sup>2</sup> Weighted extreme value percentage =  $100 * \sum_k w_{ek} / \sum_k w_k$ , where  $w_{ek}$  denotes the weight for extreme values and  $w_k$  denotes the weight for both extreme values and non-extreme values.

<sup>3</sup> Outwinor weight percentage =  $100 * \sum_k (w_{ek} - b_k) / \sum_k w_k$ , where  $b_k$  denotes the cutoff point for defining the extreme weight.

**Table G.2 2003 NSDUH Respondent Person-Level Percentages of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States**

Domain	n	Before res.per.nr <sup>1</sup> (Weight1*...*Weight11)			After res.per.nr <sup>1</sup> (Weight1*...*Weight12)			Before res.per.ps <sup>2</sup> (Weight1*...*Weight12)			After res.per.ps <sup>2</sup> (Weight1*...*Weight13)		
		Unwtd	Wtd <sup>3</sup>	Outwinsor <sup>4</sup>	Unwtd	Wtd <sup>3</sup>	Outwinsor <sup>4</sup>	Unwtd	Wtd <sup>3</sup>	Outwinsor <sup>4</sup>	Unwtd	Wtd <sup>3</sup>	Outwinsor <sup>4</sup>
United States	67,784	1.69%	3.62%	0.73%	1.46%	3.83%	0.70%	1.54%	3.98%	0.78%	1.17%	3.40%	0.61%
Alabama	879	0.80%	2.34%	0.68%	1.37%	6.32%	1.40%	1.37%	6.32%	1.42%	0.91%	2.06%	0.30%
Alaska	883	1.93%	4.47%	0.90%	2.15%	5.43%	0.75%	2.27%	6.05%	0.91%	1.25%	2.44%	0.36%
Arizona	897	1.23%	3.13%	0.27%	0.22%	0.38%	0.09%	0.45%	1.15%	0.21%	0.67%	1.72%	0.39%
Arkansas	922	1.30%	2.03%	0.73%	1.30%	2.18%	0.44%	1.41%	2.37%	0.52%	1.52%	3.01%	1.36%
California	3,600	1.78%	3.92%	0.71%	2.31%	5.38%	0.90%	2.22%	5.11%	1.00%	0.39%	2.51%	0.43%
Colorado	911	1.32%	2.28%	0.29%	0.99%	1.79%	0.13%	1.10%	1.95%	0.17%	1.87%	9.70%	1.42%
Connecticut	933	2.36%	5.55%	1.18%	1.61%	4.87%	0.69%	1.61%	4.69%	0.67%	0.64%	4.38%	0.71%
Delaware	911	1.76%	4.06%	1.34%	0.88%	1.81%	0.41%	0.99%	2.14%	0.62%	0.77%	3.54%	0.41%
District of Columbia	949	2.21%	5.76%	1.97%	1.90%	7.29%	2.26%	1.90%	6.96%	2.17%	2.11%	8.35%	1.95%
Florida	3,541	1.27%	3.88%	0.78%	0.88%	2.93%	0.55%	1.02%	3.11%	0.60%	0.65%	2.71%	0.31%
Georgia	902	1.22%	2.11%	0.58%	1.22%	4.14%	1.09%	1.44%	4.39%	1.40%	1.00%	5.13%	0.99%
Hawaii	928	0.97%	2.27%	0.48%	0.97%	1.83%	0.36%	1.40%	3.30%	0.63%	0.75%	0.85%	0.15%
Idaho	912	1.21%	2.42%	0.56%	0.88%	1.20%	0.31%	0.88%	1.20%	0.31%	2.19%	9.60%	1.76%
Illinois	3,711	1.83%	3.65%	0.52%	0.94%	2.44%	0.41%	1.10%	2.83%	0.48%	1.21%	3.71%	0.40%
Indiana	903	2.33%	4.39%	0.77%	2.21%	3.54%	0.78%	2.44%	3.62%	0.81%	1.77%	2.61%	0.66%
Iowa	884	2.26%	4.17%	1.27%	2.04%	3.86%	1.11%	2.04%	3.92%	1.16%	1.70%	4.62%	1.73%
Kansas	875	1.60%	2.90%	0.77%	2.51%	4.15%	0.73%	2.74%	4.48%	0.89%	1.03%	3.43%	1.46%
Kentucky	908	1.43%	2.81%	0.67%	1.76%	4.11%	0.78%	1.98%	5.04%	1.30%	1.43%	3.76%	0.26%
Louisiana	943	2.01%	3.59%	0.59%	3.29%	5.22%	0.67%	3.08%	5.10%	0.67%	0.74%	1.27%	0.13%
Maine	928	1.29%	1.13%	0.36%	0.11%	0.13%	0.06%	0.32%	0.75%	0.24%	0.43%	0.56%	0.27%
Maryland	863	0.81%	3.13%	0.36%	0.81%	3.55%	1.18%	1.04%	3.75%	1.18%	0.70%	2.69%	0.73%
Massachusetts	964	4.05%	8.87%	2.57%	4.36%	7.36%	1.75%	4.15%	7.77%	2.02%	3.73%	5.32%	1.05%
Michigan	3,667	2.75%	6.85%	1.13%	0.85%	2.17%	0.21%	0.93%	2.24%	0.30%	0.68%	2.35%	0.19%
Minnesota	909	2.20%	7.27%	1.21%	1.87%	4.05%	0.68%	1.87%	4.05%	0.68%	1.76%	4.05%	0.55%
Mississippi	899	1.89%	3.27%	0.66%	1.22%	3.08%	0.99%	1.33%	3.30%	1.07%	0.89%	1.80%	0.54%

<sup>1</sup> Before res.per.nr (Weight1\*...\*Weight11) and after res.per.nr (Weight1\*...\*Weight12) used demographic variables from screener data for all respondents.

<sup>2</sup> Before res.per.ps (Weight1\*...\*Weight12) and after res.per.ps (Weight1\*...\*Weight13) used demographic variables from questionnaire data for all respondents.

<sup>3</sup> Weighted outlier percentage =  $100 * \sum_k w_{ok} / \sum_k w_k$ , where  $w_{ok}$  denotes the weight for outliers and  $w_k$  denotes the weight for both outliers and non-outliers.

<sup>4</sup> Outwinsor weight percentage =  $100 * \sum_k (w_{ok} - b_k) / \sum_k w_k$ , where  $b_k$  denotes the cutoff point for defining the extreme weight.

(continued)

**Table G.2 2003 NSDUH Respondent Person-Level Percentages of Extreme Values and Outwinsors: United States, District of Columbia, and the 50 States (continued)**

Domain	n	Before res.per.nr <sup>1</sup> (Weight1*...*Weight11)			After res.per.nr <sup>1</sup> (Weight1*...*Weight12)			Before res.per.ps <sup>2</sup> (Weight1*...*Weight12)			After res.per.ps <sup>2</sup> (Weight1*...*Weight13)		
		Unwtd	Wtd <sup>3</sup>	Outwinsor <sup>4</sup>	Unwtd	Wtd <sup>3</sup>	Outwinsor <sup>4</sup>	Unwtd	Wtd <sup>3</sup>	Outwinsor <sup>4</sup>	Unwtd	Wtd <sup>3</sup>	Outwinsor <sup>4</sup>
Missouri	932	1.29%	3.20%	0.83%	2.04%	5.99%	1.29%	1.93%	5.99%	1.37%	0.75%	3.76%	0.88%
Montana	911	3.84%	4.11%	0.63%	1.65%	3.27%	0.61%	2.09%	3.58%	0.84%	3.07%	1.78%	0.20%
Nebraska	918	1.31%	2.43%	0.50%	1.74%	6.54%	1.87%	1.42%	5.25%	1.56%	1.31%	3.70%	0.96%
Nevada	902	2.11%	4.29%	1.01%	1.66%	2.87%	0.25%	1.88%	3.60%	0.26%	1.44%	4.65%	0.61%
New Hampshire	910	1.10%	1.56%	0.27%	1.98%	5.22%	1.52%	1.87%	5.13%	1.56%	0.55%	2.05%	0.43%
New Jersey	883	3.06%	6.99%	1.23%	1.13%	5.76%	0.96%	1.36%	5.94%	0.88%	1.25%	3.27%	0.41%
New Mexico	944	1.48%	2.56%	0.54%	0.95%	2.32%	0.18%	1.06%	3.52%	0.42%	0.74%	1.40%	0.04%
New York	3,634	1.35%	3.61%	1.18%	1.82%	6.11%	0.75%	1.95%	6.44%	0.94%	1.93%	7.88%	1.42%
North Carolina	904	1.00%	2.15%	0.99%	1.33%	2.25%	0.75%	1.33%	2.25%	0.74%	1.33%	1.85%	0.65%
North Dakota	867	1.96%	3.15%	0.89%	2.88%	7.58%	1.42%	2.88%	7.58%	1.42%	0.92%	1.66%	0.57%
Ohio	3,559	1.83%	2.85%	0.34%	0.81%	1.48%	0.23%	0.96%	1.91%	0.40%	0.65%	0.85%	0.10%
Oklahoma	871	1.49%	3.05%	0.50%	2.18%	4.57%	0.78%	2.41%	5.10%	1.06%	1.61%	4.70%	1.02%
Oregon	912	0.88%	0.81%	0.11%	1.21%	1.77%	0.11%	1.10%	1.36%	0.11%	1.32%	2.82%	0.39%
Pennsylvania	3,572	1.04%	1.90%	0.31%	1.43%	3.95%	0.64%	1.51%	4.19%	0.74%	0.84%	3.44%	0.49%
Rhode Island	914	1.64%	3.55%	0.66%	1.64%	4.85%	1.84%	1.64%	4.85%	1.79%	1.20%	8.34%	2.39%
South Carolina	920	2.07%	3.70%	0.65%	1.30%	3.11%	0.59%	1.30%	3.24%	0.74%	1.41%	2.83%	0.46%
South Dakota	881	2.95%	4.94%	1.47%	1.82%	5.97%	1.66%	1.93%	6.23%	1.85%	2.72%	4.25%	1.04%
Tennessee	856	2.45%	7.83%	1.22%	3.86%	10.99%	1.27%	3.86%	10.99%	1.32%	1.99%	5.15%	0.89%
Texas	3,566	0.53%	1.24%	0.05%	0.73%	1.27%	0.14%	0.73%	1.30%	0.15%	0.56%	1.52%	0.13%
Utah	898	0.56%	1.19%	0.28%	0.78%	1.96%	0.23%	0.89%	2.64%	0.41%	0.67%	2.15%	0.16%
Vermont	917	1.53%	2.40%	0.63%	1.42%	1.58%	0.41%	1.53%	1.80%	0.53%	1.09%	1.59%	0.34%
Virginia	907	1.98%	5.63%	1.14%	0.99%	1.94%	0.37%	1.10%	2.04%	0.38%	1.10%	3.54%	0.56%
Washington	941	1.06%	1.09%	0.15%	0.64%	1.06%	0.08%	0.74%	1.31%	0.21%	0.64%	1.62%	0.20%
West Virginia	871	2.07%	3.82%	0.87%	1.84%	3.09%	0.71%	1.95%	3.42%	0.71%	1.72%	3.23%	0.92%
Wisconsin	887	2.59%	3.75%	1.00%	2.48%	5.91%	1.89%	2.59%	5.92%	1.80%	3.61%	6.12%	2.18%
Wyoming	885	2.71%	4.16%	0.70%	1.47%	2.57%	0.42%	1.47%	2.57%	0.40%	1.36%	1.72%	0.31%

<sup>1</sup> Before res.per.nr (Weight1\*...\*Weight11) and after res.per.nr (Weight1\*...\*Weight12) used demographic variables from screener data for all respondents.

<sup>2</sup> Before res.per.ps (Weight1\*...\*Weight12) and after res.per.ps (Weight1\*...\*Weight13) used demographic variables from questionnaire data for all respondents.

<sup>3</sup> Weighted outlier percentage =  $100 * \sum_k w_{ok} / \sum_k w_k$ , where  $w_{ok}$  denotes the weight for outliers and  $w_k$  denotes the weight for both outliers and non-outliers.

<sup>4</sup> Outwinsor weight percentage =  $100 * \sum_k (w_{ok} - b_k) / \sum_k w_k$ , where  $b_k$  denotes the cutoff point for defining the extreme weight.



## **Appendix H: Evaluation of Calibration Weights: Slippage Rates**



**Table H.1 2003 NSDUH Slippage Rates: United States**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		67,784	237,682,009	237,682,009	237,682,009	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	16,605	59,153,042	59,153,042	59,153,042	0.00	0.00
	<b>Quarter 2</b>	17,202	59,321,586	59,321,586	59,321,586	0.00	0.00
	<b>Quarter 3</b>	17,725	59,507,993	59,507,993	59,507,993	0.00	0.00
	<b>Quarter 4</b>	16,252	59,699,388	59,699,388	59,699,388	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	22,665	24,983,416	24,995,357	24,995,357	-0.05	-0.00
	<b>18-25</b>	22,738	31,669,057	31,728,286	31,728,286	-0.19	0.00
	<b>26-34</b>	6,570	34,842,153	34,960,677	34,960,677	-0.34	0.00
	<b>35-49</b>	9,831	65,178,133	65,031,338	65,031,338	0.23	0.00
	<b>50-64</b>	3,610	49,256,293	46,666,250	46,666,250	5.55	0.00
	<b>65+</b>	2,370	31,752,957	34,300,100	34,300,100	-7.43	0.00
<b>Race</b>	<b>White</b>	52,289	186,716,370	193,934,203	193,934,204	-3.72	-0.00
	<b>Black</b>	8,571	28,636,799	28,335,910	28,335,910	1.06	-0.00
	<b>Other</b>	6,924	22,328,841	15,411,896	15,411,895	44.88	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	9,073	30,130,771	29,882,450	29,882,451	0.83	-0.00
	<b>Non-Hispanic</b>	58,711	207,551,238	207,799,558	207,799,558	-0.12	0.00
<b>Gender</b>	<b>Male</b>	32,611	114,884,836	114,985,175	114,985,175	-0.09	0.00
	<b>Female</b>	35,173	122,797,173	122,696,834	122,696,834	0.08	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.2 2003 NSDUH Slippage Rates: Alabama**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		879	3,699,723	3,699,723	3,699,723	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	233	922,727	922,727	922,727	0.00	0.00
	<b>Quarter 2</b>	247	924,179	924,179	924,179	0.00	0.00
	<b>Quarter 3</b>	224	925,533	925,533	925,533	0.00	0.00
	<b>Quarter 4</b>	175	927,284	927,284	927,284	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	298	384,759	382,688	382,688	0.54	0.00
	<b>18-25</b>	335	494,048	501,543	501,543	-1.49	0.00
	<b>26-34</b>	78	511,389	519,268	519,268	-1.52	0.00
	<b>35-49</b>	104	986,463	973,160	973,160	1.37	-0.00
	<b>50-64</b>	35	754,874	755,947	755,947	-0.14	0.00
	<b>65+</b>	29	568,190	567,117	567,117	0.19	0.00
<b>Race</b>	<b>White</b>	591	2,666,679	2,694,828	2,694,828	-1.04	-0.00
	<b>Black</b>	268	941,118	924,675	924,675	1.78	0.00
	<b>Other</b>	20	91,926	80,220	80,220	14.59	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	11	58,016	66,080	66,080	-12.20	0.00
	<b>Non-Hispanic</b>	868	3,641,707	3,633,643	3,633,643	0.22	0.00
<b>Gender</b>	<b>Male</b>	405	1,736,634	1,757,662	1,757,662	-1.20	0.00
	<b>Female</b>	474	1,963,088	1,942,061	1,942,061	1.08	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.3 2003 NSDUH Slippage Rates: Alaska**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		883	505,278	505,278	505,278	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	223	125,384	125,384	125,384	0.00	0.00
	<b>Quarter 2</b>	204	125,893	125,893	125,893	0.00	0.00
	<b>Quarter 3</b>	265	126,714	126,714	126,714	0.00	0.00
	<b>Quarter 4</b>	191	127,287	127,287	127,287	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	298	68,638	68,750	68,750	-0.16	0.00
	<b>18-25</b>	309	66,784	67,522	67,522	-1.09	0.00
	<b>26-34</b>	82	68,592	68,485	68,485	0.16	0.00
	<b>35-49</b>	147	157,164	155,341	155,341	1.17	0.00
	<b>50-64</b>	37	109,550	105,262	105,262	4.07	0.00
	<b>65+</b>	10	34,549	39,919	39,919	-13.45	0.00
<b>Race</b>	<b>White</b>	636	367,096	367,661	367,661	-0.15	0.00
	<b>Black</b>	28	18,205	16,983	16,983	7.20	0.00
	<b>Other</b>	219	119,976	120,635	120,635	-0.55	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	64	19,117	20,455	20,455	-6.54	0.00
	<b>Non-Hispanic</b>	819	486,161	484,823	484,823	0.28	0.00
<b>Gender</b>	<b>Male</b>	433	253,902	253,595	253,595	0.12	0.00
	<b>Female</b>	450	251,376	251,683	251,683	-0.12	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.4 2003 NSDUH Slippage Rates: Arizona**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		897	4,473,518	4,473,518	4,473,518	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	222	1,107,381	1,107,382	1,107,382	-0.00	0.00
	<b>Quarter 2</b>	303	1,114,390	1,114,390	1,114,390	-0.00	0.00
	<b>Quarter 3</b>	188	1,122,101	1,122,101	1,122,101	0.00	0.00
	<b>Quarter 4</b>	184	1,129,646	1,129,646	1,129,646	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	310	487,982	493,252	493,252	-1.07	0.00
	<b>18-25</b>	316	616,931	611,163	611,163	0.94	0.00
	<b>26-34</b>	83	695,304	703,538	703,538	-1.17	0.00
	<b>35-49</b>	126	1,106,200	1,130,319	1,130,319	-2.13	0.00
	<b>50-64</b>	41	1,096,858	833,913	833,913	31.53	0.00
	<b>65+</b>	21	470,243	701,334	701,334	-32.95	-0.00
<b>Race</b>	<b>White</b>	706	3,770,250	3,961,417	3,961,417	-4.83	-0.00
	<b>Black</b>	31	162,613	142,775	137,656	18.13	3.72
	<b>Other</b>	160	540,655	369,327	374,446	44.39	-1.37
<b>Hispanicity</b>	<b>Hispanic</b>	320	1,157,387	1,112,832	1,112,832	4.00	0.00
	<b>Non-Hispanic</b>	577	3,316,131	3,360,686	3,360,686	-1.33	-0.00
<b>Gender</b>	<b>Male</b>	448	2,204,935	2,203,433	2,203,433	0.07	0.00
	<b>Female</b>	449	2,268,584	2,270,086	2,270,086	-0.07	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).



**Table H.5 2003 NSDUH Slippage Rates: Arkansas**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		922	2,228,670	2,228,670	2,228,670	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	219	555,416	555,416	555,416	0.00	-0.00
	<b>Quarter 2</b>	257	556,524	556,524	556,524	0.00	0.00
	<b>Quarter 3</b>	195	557,699	557,699	557,699	0.00	0.00
	<b>Quarter 4</b>	251	559,031	559,031	559,031	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	317	231,196	233,744	233,744	-1.09	0.00
	<b>18-25</b>	304	310,268	304,728	304,728	1.82	0.00
	<b>26-34</b>	83	306,239	309,231	309,231	-0.97	0.00
	<b>35-49</b>	137	577,501	568,981	568,981	1.50	0.00
	<b>50-64</b>	39	394,301	454,206	454,206	-13.19	0.00
	<b>65+</b>	42	409,165	357,780	357,780	14.36	-0.00
<b>Race</b>	<b>White</b>	703	1,805,703	1,836,251	1,836,251	-1.66	-0.00
	<b>Black</b>	179	333,910	332,675	332,675	0.37	0.00
	<b>Other</b>	40	89,056	59,744	59,744	49.06	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	40	64,061	71,870	71,870	-10.87	0.00
	<b>Non-Hispanic</b>	882	2,164,609	2,156,799	2,156,799	0.36	0.00
<b>Gender</b>	<b>Male</b>	431	1,076,209	1,074,540	1,074,540	0.16	0.00
	<b>Female</b>	491	1,152,460	1,154,129	1,154,130	-0.14	-0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.6 2003 NSDUH Slippage Rates: California**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		3,600	28,673,990	28,673,990	28,673,990	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	833	7,119,715	7,119,715	7,119,715	-0.00	0.00
	<b>Quarter 2</b>	954	7,150,005	7,150,005	7,150,005	0.00	0.00
	<b>Quarter 3</b>	972	7,185,785	7,185,785	7,185,785	-0.00	0.00
	<b>Quarter 4</b>	841	7,218,486	7,218,486	7,218,486	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	1,232	3,158,482	3,161,827	3,161,827	-0.11	0.00
	<b>18-25</b>	1,181	3,942,555	3,928,708	3,928,708	0.35	0.00
	<b>26-34</b>	380	4,478,826	4,670,814	4,670,814	-4.11	0.00
	<b>35-49</b>	531	8,167,587	7,989,977	7,989,977	2.22	0.00
	<b>50-64</b>	167	5,345,382	5,272,781	5,272,781	1.38	0.00
	<b>65+</b>	109	3,581,159	3,649,885	3,649,885	-1.88	0.00
<b>Race</b>	<b>White</b>	2,491	20,074,978	22,268,817	22,268,817	-9.85	-0.00
	<b>Black</b>	232	1,913,790	1,878,769	1,878,769	1.86	0.00
	<b>Other</b>	877	6,685,222	4,526,405	4,526,405	47.69	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	1,484	9,084,077	9,038,233	9,038,233	0.51	0.00
	<b>Non-Hispanic</b>	2,116	19,589,913	19,635,757	19,635,757	-0.23	0.00
<b>Gender</b>	<b>Male</b>	1,804	14,124,966	14,087,160	14,087,160	0.27	0.00
	<b>Female</b>	1,796	14,549,025	14,586,830	14,586,830	-0.26	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.7 2003 NSDUH Slippage Rates: Colorado**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		911	3,701,560	3,701,560	3,701,560	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	209	921,113	921,113	921,113	-0.00	0.00
	<b>Quarter 2</b>	226	923,763	923,763	923,763	0.00	0.00
	<b>Quarter 3</b>	259	926,835	926,835	926,835	0.00	0.00
	<b>Quarter 4</b>	217	929,849	929,849	929,849	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	294	389,188	385,020	385,020	1.08	0.00
	<b>18-25</b>	302	499,192	499,513	499,513	-0.06	0.00
	<b>26-34</b>	112	615,223	629,881	629,881	-2.33	0.00
	<b>35-49</b>	125	1,036,867	1,053,670	1,053,670	-1.59	0.00
	<b>50-64</b>	60	875,360	708,968	708,968	23.47	0.00
	<b>65+</b>	18	285,729	424,507	424,507	-32.69	0.00
<b>Race</b>	<b>White</b>	767	3,203,165	3,367,253	3,367,253	-4.87	0.00
	<b>Black</b>	30	142,995	140,941	140,941	1.46	-0.00
	<b>Other</b>	114	355,399	193,366	193,366	83.80	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	202	624,536	625,169	625,169	-0.10	0.00
	<b>Non-Hispanic</b>	709	3,077,023	3,076,391	3,076,391	0.02	0.00
<b>Gender</b>	<b>Male</b>	447	1,839,479	1,840,266	1,840,266	-0.04	0.00
	<b>Female</b>	464	1,862,080	1,861,294	1,861,294	0.04	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.8 2003 NSDUH Slippage Rates: Connecticut**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		933	2,880,493	2,880,493	2,880,493	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	224	717,165	717,165	717,165	0.00	0.00
	<b>Quarter 2</b>	212	719,058	719,058	719,058	0.00	0.00
	<b>Quarter 3</b>	256	721,070	721,070	721,070	0.00	0.00
	<b>Quarter 4</b>	241	723,200	723,200	723,200	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	279	291,860	292,982	292,982	-0.38	0.00
	<b>18-25</b>	350	333,278	331,774	331,774	0.45	0.00
	<b>26-34</b>	100	366,178	369,461	369,461	-0.89	0.00
	<b>35-49</b>	142	858,995	846,282	846,282	1.50	0.00
	<b>50-64</b>	38	597,831	598,395	598,395	-0.09	0.00
	<b>65+</b>	24	432,351	441,600	441,600	-2.09	-0.00
<b>Race</b>	<b>White</b>	708	2,431,326	2,492,065	2,492,065	-2.44	0.00
	<b>Black</b>	118	278,636	265,895	265,895	4.79	0.00
	<b>Other</b>	107	170,532	122,534	122,534	39.17	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	148	272,889	263,123	263,123	3.71	0.00
	<b>Non-Hispanic</b>	785	2,607,604	2,617,370	2,617,370	-0.37	0.00
<b>Gender</b>	<b>Male</b>	430	1,382,458	1,380,413	1,380,413	0.15	0.00
	<b>Female</b>	503	1,498,035	1,500,080	1,500,080	-0.14	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.9 2003 NSDUH Slippage Rates: Delaware**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		911	671,922	671,922	671,922	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	192	167,097	167,097	167,097	-0.00	0.00
	<b>Quarter 2</b>	267	167,675	167,675	167,675	0.00	0.00
	<b>Quarter 3</b>	255	168,258	168,258	168,258	-0.00	0.00
	<b>Quarter 4</b>	197	168,893	168,893	168,893	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	305	68,298	68,298	68,298	-0.00	0.00
	<b>18-25</b>	314	90,862	89,106	89,106	1.97	-0.00
	<b>26-34</b>	84	93,145	92,973	92,973	0.19	0.00
	<b>35-49</b>	124	182,626	184,555	184,555	-1.04	0.00
	<b>50-64</b>	55	151,035	134,588	134,588	12.22	0.00
	<b>65+</b>	29	85,955	102,403	102,403	-16.06	0.00
<b>Race</b>	<b>White</b>	647	513,729	523,737	523,737	-1.91	0.00
	<b>Black</b>	203	126,664	122,195	122,195	3.66	0.00
	<b>Other</b>	61	31,529	25,990	25,990	21.31	-0.00
<b>Hispanicity</b>	<b>Hispanic</b>	95	32,977	31,450	31,450	4.85	0.00
	<b>Non-Hispanic</b>	816	638,946	640,473	640,473	-0.24	0.00
<b>Gender</b>	<b>Male</b>	475	321,334	320,986	320,986	0.11	0.00
	<b>Female</b>	436	350,588	350,936	350,936	-0.10	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.10 2003 NSDUH Slippage Rates: District of Columbia**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		949	476,873	476,873	476,873	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	232	119,574	119,575	119,575	-0.00	-0.00
	<b>Quarter 2</b>	210	119,328	119,328	119,328	-0.00	0.00
	<b>Quarter 3</b>	199	119,096	119,096	119,096	-0.00	0.00
	<b>Quarter 4</b>	308	118,875	118,875	118,875	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	327	33,005	32,832	32,832	0.53	0.00
	<b>18-25</b>	315	72,163	73,453	73,453	-1.76	0.00
	<b>26-34</b>	98	94,628	95,400	95,400	-0.81	0.00
	<b>35-49</b>	144	124,242	120,047	120,047	3.49	0.00
	<b>50-64</b>	37	89,743	91,044	91,044	-1.43	-0.00
	<b>65+</b>	28	63,091	64,097	64,097	-1.57	0.00
<b>Race</b>	<b>White</b>	270	168,255	179,971	179,971	-6.51	0.00
	<b>Black</b>	582	273,375	272,599	272,599	0.28	-0.00
	<b>Other</b>	97	35,243	24,304	24,304	45.01	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	89	43,011	43,634	43,634	-1.43	0.00
	<b>Non-Hispanic</b>	860	433,862	433,239	433,239	0.14	0.00
<b>Gender</b>	<b>Male</b>	434	219,383	219,334	219,334	0.02	0.00
	<b>Female</b>	515	257,491	257,540	257,540	-0.02	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.11 2003 NSDUH Slippage Rates: Florida**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		3,541	14,145,707	14,145,707	14,145,707	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	922	3,509,399	3,509,399	3,509,399	0.00	-0.00
	<b>Quarter 2</b>	898	3,526,844	3,526,844	3,526,844	0.00	0.00
	<b>Quarter 3</b>	956	3,545,240	3,545,240	3,545,240	0.00	0.00
	<b>Quarter 4</b>	765	3,564,225	3,564,225	3,564,225	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	1,200	1,356,509	1,360,537	1,360,537	-0.30	-0.00
	<b>18-25</b>	1,156	1,628,483	1,626,149	1,626,149	0.14	-0.00
	<b>26-34</b>	306	1,831,464	1,848,004	1,848,004	-0.90	0.00
	<b>35-49</b>	468	3,682,989	3,660,925	3,660,925	0.60	0.00
	<b>50-64</b>	230	3,127,613	2,837,895	2,837,895	10.21	0.00
	<b>65+</b>	181	2,518,648	2,812,197	2,812,197	-10.44	0.00
<b>Race</b>	<b>White</b>	2,566	11,303,674	11,638,728	11,638,728	-2.88	0.00
	<b>Black</b>	713	2,068,286	2,033,018	2,033,018	1.73	-0.00
	<b>Other</b>	262	773,747	473,960	473,960	63.25	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	895	2,609,491	2,564,881	2,564,881	1.74	-0.00
	<b>Non-Hispanic</b>	2,646	11,536,216	11,580,826	11,580,826	-0.39	0.00
<b>Gender</b>	<b>Male</b>	1,685	6,790,832	6,800,743	6,800,743	-0.15	0.00
	<b>Female</b>	1,856	7,354,875	7,344,964	7,344,964	0.13	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.12 2003 NSDUH Slippage Rates: Georgia**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		902	6,951,437	6,951,437	6,951,437	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	215	1,726,737	1,726,737	1,726,737	0.00	0.00
	<b>Quarter 2</b>	234	1,734,132	1,734,132	1,734,132	0.00	0.00
	<b>Quarter 3</b>	228	1,741,285	1,741,285	1,741,285	0.00	-0.00
	<b>Quarter 4</b>	225	1,749,283	1,749,283	1,749,283	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	309	763,303	756,648	756,648	0.88	0.00
	<b>18-25</b>	265	979,954	959,782	959,782	2.10	-0.00
	<b>26-34</b>	92	1,120,793	1,176,086	1,176,086	-4.70	0.00
	<b>35-49</b>	142	2,010,172	1,963,189	1,963,189	2.39	0.00
	<b>50-64</b>	55	1,228,415	1,301,512	1,301,512	-5.62	-0.00
	<b>65+</b>	39	848,802	794,221	794,221	6.87	0.00
<b>Race</b>	<b>White</b>	545	4,692,578	4,803,749	4,803,749	-2.31	0.00
	<b>Black</b>	286	1,883,036	1,893,263	1,893,263	-0.54	-0.00
	<b>Other</b>	71	375,823	254,425	254,425	47.71	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	80	418,845	397,402	397,402	5.40	0.00
	<b>Non-Hispanic</b>	822	6,532,592	6,554,035	6,554,035	-0.33	0.00
<b>Gender</b>	<b>Male</b>	441	3,343,772	3,349,678	3,349,678	-0.18	0.00
	<b>Female</b>	461	3,607,665	3,601,759	3,601,759	0.16	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.13 2003 NSDUH Slippage Rates: Hawaii**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		928	1,013,259	1,013,259	1,013,259	0.00	-0.00
<b>Quarter</b>	<b>Quarter 1</b>	209	250,622	250,622	250,622	-0.00	-0.00
	<b>Quarter 2</b>	244	251,577	251,577	251,577	0.00	-0.00
	<b>Quarter 3</b>	230	254,947	254,947	254,947	0.00	-0.00
	<b>Quarter 4</b>	245	256,113	256,112	256,113	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	351	100,587	100,981	100,981	-0.39	-0.00
	<b>18-25</b>	273	122,468	121,594	121,594	0.72	0.00
	<b>26-34</b>	85	139,267	135,127	135,127	3.06	0.00
	<b>35-49</b>	129	272,274	268,054	268,054	1.57	0.00
	<b>50-64</b>	44	180,438	221,252	221,252	-18.45	0.00
	<b>65+</b>	46	198,225	166,251	166,251	19.23	0.00
<b>Race</b>	<b>White</b>	234	243,295	257,018	257,019	-5.34	-0.00
	<b>Black</b>	13	17,862	16,860	16,860	5.94	0.00
	<b>Other</b>	681	752,102	739,380	739,380	1.72	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	125	78,406	63,462	63,462	23.55	-0.00
	<b>Non-Hispanic</b>	803	934,852	949,796	949,796	-1.57	0.00
<b>Gender</b>	<b>Male</b>	461	489,368	489,368	489,368	0.00	-0.00
	<b>Female</b>	467	523,891	523,891	523,891	-0.00	-0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.14 2003 NSDUH Slippage Rates: Idaho**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		912	1,099,895	1,099,895	1,099,895	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	203	272,796	272,796	272,796	0.00	0.00
	<b>Quarter 2</b>	255	274,195	274,195	274,195	0.00	0.00
	<b>Quarter 3</b>	207	275,685	275,685	275,685	0.00	0.00
	<b>Quarter 4</b>	247	277,220	277,220	277,220	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	297	126,989	128,037	128,037	-0.82	0.00
	<b>18-25</b>	288	167,743	166,977	166,977	0.46	-0.00
	<b>26-34</b>	104	158,706	154,831	154,831	2.50	0.00
	<b>35-49</b>	133	280,586	284,179	284,179	-1.26	0.00
	<b>50-64</b>	59	236,994	215,678	215,678	9.88	0.00
	<b>65+</b>	31	128,877	150,193	150,193	-14.19	0.00
<b>Race</b>	<b>White</b>	852	1,026,870	1,053,185	1,053,185	-2.50	0.00
	<b>Black</b>	5	14,749	5,435	5,435	171.36	-0.00
	<b>Other</b>	55	58,276	41,275	41,275	41.19	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	87	80,988	83,657	83,657	-3.19	0.00
	<b>Non-Hispanic</b>	825	1,018,907	1,016,238	1,016,238	0.26	0.00
<b>Gender</b>	<b>Male</b>	409	543,699	543,297	543,297	0.07	0.00
	<b>Female</b>	503	556,196	556,598	556,598	-0.07	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.15 2003 NSDUH Slippage Rates: Illinois**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		3,711	10,319,948	10,319,948	10,319,948	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	775	2,573,024	2,573,024	2,573,024	0.00	0.00
	<b>Quarter 2</b>	844	2,577,574	2,577,574	2,577,574	-0.00	0.00
	<b>Quarter 3</b>	1,149	2,582,099	2,582,099	2,582,099	0.00	0.00
	<b>Quarter 4</b>	943	2,587,250	2,587,250	2,587,250	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	1,235	1,082,478	1,083,365	1,083,365	-0.08	0.00
	<b>18-25</b>	1,234	1,394,026	1,395,959	1,395,959	-0.14	0.00
	<b>26-34</b>	367	1,596,025	1,604,176	1,604,176	-0.51	0.00
	<b>35-49</b>	542	2,851,973	2,835,850	2,835,850	0.57	0.00
	<b>50-64</b>	209	2,183,983	1,975,778	1,975,778	10.54	-0.00
	<b>65+</b>	124	1,211,463	1,424,820	1,424,820	-14.97	-0.00
<b>Race</b>	<b>White</b>	2,777	8,010,783	8,320,903	8,320,903	-3.73	-0.00
	<b>Black</b>	587	1,489,176	1,457,810	1,457,810	2.15	0.00
	<b>Other</b>	347	819,989	541,235	541,235	51.50	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	543	1,294,155	1,280,921	1,280,921	1.03	0.00
	<b>Non-Hispanic</b>	3,168	9,025,793	9,039,027	9,039,027	-0.15	-0.00
<b>Gender</b>	<b>Male</b>	1,742	4,978,678	5,001,180	5,001,180	-0.45	0.00
	<b>Female</b>	1,969	5,341,270	5,318,768	5,318,768	0.42	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.16 2003 NSDUH Slippage Rates: Indiana**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		903	5,049,910	5,049,910	5,049,910	0.00	-0.00
<b>Quarter</b>	<b>Quarter 1</b>	217	1,259,169	1,259,169	1,259,169	0.00	0.00
	<b>Quarter 2</b>	235	1,261,278	1,261,278	1,261,278	0.00	0.00
	<b>Quarter 3</b>	253	1,263,402	1,263,402	1,263,402	0.00	-0.00
	<b>Quarter 4</b>	198	1,266,061	1,266,061	1,266,061	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	307	543,827	545,216	545,217	-0.25	-0.00
	<b>18-25</b>	289	701,689	710,330	710,330	-1.22	0.00
	<b>26-34</b>	83	729,208	719,179	719,179	1.39	0.00
	<b>35-49</b>	138	1,365,860	1,365,860	1,365,860	0.00	0.00
	<b>50-64</b>	53	1,053,006	991,721	991,721	6.18	-0.00
	<b>65+</b>	33	656,320	717,605	717,605	-8.54	0.00
<b>Race</b>	<b>White</b>	764	4,494,546	4,536,072	4,536,072	-0.92	0.00
	<b>Black</b>	98	402,005	398,046	398,046	0.99	0.00
	<b>Other</b>	41	153,360	115,792	115,792	32.44	-0.00
<b>Hispanicity</b>	<b>Hispanic</b>	49	166,251	178,192	178,192	-6.70	0.00
	<b>Non-Hispanic</b>	854	4,883,659	4,871,718	4,871,718	0.25	-0.00
<b>Gender</b>	<b>Male</b>	446	2,450,711	2,456,228	2,456,228	-0.22	0.00
	<b>Female</b>	457	2,599,199	2,593,682	2,593,682	0.21	-0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.17 2003 NSDUH Slippage Rates: Iowa**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		884	2,448,928	2,448,928	2,448,928	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	231	611,015	611,015	611,015	0.00	0.00
	<b>Quarter 2</b>	234	611,771	611,771	611,771	0.00	0.00
	<b>Quarter 3</b>	211	612,550	612,550	612,550	0.00	0.00
	<b>Quarter 4</b>	208	613,593	613,593	613,593	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	303	244,137	245,539	245,539	-0.57	0.00
	<b>18-25</b>	288	352,244	353,759	353,759	-0.43	0.00
	<b>26-34</b>	99	309,420	317,089	317,089	-2.42	0.00
	<b>35-49</b>	115	646,831	642,124	642,124	0.73	0.00
	<b>50-64</b>	47	533,579	487,903	487,903	9.36	-0.00
	<b>65+</b>	32	362,716	402,514	402,514	-9.89	0.00
<b>Race</b>	<b>White</b>	832	2,341,975	2,337,637	2,337,637	0.19	0.00
	<b>Black</b>	20	49,332	49,083	49,083	0.51	0.00
	<b>Other</b>	32	57,620	62,209	62,209	-7.38	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	27	57,972	66,507	66,507	-12.83	0.00
	<b>Non-Hispanic</b>	857	2,390,956	2,382,422	2,382,422	0.36	0.00
<b>Gender</b>	<b>Male</b>	421	1,196,524	1,196,524	1,196,524	-0.00	0.00
	<b>Female</b>	463	1,252,404	1,252,404	1,252,404	0.00	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.18 2003 NSDUH Slippage Rates: Kansas**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		875	2,209,221	2,209,221	2,209,221	0.00	-0.00
<b>Quarter</b>	<b>Quarter 1</b>	222	551,103	551,103	551,103	0.00	0.00
	<b>Quarter 2</b>	227	551,786	551,786	551,786	0.00	-0.00
	<b>Quarter 3</b>	209	552,687	552,687	552,687	0.00	0.00
	<b>Quarter 4</b>	217	553,644	553,644	553,644	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	280	240,891	240,109	240,109	0.33	-0.00
	<b>18-25</b>	307	322,661	322,145	322,145	0.16	0.00
	<b>26-34</b>	76	303,413	304,711	304,711	-0.43	0.00
	<b>35-49</b>	121	588,500	588,500	588,500	0.00	0.00
	<b>50-64</b>	44	362,163	424,598	424,598	-14.70	-0.00
	<b>65+</b>	47	391,594	329,159	329,159	18.97	-0.00
<b>Race</b>	<b>White</b>	731	1,964,599	1,992,301	1,992,301	-1.39	0.00
	<b>Black</b>	68	120,256	120,199	120,199	0.05	-0.00
	<b>Other</b>	76	124,366	96,721	96,721	28.58	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	84	155,775	152,256	152,256	2.31	-0.00
	<b>Non-Hispanic</b>	791	2,053,446	2,056,966	2,056,966	-0.17	0.00
<b>Gender</b>	<b>Male</b>	435	1,078,914	1,078,914	1,078,914	0.00	-0.00
	<b>Female</b>	440	1,130,307	1,130,307	1,130,307	0.00	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.19 2003 NSDUH Slippage Rates: Kentucky**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		908	3,381,254	3,381,254	3,381,254	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	253	842,911	842,911	842,911	0.00	0.00
	<b>Quarter 2</b>	220	844,470	844,470	844,470	0.00	0.00
	<b>Quarter 3</b>	202	845,993	845,993	845,993	0.00	0.00
	<b>Quarter 4</b>	233	847,881	847,881	847,881	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	309	341,258	337,609	337,609	1.08	0.00
	<b>18-25</b>	290	453,637	451,685	451,685	0.43	0.00
	<b>26-34</b>	110	519,478	490,182	490,182	5.98	0.00
	<b>35-49</b>	140	900,452	919,967	919,967	-2.12	0.00
	<b>50-64</b>	39	752,241	696,323	696,323	8.03	0.00
	<b>65+</b>	20	414,188	485,489	485,489	-14.69	0.00
<b>Race</b>	<b>White</b>	815	3,058,709	3,082,109	3,082,109	-0.76	0.00
	<b>Black</b>	57	232,192	235,230	235,230	-1.29	0.00
	<b>Other</b>	36	90,353	63,916	63,916	41.36	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	22	53,109	53,236	53,236	-0.24	0.00
	<b>Non-Hispanic</b>	886	3,328,145	3,328,018	3,328,018	0.00	0.00
<b>Gender</b>	<b>Male</b>	432	1,629,483	1,628,591	1,628,591	0.05	0.00
	<b>Female</b>	476	1,751,772	1,752,664	1,752,664	-0.05	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.20 2003 NSDUH Slippage Rates: Louisiana**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		943	3,618,197	3,618,197	3,618,197	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	222	902,592	902,592	902,592	0.00	0.00
	<b>Quarter 2</b>	250	903,907	903,907	903,907	0.00	0.00
	<b>Quarter 3</b>	209	905,029	905,029	905,029	0.00	0.00
	<b>Quarter 4</b>	262	906,668	906,668	906,668	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	319	404,399	405,066	405,066	-0.16	0.00
	<b>18-25</b>	334	540,190	541,507	541,507	-0.24	-0.00
	<b>26-34</b>	83	519,165	505,820	505,820	2.64	0.00
	<b>35-49</b>	122	936,413	961,277	961,277	-2.59	0.00
	<b>50-64</b>	52	716,764	709,278	709,278	1.06	0.00
	<b>65+</b>	33	501,265	495,249	495,249	1.21	0.00
<b>Race</b>	<b>White</b>	594	2,401,587	2,404,846	2,404,846	-0.14	0.00
	<b>Black</b>	307	1,106,758	1,113,869	1,113,869	-0.64	0.00
	<b>Other</b>	42	109,851	99,481	99,481	10.42	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	36	103,543	92,277	92,277	12.21	0.00
	<b>Non-Hispanic</b>	907	3,514,653	3,525,919	3,525,919	-0.32	0.00
<b>Gender</b>	<b>Male</b>	442	1,712,843	1,711,611	1,711,611	0.07	-0.00
	<b>Female</b>	501	1,905,353	1,906,586	1,906,586	-0.06	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).



**Table H.21 2003 NSDUH Slippage Rates: Maine**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		928	1,113,100	1,113,100	1,113,100	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	215	277,010	277,010	277,010	0.00	0.00
	<b>Quarter 2</b>	243	277,820	277,820	277,820	0.00	0.00
	<b>Quarter 3</b>	234	278,660	278,660	278,660	0.00	0.00
	<b>Quarter 4</b>	236	279,610	279,610	279,610	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	304	110,584	110,584	110,584	0.00	0.00
	<b>18-25</b>	329	134,142	132,168	132,168	1.49	0.00
	<b>26-34</b>	57	132,644	129,913	129,913	2.10	0.00
	<b>35-49</b>	146	314,643	315,139	315,139	-0.16	0.00
	<b>50-64</b>	54	251,621	245,623	245,623	2.44	0.00
	<b>65+</b>	38	169,466	179,673	179,673	-5.68	0.00
<b>Race</b>	<b>White</b>	878	1,068,862	1,083,643	1,083,643	-1.36	0.00
	<b>Black</b>	10	7,263	6,194	6,194	17.26	0.00
	<b>Other</b>	40	36,976	23,264	23,264	58.94	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	7	6,669	8,001	8,001	-16.64	-0.00
	<b>Non-Hispanic</b>	921	1,106,431	1,105,100	1,105,100	0.12	0.00
<b>Gender</b>	<b>Male</b>	420	534,108	537,455	537,455	-0.62	0.00
	<b>Female</b>	508	578,993	575,645	575,645	0.58	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.22 2003 NSDUH Slippage Rates: Maryland**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		863	4,510,290	4,510,290	4,510,290	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	180	1,121,969	1,121,969	1,121,969	0.00	0.00
	<b>Quarter 2</b>	213	1,125,620	1,125,620	1,125,620	0.00	0.00
	<b>Quarter 3</b>	245	1,129,350	1,129,350	1,129,350	0.00	0.00
	<b>Quarter 4</b>	225	1,133,351	1,133,351	1,133,351	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	293	481,790	481,268	481,268	0.11	-0.00
	<b>18-25</b>	232	539,000	547,577	547,577	-1.57	0.00
	<b>26-34</b>	101	650,578	632,183	632,183	2.91	0.00
	<b>35-49</b>	137	1,310,396	1,320,736	1,320,736	-0.78	0.00
	<b>50-64</b>	64	945,619	928,301	928,301	1.87	0.00
	<b>65+</b>	36	582,907	600,225	600,225	-2.89	0.00
<b>Race</b>	<b>White</b>	508	2,899,101	3,021,380	3,021,380	-4.05	-0.00
	<b>Black</b>	298	1,246,414	1,214,816	1,214,816	2.60	0.00
	<b>Other</b>	57	364,775	274,094	274,094	33.08	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	78	203,251	202,132	202,132	0.55	-0.00
	<b>Non-Hispanic</b>	785	4,307,039	4,308,158	4,308,158	-0.03	0.00
<b>Gender</b>	<b>Male</b>	410	2,142,825	2,133,346	2,133,346	0.44	0.00
	<b>Female</b>	453	2,367,465	2,376,944	2,376,944	-0.40	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.23 2003 NSDUH Slippage Rates: Massachusetts**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		964	5,377,359	5,377,359	5,377,359	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	223	1,343,181	1,343,181	1,343,181	0.00	0.00
	<b>Quarter 2</b>	207	1,343,822	1,343,822	1,343,822	0.00	0.00
	<b>Quarter 3</b>	225	1,344,632	1,344,632	1,344,632	-0.00	0.00
	<b>Quarter 4</b>	309	1,345,725	1,345,725	1,345,725	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	303	513,293	514,569	514,569	-0.25	0.00
	<b>18-25</b>	322	670,569	674,611	674,611	-0.60	0.00
	<b>26-34</b>	106	788,236	796,612	796,612	-1.05	0.00
	<b>35-49</b>	138	1,570,609	1,530,809	1,530,809	2.60	0.00
	<b>50-64</b>	51	987,759	1,056,442	1,056,442	-6.50	0.00
	<b>65+</b>	44	846,893	804,318	804,318	5.29	0.00
<b>Race</b>	<b>White</b>	807	4,607,391	4,733,743	4,733,743	-2.67	0.00
	<b>Black</b>	70	334,638	327,273	334,657	-0.01	-2.21
	<b>Other</b>	87	435,330	316,342	308,959	40.90	2.39
<b>Hispanicity</b>	<b>Hispanic</b>	77	365,792	356,170	356,170	2.70	0.00
	<b>Non-Hispanic</b>	887	5,011,568	5,021,190	5,021,190	-0.19	0.00
<b>Gender</b>	<b>Male</b>	437	2,561,838	2,573,317	2,573,317	-0.45	0.00
	<b>Female</b>	527	2,815,522	2,804,043	2,804,043	0.41	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.24 2003 NSDUH Slippage Rates: Michigan**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		3,667	8,316,442	8,316,442	8,316,442	0.00	-0.00
<b>Quarter</b>	<b>Quarter 1</b>	983	2,073,361	2,073,361	2,073,361	0.00	-0.00
	<b>Quarter 2</b>	880	2,076,920	2,076,920	2,076,920	0.00	0.00
	<b>Quarter 3</b>	851	2,080,882	2,080,882	2,080,882	0.00	0.00
	<b>Quarter 4</b>	953	2,085,278	2,085,278	2,085,278	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	1,192	896,043	898,823	898,823	-0.31	0.00
	<b>18-25</b>	1,312	1,103,976	1,104,530	1,104,530	-0.05	0.00
	<b>26-34</b>	379	1,173,777	1,160,921	1,160,921	1.11	0.00
	<b>35-49</b>	509	2,283,373	2,298,197	2,298,197	-0.65	0.00
	<b>50-64</b>	172	1,793,758	1,664,953	1,664,953	7.74	-0.00
	<b>65+</b>	103	1,065,515	1,189,019	1,189,019	-10.39	-0.00
<b>Race</b>	<b>White</b>	2,936	6,840,476	6,887,744	6,887,744	-0.69	-0.00
	<b>Black</b>	527	1,129,761	1,109,437	1,109,437	1.83	0.00
	<b>Other</b>	204	346,205	319,261	319,261	8.44	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	184	242,041	262,975	262,975	-7.96	0.00
	<b>Non-Hispanic</b>	3,483	8,074,401	8,053,466	8,053,466	0.26	-0.00
<b>Gender</b>	<b>Male</b>	1,735	4,019,642	4,029,281	4,029,281	-0.24	0.00
	<b>Female</b>	1,932	4,296,799	4,287,161	4,287,161	0.22	-0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.25 2003 NSDUH Slippage Rates: Minnesota**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		909	4,193,331	4,193,331	4,193,331	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	224	1,044,471	1,044,471	1,044,471	0.00	0.00
	<b>Quarter 2</b>	258	1,046,885	1,046,886	1,046,886	-0.00	0.00
	<b>Quarter 3</b>	243	1,049,533	1,049,533	1,049,533	0.00	0.00
	<b>Quarter 4</b>	184	1,052,441	1,052,441	1,052,441	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	357	446,690	445,182	445,182	0.34	0.00
	<b>18-25</b>	266	568,016	581,147	581,147	-2.26	0.00
	<b>26-34</b>	64	612,628	601,005	601,005	1.93	0.00
	<b>35-49</b>	158	1,190,400	1,190,400	1,190,400	-0.00	0.00
	<b>50-64</b>	42	899,190	804,539	804,539	11.76	0.00
	<b>65+</b>	22	476,407	571,058	571,058	-16.57	-0.00
<b>Race</b>	<b>White</b>	803	3,797,559	3,831,651	3,831,651	-0.89	0.00
	<b>Black</b>	32	142,654	145,611	145,611	-2.03	0.00
	<b>Other</b>	74	253,117	216,069	216,069	17.15	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	40	146,811	118,330	118,330	24.07	0.00
	<b>Non-Hispanic</b>	869	4,046,520	4,075,001	4,075,001	-0.70	0.00
<b>Gender</b>	<b>Male</b>	461	2,064,406	2,064,406	2,064,406	0.00	0.00
	<b>Female</b>	448	2,128,925	2,128,925	2,128,925	0.00	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.26 2003 NSDUH Slippage Rates: Mississippi**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		899	2,311,859	2,311,859	2,311,859	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	211	576,860	576,860	576,860	0.00	-0.00
	<b>Quarter 2</b>	246	577,625	577,625	577,625	-0.00	0.00
	<b>Quarter 3</b>	251	578,202	578,202	578,202	-0.00	0.00
	<b>Quarter 4</b>	191	579,172	579,172	579,172	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	283	257,167	257,972	257,972	-0.31	-0.00
	<b>18-25</b>	291	350,180	348,335	348,335	0.53	-0.00
	<b>26-34</b>	107	326,658	326,785	326,785	-0.04	0.00
	<b>35-49</b>	127	600,312	598,543	598,543	0.30	0.00
	<b>50-64</b>	53	456,651	449,492	449,492	1.59	0.00
	<b>65+</b>	38	320,890	330,732	330,732	-2.98	0.00
<b>Race</b>	<b>White</b>	529	1,440,102	1,465,313	1,465,313	-1.72	0.00
	<b>Black</b>	356	857,261	806,477	806,477	6.30	0.00
	<b>Other</b>	14	14,496	40,069	40,069	-63.82	-0.00
<b>Hispanicity</b>	<b>Hispanic</b>	12	55,745	32,607	32,607	70.96	0.00
	<b>Non-Hispanic</b>	887	2,256,114	2,279,252	2,279,252	-1.02	-0.00
<b>Gender</b>	<b>Male</b>	386	1,092,904	1,093,270	1,093,270	-0.03	-0.00
	<b>Female</b>	513	1,218,954	1,218,588	1,218,588	0.03	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.27 2003 NSDUH Slippage Rates: Missouri**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		932	4,683,914	4,683,914	4,683,914	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	239	1,167,695	1,167,695	1,167,695	0.00	0.00
	<b>Quarter 2</b>	219	1,169,743	1,169,743	1,169,743	0.00	0.00
	<b>Quarter 3</b>	231	1,171,963	1,171,963	1,171,963	0.00	0.00
	<b>Quarter 4</b>	243	1,174,513	1,174,513	1,174,513	0.00	0.00
	<b>Age Group</b>	<b>12-17</b>	314	497,833	493,755	493,755	0.83
	<b>18-25</b>	325	636,666	635,283	635,283	0.22	0.00
	<b>26-34</b>	85	650,018	646,417	646,417	0.56	0.00
	<b>35-49</b>	117	1,219,286	1,258,710	1,258,710	-3.13	0.00
	<b>50-64</b>	57	1,079,879	935,252	935,252	15.46	0.00
	<b>65+</b>	34	600,232	714,498	714,498	-15.99	0.00
<b>Race</b>	<b>White</b>	777	3,988,280	4,049,344	4,049,344	-1.51	0.00
	<b>Black</b>	105	493,066	500,392	500,392	-1.46	0.00
	<b>Other</b>	50	202,567	134,178	134,178	50.97	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	22	89,233	96,572	96,572	-7.60	0.00
	<b>Non-Hispanic</b>	910	4,594,681	4,587,342	4,587,342	0.16	0.00
<b>Gender</b>	<b>Male</b>	444	2,249,807	2,249,807	2,249,807	0.00	0.00
	<b>Female</b>	488	2,434,108	2,434,108	2,434,108	0.00	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.28 2003 NSDUH Slippage Rates: Montana**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		911	767,946	767,946	767,946	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	253	191,145	191,145	191,145	-0.00	0.00
	<b>Quarter 2</b>	208	191,642	191,642	191,642	0.00	0.00
	<b>Quarter 3</b>	220	192,271	192,271	192,271	0.00	0.00
	<b>Quarter 4</b>	230	192,888	192,888	192,888	0.00	0.00
	<b>Age Group</b>	<b>12-17</b>	272	81,313	81,338	81,338	-0.03
	<b>18-25</b>	348	105,391	105,014	105,014	0.36	0.00
	<b>26-34</b>	75	89,561	89,914	89,914	-0.39	0.00
	<b>35-49</b>	151	203,333	203,333	203,333	0.00	-0.00
	<b>50-64</b>	39	171,226	169,730	169,730	0.88	0.00
	<b>65+</b>	26	117,121	118,617	118,617	-1.26	-0.00
<b>Race</b>	<b>White</b>	828	696,324	705,962	705,962	-1.37	0.00
	<b>Black</b>	1	781	550	2,545	-69.31	-78.37
	<b>Other</b>	82	70,841	61,434	59,439	19.18	3.36
<b>Hispanicity</b>	<b>Hispanic</b>	37	14,024	14,512	14,512	-3.36	0.00
	<b>Non-Hispanic</b>	874	753,922	753,434	753,434	0.06	0.00
<b>Gender</b>	<b>Male</b>	427	380,319	378,928	378,928	0.37	0.00
	<b>Female</b>	484	387,627	389,018	389,018	-0.36	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.29 2003 NSDUH Slippage Rates: Nebraska**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		918	1,418,952	1,418,952	1,418,952	0.00	-0.00
<b>Quarter</b>	<b>Quarter 1</b>	216	353,656	353,656	353,656	0.00	0.00
	<b>Quarter 2</b>	235	354,340	354,340	354,340	0.00	-0.00
	<b>Quarter 3</b>	229	355,063	355,063	355,063	0.00	0.00
	<b>Quarter 4</b>	238	355,892	355,892	355,892	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	296	153,140	152,127	152,127	0.67	0.00
	<b>18-25</b>	348	203,365	207,187	207,187	-1.84	-0.00
	<b>26-34</b>	83	190,768	197,275	197,275	-3.30	0.00
	<b>35-49</b>	116	375,908	372,683	372,683	0.87	0.00
	<b>50-64</b>	39	251,171	272,970	272,970	-7.99	0.00
	<b>65+</b>	36	244,599	216,710	216,710	12.87	-0.00
<b>Race</b>	<b>White</b>	821	1,295,331	1,319,001	1,319,001	-1.79	0.00
	<b>Black</b>	43	61,694	53,698	53,698	14.89	-0.00
	<b>Other</b>	54	61,927	46,253	46,253	33.89	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	76	77,069	75,049	75,049	2.69	-0.00
	<b>Non-Hispanic</b>	842	1,341,883	1,343,903	1,343,903	-0.15	0.00
<b>Gender</b>	<b>Male</b>	470	694,703	694,086	694,086	0.09	-0.00
	<b>Female</b>	448	724,249	724,866	724,866	-0.09	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.30 2003 NSDUH Slippage Rates: Nevada**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		902	1,818,116	1,818,116	1,818,116	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	255	448,187	448,187	448,187	0.00	0.00
	<b>Quarter 2</b>	221	452,219	452,219	452,219	-0.00	0.00
	<b>Quarter 3</b>	210	456,682	456,682	456,682	-0.00	0.00
	<b>Quarter 4</b>	216	461,029	461,029	461,029	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	278	187,501	187,341	187,341	0.09	0.00
	<b>18-25</b>	308	221,392	222,655	222,655	-0.57	0.00
	<b>26-34</b>	88	288,482	305,655	305,655	-5.62	0.00
	<b>35-49</b>	127	522,632	493,006	493,006	6.01	0.00
	<b>50-64</b>	59	342,314	363,073	363,073	-5.72	0.00
	<b>65+</b>	42	255,795	246,387	246,387	3.82	0.00
<b>Race</b>	<b>White</b>	715	1,482,576	1,543,601	1,543,601	-3.95	-0.00
	<b>Black</b>	51	111,580	116,799	116,799	-4.47	-0.00
	<b>Other</b>	136	223,960	157,716	157,716	42.00	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	264	363,896	357,939	357,939	1.66	0.00
	<b>Non-Hispanic</b>	638	1,454,220	1,460,177	1,460,177	-0.41	-0.00
<b>Gender</b>	<b>Male</b>	446	914,992	916,446	916,446	-0.16	0.00
	<b>Female</b>	456	903,124	901,670	901,670	0.16	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.31 2003 NSDUH Slippage Rates: New Hampshire**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		910	1,082,138	1,082,138	1,082,138	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	290	269,135	269,135	269,135	0.00	0.00
	<b>Quarter 2</b>	218	270,042	270,042	270,042	-0.00	0.00
	<b>Quarter 3</b>	188	270,962	270,962	270,962	0.00	0.00
	<b>Quarter 4</b>	214	271,999	271,999	271,999	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	287	113,818	114,288	114,288	-0.41	0.00
	<b>18-25</b>	329	131,416	132,490	132,490	-0.81	0.00
	<b>26-34</b>	81	138,340	134,235	134,235	3.06	0.00
	<b>35-49</b>	147	325,528	328,090	328,090	-0.78	0.00
	<b>50-64</b>	46	265,984	227,917	227,917	16.70	0.00
	<b>65+</b>	20	107,052	145,119	145,119	-26.23	0.00
<b>Race</b>	<b>White</b>	858	1,031,424	1,045,174	1,045,174	-1.32	0.00
	<b>Black</b>	6	9,043	9,188	9,188	-1.58	0.00
	<b>Other</b>	46	41,672	27,777	27,777	50.02	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	23	19,229	17,157	17,157	12.08	0.00
	<b>Non-Hispanic</b>	887	1,062,910	1,064,982	1,064,982	-0.19	0.00
<b>Gender</b>	<b>Male</b>	456	529,704	529,704	529,704	0.00	0.00
	<b>Female</b>	454	552,435	552,435	552,435	0.00	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.32 2003 NSDUH Slippage Rates: New Jersey**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		883	7,118,305	7,118,305	7,118,305	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	208	1,773,729	1,773,729	1,773,729	0.00	0.00
	<b>Quarter 2</b>	223	1,777,469	1,777,469	1,777,469	0.00	0.00
	<b>Quarter 3</b>	254	1,781,406	1,781,406	1,781,406	0.00	0.00
	<b>Quarter 4</b>	198	1,785,701	1,785,701	1,785,701	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	289	729,370	726,704	726,704	0.37	0.00
	<b>18-25</b>	282	795,213	807,111	807,111	-1.47	0.00
	<b>26-34</b>	100	1,029,239	998,871	998,871	3.04	0.00
	<b>35-49</b>	137	2,117,522	2,084,672	2,084,672	1.58	0.00
	<b>50-64</b>	40	1,461,842	1,426,227	1,426,227	2.50	0.00
	<b>65+</b>	35	985,119	1,074,720	1,074,720	-8.34	-0.00
<b>Race</b>	<b>White</b>	646	5,311,694	5,590,702	5,590,702	-4.99	0.00
	<b>Black</b>	110	945,190	967,837	967,837	-2.34	0.00
	<b>Other</b>	127	861,421	559,766	559,766	53.89	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	200	1,043,611	981,619	981,619	6.32	0.00
	<b>Non-Hispanic</b>	683	6,074,694	6,136,686	6,136,686	-1.01	0.00
<b>Gender</b>	<b>Male</b>	421	3,393,841	3,414,131	3,414,131	-0.59	0.00
	<b>Female</b>	462	3,724,464	3,704,174	3,704,174	0.55	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.33 2003 NSDUH Slippage Rates: New Mexico**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		944	1,520,180	1,520,180	1,520,180	0.00	-0.00
<b>Quarter</b>	<b>Quarter 1</b>	201	377,777	377,777	377,777	-0.00	0.00
	<b>Quarter 2</b>	284	379,150	379,150	379,150	0.00	-0.00
	<b>Quarter 3</b>	207	380,861	380,861	380,861	0.00	-0.00
	<b>Quarter 4</b>	252	382,392	382,392	382,392	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	317	175,933	177,001	177,001	-0.60	-0.00
	<b>18-25</b>	314	214,969	213,899	213,899	0.50	0.00
	<b>26-34</b>	89	195,916	200,400	200,400	-2.24	0.00
	<b>35-49</b>	147	397,043	398,017	398,017	-0.24	-0.00
	<b>50-64</b>	43	309,537	311,998	311,998	-0.79	0.00
	<b>65+</b>	34	226,783	218,865	218,865	3.62	0.00
<b>Race</b>	<b>White</b>	717	1,237,799	1,304,868	1,304,868	-5.14	0.00
	<b>Black</b>	26	35,891	31,977	31,977	12.24	-0.00
	<b>Other</b>	201	246,490	183,335	183,335	34.45	-0.00
<b>Hispanicity</b>	<b>Hispanic</b>	461	613,513	629,603	629,603	-2.56	0.00
	<b>Non-Hispanic</b>	483	906,667	890,577	890,577	1.81	-0.00
<b>Gender</b>	<b>Male</b>	449	733,929	735,313	735,313	-0.19	-0.00
	<b>Female</b>	495	786,251	784,867	784,867	0.18	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.34 2003 NSDUH Slippage Rates: New York**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		3,634	15,948,708	15,948,708	15,948,708	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	787	3,977,843	3,977,844	3,977,844	-0.00	0.00
	<b>Quarter 2</b>	984	3,983,670	3,983,671	3,983,671	-0.00	0.00
	<b>Quarter 3</b>	979	3,990,154	3,990,154	3,990,154	-0.00	0.00
	<b>Quarter 4</b>	884	3,997,040	3,997,040	3,997,040	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	1,224	1,553,399	1,559,994	1,559,994	-0.42	0.00
	<b>18-25</b>	1,219	2,048,380	2,046,657	2,046,657	0.08	0.00
	<b>26-34</b>	360	2,366,722	2,371,102	2,371,102	-0.18	0.00
	<b>35-49</b>	493	4,374,729	4,421,875	4,421,875	-1.07	0.00
	<b>50-64</b>	228	3,871,569	3,177,445	3,177,445	21.85	0.00
	<b>65+</b>	110	1,733,909	2,371,636	2,371,636	-26.89	0.00
<b>Race</b>	<b>White</b>	2,363	10,538,834	11,909,969	11,909,969	-11.51	-0.00
	<b>Black</b>	648	2,620,218	2,694,131	2,694,131	-2.74	-0.00
	<b>Other</b>	623	2,789,656	1,344,609	1,344,609	107.47	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	691	2,404,201	2,455,707	2,455,707	-2.10	0.00
	<b>Non-Hispanic</b>	2,943	13,544,507	13,493,001	13,493,001	0.38	0.00
<b>Gender</b>	<b>Male</b>	1,763	7,585,902	7,591,773	7,591,773	-0.08	0.00
	<b>Female</b>	1,871	8,362,806	8,356,935	8,356,935	0.07	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.35 2003 NSDUH Slippage Rates: North Carolina**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		904	6,805,722	6,805,722	6,805,722	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	234	1,693,633	1,693,633	1,693,633	0.00	0.00
	<b>Quarter 2</b>	209	1,698,707	1,698,707	1,698,707	0.00	0.00
	<b>Quarter 3</b>	260	1,703,803	1,703,803	1,703,803	0.00	-0.00
	<b>Quarter 4</b>	201	1,709,578	1,709,579	1,709,579	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	286	694,611	693,740	693,740	0.13	-0.00
	<b>18-25</b>	344	873,713	884,534	884,534	-1.22	0.00
	<b>26-34</b>	81	1,077,093	1,058,887	1,058,887	1.72	0.00
	<b>35-49</b>	127	1,819,166	1,847,572	1,847,572	-1.54	0.00
	<b>50-64</b>	37	1,358,451	1,351,872	1,351,872	0.49	0.00
	<b>65+</b>	29	982,688	969,117	969,117	1.40	0.00
<b>Race</b>	<b>White</b>	590	4,969,179	5,140,173	5,140,173	-3.33	0.00
	<b>Black</b>	247	1,455,260	1,415,025	1,415,025	2.84	0.00
	<b>Other</b>	67	381,283	250,524	250,524	52.19	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	93	378,093	333,819	333,819	13.26	0.00
	<b>Non-Hispanic</b>	811	6,427,629	6,471,903	6,471,903	-0.68	0.00
<b>Gender</b>	<b>Male</b>	458	3,284,603	3,266,972	3,266,972	0.54	0.00
	<b>Female</b>	446	3,521,119	3,538,750	3,538,750	-0.50	-0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.36 2003 NSDUH Slippage Rates: North Dakota**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		867	525,140	525,140	525,140	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	215	131,222	131,222	131,222	0.00	0.00
	<b>Quarter 2</b>	249	131,236	131,236	131,236	0.00	0.00
	<b>Quarter 3</b>	234	131,295	131,295	131,295	0.00	0.00
	<b>Quarter 4</b>	169	131,387	131,387	131,387	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	259	54,050	54,050	54,050	0.00	0.00
	<b>18-25</b>	276	82,629	82,629	82,629	0.00	0.00
	<b>26-34</b>	97	64,923	64,923	64,923	0.00	-0.00
	<b>35-49</b>	137	134,262	134,262	134,262	0.00	0.00
	<b>50-64</b>	59	114,433	102,453	102,453	11.69	0.00
	<b>65+</b>	39	74,843	86,823	86,823	-13.80	0.00
<b>Race</b>	<b>White</b>	788	489,703	491,220	491,220	-0.31	0.00
	<b>Black</b>	5	2,463	3,672	3,672	-32.93	-0.00
	<b>Other</b>	74	32,974	30,247	30,247	9.02	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	13	5,737	5,891	5,891	-2.62	0.00
	<b>Non-Hispanic</b>	854	519,403	519,249	519,249	0.03	0.00
<b>Gender</b>	<b>Male</b>	449	259,404	259,404	259,404	0.00	0.00
	<b>Female</b>	418	265,736	265,736	265,736	0.00	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).



**Table H.37 2003 NSDUH Slippage Rates: Ohio**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		3,559	9,433,820	9,433,820	9,433,820	-0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	907	2,354,601	2,354,601	2,354,601	0.00	0.00
	<b>Quarter 2</b>	955	2,356,957	2,356,957	2,356,957	-0.00	0.00
	<b>Quarter 3</b>	861	2,359,467	2,359,467	2,359,467	0.00	0.00
	<b>Quarter 4</b>	836	2,362,795	2,362,795	2,362,795	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	1,198	984,123	984,255	984,255	-0.01	0.00
	<b>18-25</b>	1,224	1,248,560	1,244,999	1,244,999	0.29	0.00
	<b>26-34</b>	354	1,298,237	1,296,346	1,296,346	0.15	0.00
	<b>35-49</b>	474	2,570,868	2,571,293	2,571,293	-0.02	-0.00
	<b>50-64</b>	200	2,151,475	1,905,768	1,905,768	12.89	0.00
	<b>65+</b>	109	1,180,557	1,431,160	1,431,160	-17.51	-0.00
<b>Race</b>	<b>White</b>	2,962	8,138,723	8,171,816	8,171,816	-0.40	-0.00
	<b>Black</b>	435	1,012,344	1,015,570	1,015,570	-0.32	0.00
	<b>Other</b>	162	282,752	246,434	246,434	14.74	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	83	179,301	173,322	173,322	3.45	0.00
	<b>Non-Hispanic</b>	3,476	9,254,519	9,260,498	9,260,498	-0.06	0.00
<b>Gender</b>	<b>Male</b>	1,695	4,523,178	4,534,879	4,534,879	-0.26	0.00
	<b>Female</b>	1,864	4,910,641	4,898,941	4,898,941	0.24	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.38 2003 NSDUH Slippage Rates: Oklahoma**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		871	2,846,785	2,846,785	2,846,785	0.00	-0.00
<b>Quarter</b>	<b>Quarter 1</b>	198	709,031	709,031	709,031	0.00	0.00
	<b>Quarter 2</b>	238	710,293	710,293	710,293	0.00	0.00
	<b>Quarter 3</b>	260	712,932	712,932	712,932	0.00	-0.00
	<b>Quarter 4</b>	175	714,529	714,529	714,529	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	328	299,660	300,217	300,218	-0.19	-0.00
	<b>18-25</b>	269	419,505	413,370	413,370	1.48	0.00
	<b>26-34</b>	58	378,887	394,306	394,306	-3.91	0.00
	<b>35-49</b>	133	740,787	730,945	730,945	1.35	0.00
	<b>50-64</b>	44	524,353	572,262	572,262	-8.37	0.00
	<b>65+</b>	39	483,593	435,685	435,685	11.00	0.00
<b>Race</b>	<b>White</b>	616	2,214,455	2,273,665	2,273,665	-2.60	0.00
	<b>Black</b>	64	204,712	202,344	202,344	1.17	-0.00
	<b>Other</b>	191	427,618	370,776	370,776	15.33	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	56	138,877	142,285	142,285	-2.40	-0.00
	<b>Non-Hispanic</b>	815	2,707,908	2,704,500	2,704,500	0.13	0.00
<b>Gender</b>	<b>Male</b>	405	1,374,453	1,374,453	1,374,453	0.00	-0.00
	<b>Female</b>	466	1,472,333	1,472,332	1,472,333	0.00	-0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.39 2003 NSDUH Slippage Rates: Oregon**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		912	2,970,969	2,970,969	2,970,969	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	270	738,529	738,529	738,529	0.00	0.00
	<b>Quarter 2</b>	201	741,071	741,071	741,071	0.00	0.00
	<b>Quarter 3</b>	267	744,230	744,230	744,230	0.00	0.00
	<b>Quarter 4</b>	174	747,139	747,139	747,139	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	311	293,711	296,519	296,519	-0.95	0.00
	<b>18-25</b>	310	392,187	390,879	390,879	0.33	0.00
	<b>26-34</b>	81	441,779	445,421	445,421	-0.82	0.00
	<b>35-49</b>	139	789,164	778,896	778,896	1.32	0.00
	<b>50-64</b>	44	615,223	618,998	618,998	-0.61	0.00
	<b>65+</b>	27	438,904	440,257	440,257	-0.31	0.00
<b>Race</b>	<b>White</b>	802	2,631,490	2,715,667	2,715,667	-3.10	0.00
	<b>Black</b>	14	50,065	49,028	49,028	2.12	0.00
	<b>Other</b>	96	289,413	206,274	206,274	40.31	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	121	258,267	233,762	233,762	10.48	0.00
	<b>Non-Hispanic</b>	791	2,712,702	2,737,207	2,737,207	-0.90	0.00
<b>Gender</b>	<b>Male</b>	437	1,452,201	1,460,701	1,460,701	-0.58	0.00
	<b>Female</b>	475	1,518,767	1,510,267	1,510,267	0.56	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.40 2003 NSDUH Slippage Rates: Pennsylvania**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		3,572	10,356,055	10,356,055	10,356,055	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	827	2,583,666	2,583,666	2,583,666	0.00	0.00
	<b>Quarter 2</b>	931	2,587,057	2,587,057	2,587,057	0.00	0.00
	<b>Quarter 3</b>	1,030	2,590,438	2,590,438	2,590,438	0.00	0.00
	<b>Quarter 4</b>	784	2,594,895	2,594,895	2,594,895	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	1,237	1,036,660	1,030,859	1,030,859	0.56	0.00
	<b>18-25</b>	1,147	1,310,024	1,309,752	1,309,752	0.02	0.00
	<b>26-34</b>	327	1,305,819	1,296,708	1,296,708	0.70	0.00
	<b>35-49</b>	528	2,782,229	2,801,060	2,801,060	-0.67	0.00
	<b>50-64</b>	174	2,056,695	2,125,683	2,125,683	-3.25	0.00
	<b>65+</b>	159	1,864,627	1,791,994	1,791,994	4.05	-0.00
<b>Race</b>	<b>White</b>	2,993	8,971,511	9,069,403	9,069,403	-1.08	0.00
	<b>Black</b>	411	1,020,862	977,291	977,291	4.46	-0.00
	<b>Other</b>	168	363,681	309,361	309,361	17.56	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	192	319,815	311,278	311,278	2.74	0.00
	<b>Non-Hispanic</b>	3,380	10,036,240	10,044,777	10,044,777	-0.08	0.00
<b>Gender</b>	<b>Male</b>	1,706	4,935,390	4,951,473	4,951,473	-0.32	0.00
	<b>Female</b>	1,866	5,420,665	5,404,582	5,404,582	0.30	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.41 2003 NSDUH Slippage Rates: Rhode Island**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		914	903,348	903,348	903,348	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	226	224,922	224,922	224,922	0.00	0.00
	<b>Quarter 2</b>	190	225,505	225,505	225,505	-0.00	0.00
	<b>Quarter 3</b>	301	226,142	226,142	226,142	0.00	0.00
	<b>Quarter 4</b>	197	226,779	226,779	226,779	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	307	86,402	86,777	86,777	-0.43	0.00
	<b>18-25</b>	311	126,444	127,775	127,775	-1.04	0.00
	<b>26-34</b>	75	121,234	119,529	119,529	1.43	0.00
	<b>35-49</b>	135	247,517	250,426	250,426	-1.16	0.00
	<b>50-64</b>	58	216,137	176,891	176,891	22.19	0.00
	<b>65+</b>	28	105,613	141,950	141,950	-25.60	0.00
<b>Race</b>	<b>White</b>	767	778,959	814,573	814,573	-4.37	0.00
	<b>Black</b>	46	57,918	56,506	49,123	17.91	15.03
	<b>Other</b>	101	66,471	32,269	39,653	67.63	-18.62
<b>Hispanicity</b>	<b>Hispanic</b>	129	74,130	75,925	75,925	-2.36	0.00
	<b>Non-Hispanic</b>	785	829,219	827,423	827,423	0.22	0.00
<b>Gender</b>	<b>Male</b>	443	429,833	430,142	430,142	-0.07	0.00
	<b>Female</b>	471	473,515	473,206	473,206	0.07	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.42 2003 NSDUH Slippage Rates: South Carolina**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		920	3,384,520	3,384,520	3,384,520	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	257	842,524	842,524	842,524	-0.00	0.00
	<b>Quarter 2</b>	196	844,861	844,861	844,861	0.00	-0.00
	<b>Quarter 3</b>	255	847,157	847,157	847,157	0.00	0.00
	<b>Quarter 4</b>	212	849,978	849,978	849,978	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	310	358,031	354,988	354,988	0.86	0.00
	<b>18-25</b>	304	450,800	458,297	458,297	-1.64	0.00
	<b>26-34</b>	111	485,726	480,017	480,017	1.19	0.00
	<b>35-49</b>	122	897,905	895,086	895,086	0.31	0.00
	<b>50-64</b>	47	761,166	704,377	704,377	8.06	0.00
	<b>65+</b>	26	430,891	491,754	491,754	-12.38	-0.00
<b>Race</b>	<b>White</b>	594	2,302,258	2,344,475	2,344,475	-1.80	0.00
	<b>Black</b>	300	1,008,755	968,562	968,562	4.15	0.00
	<b>Other</b>	26	73,507	71,483	71,483	2.83	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	42	65,042	85,702	85,702	-24.11	0.00
	<b>Non-Hispanic</b>	878	3,319,478	3,298,818	3,298,818	0.63	0.00
<b>Gender</b>	<b>Male</b>	425	1,600,193	1,606,004	1,606,004	-0.36	0.00
	<b>Female</b>	495	1,784,327	1,778,516	1,778,516	0.33	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.43 2003 NSDUH Slippage Rates: South Dakota**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		881	621,498	621,498	621,498	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	218	154,978	154,978	154,978	-0.00	0.00
	<b>Quarter 2</b>	227	155,201	155,201	155,201	0.00	0.00
	<b>Quarter 3</b>	213	155,499	155,499	155,499	0.00	0.00
	<b>Quarter 4</b>	223	155,820	155,820	155,820	-0.00	0.00
<b>Age Group</b>	<b>12-17</b>	280	68,962	69,339	69,339	-0.54	0.00
	<b>18-25</b>	317	94,483	92,111	92,111	2.57	0.00
	<b>26-34</b>	69	73,401	77,661	77,661	-5.49	0.00
	<b>35-49</b>	132	163,845	161,579	161,579	1.40	0.00
	<b>50-64</b>	42	115,520	119,300	119,300	-3.17	0.00
	<b>65+</b>	41	105,288	101,509	101,509	3.72	-0.00
<b>Race</b>	<b>White</b>	783	560,619	562,573	562,573	-0.35	0.00
	<b>Black</b>	5	4,912	4,571	4,571	7.47	0.00
	<b>Other</b>	93	55,967	54,354	54,354	2.97	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	23	7,025	8,028	8,028	-12.49	0.00
	<b>Non-Hispanic</b>	858	614,473	613,470	613,470	0.16	0.00
<b>Gender</b>	<b>Male</b>	407	306,282	304,704	304,704	0.52	0.00
	<b>Female</b>	474	315,216	316,795	316,795	-0.50	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.44 2003 NSDUH Slippage Rates: Tennessee**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		856	4,823,157	4,823,157	4,823,157	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	223	1,200,931	1,200,931	1,200,931	0.00	0.00
	<b>Quarter 2</b>	230	1,204,090	1,204,090	1,204,090	0.00	0.00
	<b>Quarter 3</b>	208	1,207,221	1,207,221	1,207,221	-0.00	0.00
	<b>Quarter 4</b>	195	1,210,916	1,210,916	1,210,916	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	323	473,419	474,491	474,491	-0.23	0.00
	<b>18-25</b>	222	627,943	632,850	632,850	-0.78	0.00
	<b>26-34</b>	110	727,870	721,312	721,312	0.91	-0.00
	<b>35-49</b>	121	1,294,948	1,309,193	1,309,193	-1.09	0.00
	<b>50-64</b>	53	1,108,568	993,392	993,392	11.59	0.00
	<b>65+</b>	27	590,409	691,920	691,920	-14.67	0.00
<b>Race</b>	<b>White</b>	670	3,943,611	3,963,780	3,963,780	-0.51	-0.00
	<b>Black</b>	159	717,623	750,292	750,292	-4.35	0.00
	<b>Other</b>	27	161,923	109,086	109,086	48.44	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	15	73,994	109,251	109,251	-32.27	0.00
	<b>Non-Hispanic</b>	841	4,749,164	4,713,906	4,713,906	0.75	0.00
<b>Gender</b>	<b>Male</b>	418	2,299,372	2,315,727	2,315,727	-0.71	0.00
	<b>Female</b>	438	2,523,785	2,507,431	2,507,431	0.65	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.45 2003 NSDUH Slippage Rates: Texas**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		3,566	17,432,369	17,432,369	17,432,369	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	799	4,328,752	4,328,752	4,328,752	0.00	0.00
	<b>Quarter 2</b>	960	4,347,866	4,347,866	4,347,866	-0.00	0.00
	<b>Quarter 3</b>	1,022	4,367,695	4,367,695	4,367,695	-0.00	0.00
	<b>Quarter 4</b>	785	4,388,056	4,388,056	4,388,056	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	1,148	2,026,570	2,033,118	2,033,118	-0.32	0.00
	<b>18-25</b>	1,208	2,517,653	2,546,961	2,546,961	-1.15	0.00
	<b>26-34</b>	386	2,905,429	2,857,423	2,857,423	1.68	0.00
	<b>35-49</b>	548	4,761,595	4,766,947	4,766,947	-0.11	0.00
	<b>50-64</b>	184	3,522,266	3,154,330	3,154,330	11.66	-0.00
	<b>65+</b>	92	1,698,856	2,073,591	2,073,591	-18.07	0.00
<b>Race</b>	<b>White</b>	2,826	14,149,489	14,682,764	14,682,764	-3.63	0.00
	<b>Black</b>	429	1,960,815	1,907,942	1,907,942	2.77	0.00
	<b>Other</b>	311	1,322,066	841,663	841,663	57.08	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	1,311	5,529,824	5,573,832	5,573,832	-0.79	0.00
	<b>Non-Hispanic</b>	2,255	11,902,546	11,858,537	11,858,537	0.37	0.00
<b>Gender</b>	<b>Male</b>	1,762	8,512,096	8,500,158	8,500,158	0.14	0.00
	<b>Female</b>	1,804	8,920,274	8,932,212	8,932,212	-0.13	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.46 2003 NSDUH Slippage Rates: Utah**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		898	1,816,737	1,816,737	1,816,737	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	227	451,802	451,802	451,802	-0.00	0.00
	<b>Quarter 2</b>	226	453,323	453,323	453,323	0.00	0.00
	<b>Quarter 3</b>	225	454,931	454,931	454,931	0.00	0.00
	<b>Quarter 4</b>	220	456,681	456,681	456,681	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	287	233,126	231,320	231,320	0.78	0.00
	<b>18-25</b>	298	357,329	357,456	357,456	-0.04	0.00
	<b>26-34</b>	82	326,257	326,446	326,446	-0.06	0.00
	<b>35-49</b>	131	424,052	425,542	425,542	-0.35	0.00
	<b>50-64</b>	65	326,458	279,151	279,151	16.95	-0.00
	<b>65+</b>	35	149,514	196,822	196,822	-24.04	-0.00
<b>Race</b>	<b>White</b>	821	1,650,408	1,707,547	1,707,547	-3.35	-0.00
	<b>Black</b>	10	17,701	16,581	16,581	6.76	0.00
	<b>Other</b>	67	148,628	92,609	92,609	60.49	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	104	177,037	164,304	164,304	7.75	0.00
	<b>Non-Hispanic</b>	794	1,639,700	1,652,433	1,652,433	-0.77	-0.00
<b>Gender</b>	<b>Male</b>	440	893,100	900,644	900,644	-0.84	0.00
	<b>Female</b>	458	923,637	916,093	916,093	0.82	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.47 2003 NSDUH Slippage Rates: Vermont**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		917	530,133	530,133	530,133	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	235	132,110	132,110	132,110	0.00	0.00
	<b>Quarter 2</b>	201	132,378	132,378	132,378	0.00	0.00
	<b>Quarter 3</b>	228	132,661	132,661	132,661	0.00	0.00
	<b>Quarter 4</b>	253	132,984	132,984	132,984	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	306	54,008	53,957	53,957	0.09	0.00
	<b>18-25</b>	306	72,022	71,119	71,119	1.27	0.00
	<b>26-34</b>	74	61,568	62,522	62,522	-1.53	0.00
	<b>35-49</b>	152	148,238	149,282	149,282	-0.70	0.00
	<b>50-64</b>	49	120,325	117,022	117,022	2.82	0.00
	<b>65+</b>	30	73,972	76,232	76,232	-2.96	0.00
<b>Race</b>	<b>White</b>	859	506,464	514,676	514,676	-1.60	0.00
	<b>Black</b>	15	4,594	2,957	2,957	55.39	0.00
	<b>Other</b>	43	19,075	12,501	12,501	52.59	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	13	7,688	4,817	4,817	59.59	0.00
	<b>Non-Hispanic</b>	904	522,445	525,316	525,316	-0.55	0.00
<b>Gender</b>	<b>Male</b>	430	258,498	258,884	258,884	-0.15	0.00
	<b>Female</b>	487	271,635	271,249	271,249	0.14	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.48 2003 NSDUH Slippage Rates: Virginia**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		907	5,951,031	5,951,031	5,951,031	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	255	1,479,410	1,479,410	1,479,410	0.00	-0.00
	<b>Quarter 2</b>	177	1,484,754	1,484,754	1,484,754	0.00	0.00
	<b>Quarter 3</b>	288	1,490,426	1,490,426	1,490,426	0.00	0.00
	<b>Quarter 4</b>	187	1,496,441	1,496,441	1,496,441	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	297	612,686	614,433	614,433	-0.28	0.00
	<b>18-25</b>	308	743,730	749,393	749,393	-0.76	0.00
	<b>26-34</b>	80	839,039	854,422	854,422	-1.80	0.00
	<b>35-49</b>	143	1,719,365	1,696,572	1,696,572	1.34	0.00
	<b>50-64</b>	50	1,260,470	1,239,143	1,239,143	1.72	0.00
	<b>65+</b>	29	775,740	797,067	797,067	-2.68	0.00
<b>Race</b>	<b>White</b>	635	4,406,634	4,485,945	4,485,945	-1.77	0.00
	<b>Black</b>	202	1,103,754	1,119,143	1,119,143	-1.38	-0.00
	<b>Other</b>	70	440,643	345,942	345,942	27.37	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	63	312,958	293,520	293,520	6.62	0.00
	<b>Non-Hispanic</b>	844	5,638,072	5,657,511	5,657,511	-0.34	0.00
<b>Gender</b>	<b>Male</b>	427	2,829,327	2,831,786	2,831,786	-0.09	0.00
	<b>Female</b>	480	3,121,703	3,119,245	3,119,245	0.08	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.49 2003 NSDUH Slippage Rates: Washington**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		941	5,053,331	5,053,331	5,053,331	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	282	1,256,050	1,256,050	1,256,050	0.00	0.00
	<b>Quarter 2</b>	187	1,260,348	1,260,348	1,260,348	0.00	0.00
	<b>Quarter 3</b>	201	1,265,976	1,265,976	1,265,976	0.00	0.00
	<b>Quarter 4</b>	271	1,270,957	1,270,957	1,270,957	0.00	0.00
<b>Age Group</b>	<b>12-17</b>	343	524,344	527,057	527,057	-0.51	0.00
	<b>18-25</b>	317	671,986	666,923	666,923	0.76	0.00
	<b>26-34</b>	78	756,349	747,782	747,782	1.15	0.00
	<b>35-49</b>	123	1,406,074	1,416,991	1,416,991	-0.77	0.00
	<b>50-64</b>	45	952,002	1,025,911	1,025,911	-7.20	0.00
	<b>65+</b>	35	742,576	668,667	668,667	11.05	0.00
<b>Race</b>	<b>White</b>	722	4,249,176	4,364,389	4,364,389	-2.64	0.00
	<b>Black</b>	41	163,823	163,046	163,046	0.48	0.00
	<b>Other</b>	178	640,333	525,897	525,897	21.76	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	116	385,554	361,030	361,030	6.79	0.00
	<b>Non-Hispanic</b>	825	4,667,777	4,692,301	4,692,301	-0.52	0.00
<b>Gender</b>	<b>Male</b>	453	2,477,472	2,478,240	2,478,240	-0.03	0.00
	<b>Female</b>	488	2,575,859	2,575,091	2,575,091	0.03	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.50 2003 NSDUH Slippage Rates: West Virginia**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		871	1,534,650	1,534,650	1,534,650	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	228	383,032	383,032	383,032	0.00	0.00
	<b>Quarter 2</b>	211	383,418	383,418	383,418	0.00	0.00
	<b>Quarter 3</b>	239	383,823	383,823	383,823	0.00	-0.00
	<b>Quarter 4</b>	193	384,377	384,377	384,377	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	282	139,824	139,083	139,083	0.53	0.00
	<b>18-25</b>	303	193,635	195,671	195,671	-1.04	0.00
	<b>26-34</b>	77	200,551	196,286	196,286	2.17	0.00
	<b>35-49</b>	121	383,667	393,435	393,435	-2.48	0.00
	<b>50-64</b>	48	336,384	343,736	343,736	-2.14	0.00
	<b>65+</b>	40	280,589	266,439	266,440	5.31	-0.00
<b>Race</b>	<b>White</b>	813	1,454,292	1,465,517	1,465,517	-0.77	0.00
	<b>Black</b>	26	50,011	45,488	45,488	9.94	0.00
	<b>Other</b>	32	30,347	23,646	23,646	28.34	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	12	10,827	9,967	9,967	8.62	0.00
	<b>Non-Hispanic</b>	859	1,523,823	1,524,683	1,524,683	-0.06	0.00
<b>Gender</b>	<b>Male</b>	419	740,876	740,876	740,876	0.00	0.00
	<b>Female</b>	452	793,774	793,774	793,774	0.00	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.51 2003 NSDUH Slippage Rates: Wisconsin**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C %	(F-C)/C %
<b>Total</b>		887	4,546,217	4,546,217	4,546,217	0.00	0.00
<b>Quarter</b>	<b>Quarter 1</b>	238	1,133,148	1,133,148	1,133,148	0.00	0.00
	<b>Quarter 2</b>	221	1,135,298	1,135,298	1,135,298	0.00	0.00
	<b>Quarter 3</b>	205	1,137,554	1,137,554	1,137,554	0.00	0.00
	<b>Quarter 4</b>	223	1,140,218	1,140,218	1,140,218	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	271	482,772	482,916	482,916	-0.03	0.00
	<b>18-25</b>	346	615,086	627,502	627,502	-1.98	0.00
	<b>26-34</b>	68	636,665	603,531	603,531	5.49	0.00
	<b>35-49</b>	130	1,243,782	1,264,355	1,264,355	-1.63	0.00
	<b>50-64</b>	33	744,957	894,004	894,004	-16.67	0.00
	<b>65+</b>	39	822,955	673,907	673,907	22.12	0.00
<b>Race</b>	<b>White</b>	796	4,129,376	4,158,991	4,158,992	-0.71	-0.00
	<b>Black</b>	50	229,684	232,826	232,826	-1.35	0.00
	<b>Other</b>	41	187,157	154,400	154,400	21.22	0.00
<b>Hispanicity</b>	<b>Hispanic</b>	48	162,562	156,083	156,083	4.15	0.00
	<b>Non-Hispanic</b>	839	4,383,655	4,390,134	4,390,134	-0.15	0.00
<b>Gender</b>	<b>Male</b>	441	2,228,404	2,228,404	2,228,404	0.00	0.00
	<b>Female</b>	446	2,317,813	2,317,813	2,317,813	0.00	0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).

**Table H.52 2003 NSDUH Slippage Rates: Wyoming**

Domain		<i>n</i>	Initial Total (I) <sup>1</sup>	Final Total (F) <sup>2</sup>	Census Total (C)	(I-C)/C%	(F-C)/C%
<b>Total</b>		885	416,105	416,105	416,105	0.00	-0.00
<b>Quarter</b>	<b>Quarter 1</b>	225	103,741	103,741	103,741	0.00	-0.00
	<b>Quarter 2</b>	233	103,911	103,911	103,911	0.00	-0.00
	<b>Quarter 3</b>	194	104,113	104,113	104,113	0.00	-0.00
	<b>Quarter 4</b>	233	104,340	104,340	104,340	0.00	-0.00
<b>Age Group</b>	<b>12-17</b>	313	44,796	44,796	44,796	0.00	-0.00
	<b>18-25</b>	253	59,470	60,007	60,007	-0.90	-0.00
	<b>26-34</b>	82	51,293	51,615	51,615	-0.62	0.00
	<b>35-49</b>	155	111,263	111,438	111,438	-0.16	-0.00
	<b>50-64</b>	50	93,159	90,957	90,957	2.42	0.00
	<b>65+</b>	32	56,123	57,292	57,292	-2.04	-0.00
<b>Race</b>	<b>White</b>	837	394,471	396,389	396,389	-0.48	0.00
	<b>Black</b>	4	1,090	367	3,492	-68.77	-89.48
	<b>Other</b>	44	20,544	19,349	16,225	26.62	19.26
<b>Hispanicity</b>	<b>Hispanic</b>	66	24,352	25,626	25,626	-4.97	0.00
	<b>Non-Hispanic</b>	819	391,753	390,479	390,480	0.33	-0.00
<b>Gender</b>	<b>Male</b>	450	207,111	206,941	206,941	0.08	0.00
	<b>Female</b>	435	208,994	209,165	209,165	-0.08	-0.00

<sup>1</sup> Weight1\*...\*Weight12 (before person poststratification).

<sup>2</sup> Weight1\*...\*Weight13 (after person poststratification).



## **Appendix I: Evaluation of Calibration Weights: Weight Summary Statistics**



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**Table I.1 2003 NSDUH Dwelling Unit–Level Weight Summary Statistics: United States, District of Columbia, and the 50 States**

Domain	n	Before res.du.nr (Weight1*...*Weight6) <sup>1</sup>						After res.du.nr & Before res.du.ps (Weight1*...*Weight7) <sup>1</sup>						After res.du.ps (Weight1*...*Weight8) <sup>1</sup>					
		Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>	Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>	Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>
United States	130,605	7	433	599	937	6,995	1.38	51	467	659	1,024	5,410	1.38	20	495	718	1,131	9,002	1.43
Alaska	1,666	85	90	107	115	225	1.03	91	100	118	129	566	1.05	33	117	133	152	352	1.06
Alabama	1,558	734	781	825	1,088	1,342	1.03	757	870	971	1,168	1,447	1.03	203	943	1,100	1,256	4,450	1.08
Arkansas	1,767	423	441	450	545	658	1.02	428	460	475	582	687	1.02	172	535	598	675	1,224	1.04
Arizona	1,662	275	624	877	1,246	3,018	1.13	614	676	934	1,293	2,917	1.12	237	892	1,125	1,454	5,519	1.15
California	6,015	109	1,396	1,539	1,602	6,995	1.02	737	1,616	1,697	1,874	4,168	1.03	476	1,745	1,938	2,169	9,002	1.06
Colorado	1,709	645	717	781	809	2,316	1.02	674	776	853	900	1,151	1.01	157	904	1,011	1,146	4,590	1.06
Connecticut	2,073	502	520	533	594	1,333	1.02	513	568	591	675	826	1.01	106	577	635	729	3,250	1.07
District of Columbia	2,576	33	69	74	84	88	1.01	51	82	93	98	131	1.01	20	85	99	114	285	1.07
Delaware	1,774	78	127	164	181	497	1.06	124	137	182	197	292	1.04	33	148	174	204	516	1.08
Florida	7,575	143	611	671	756	2,111	1.06	394	695	759	832	1,737	1.04	183	796	882	975	2,497	1.06
Georgia	1,612	123	1,376	1,487	1,583	1,964	1.02	604	1,466	1,566	1,718	2,262	1.02	289	1,733	1,927	2,232	5,026	1.06
Hawaii	1,767	32	171	175	220	234	1.02	57	183	199	251	284	1.03	40	205	232	262	773	1.07
Iowa	1,721	125	556	588	639	695	1.01	385	602	626	678	780	1.01	184	621	679	742	2,929	1.06
Idaho	1,509	269	288	295	300	446	1.01	278	302	312	327	400	1.01	70	298	330	360	1,094	1.05
Illinois	6,803	101	443	524	549	648	1.02	294	543	605	689	1,245	1.04	224	572	671	764	1,965	1.06
Indiana	1,637	152	1,127	1,185	1,442	1,589	1.02	520	1,210	1,287	1,509	1,669	1.02	347	1,303	1,424	1,594	5,780	1.07
Kansas	1,638	520	547	562	694	762	1.02	520	576	641	738	830	1.02	176	602	661	726	2,119	1.04
Kentucky	1,878	477	658	759	1,010	1,445	1.05	477	712	802	1,049	1,564	1.05	143	765	848	950	3,312	1.06
Louisiana	1,637	764	839	885	1,009	1,205	1.02	786	884	964	1,134	1,612	1.02	260	931	1,030	1,137	3,650	1.04
Massachusetts	1,878	895	963	1,020	1,113	2,099	1.01	991	1,081	1,166	1,270	2,957	1.02	199	1,103	1,255	1,505	7,269	1.10
Maryland	1,475	938	1,023	1,078	1,139	1,617	1.01	1,011	1,114	1,211	1,320	2,151	1.02	276	1,092	1,285	1,562	5,448	1.11
Maine	2,045	140	191	197	226	242	1.01	159	207	215	246	276	1.01	41	239	268	297	1,310	1.07
Michigan	6,709	116	435	486	504	943	1.01	291	494	532	556	756	1.01	160	546	582	615	2,100	1.02
Minnesota	1,673	713	761	925	965	1,214	1.02	732	821	984	1,069	1,369	1.03	300	1,000	1,125	1,293	4,402	1.06
Missouri	1,912	893	963	980	1,012	1,179	1.00	962	1,015	1,053	1,122	1,438	1.00	362	1,075	1,158	1,259	3,164	1.03

<sup>1</sup> Weight1-Weight6 are design-based weight components; nr = nonresponse adjustment, ps = poststratification.

<sup>2</sup> Q1 and Q3 refer to the first and third quartile of the weight distribution.

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

(continued)

**Table I.1 2003 NSDUH Dwelling Unit–Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)**

Domain	n	Before res.du.nr (Weight1*...*Weight6) <sup>1</sup>						After res.du.nr & Before res.du.ps (Weight1*...*Weight7) <sup>1</sup>						After res.du.ps (Weight1*...*Weight8) <sup>1</sup>					
		Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>	Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>	Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>
Mississippi	1,650	406	424	516	581	640	1.02	420	462	545	616	688	1.02	89	563	637	714	2,226	1.08
Montana	1,766	165	176	189	198	237	1.01	175	187	201	211	258	1.01	53	197	218	232	758	1.05
North Carolina	1,753	293	1,340	1,480	1,581	1,729	1.01	960	1,431	1,580	1,647	1,869	1.01	283	1,575	1,840	2,087	6,840	1.07
North Dakota	1,619	80	141	147	154	189	1.02	83	152	155	168	206	1.02	30	150	164	180	809	1.10
Nebraska	1,622	323	339	345	360	402	1.00	323	355	367	382	514	1.00	112	373	415	471	1,336	1.05
New Hampshire	1,568	201	210	304	328	695	1.05	201	233	331	347	633	1.04	62	263	326	388	1,427	1.08
New Jersey	1,981	521	1,242	1,327	1,366	1,705	1.01	1,219	1,414	1,506	1,570	2,026	1.01	357	1,361	1,533	1,763	6,174	1.07
New Mexico	1,740	271	290	343	361	475	1.03	278	298	360	405	586	1.03	97	347	410	461	2,084	1.07
Nevada	1,663	105	296	353	462	1,126	1.10	134	323	367	469	729	1.07	66	381	459	543	1,255	1.09
New York	7,205	78	719	753	813	2,208	1.01	706	833	887	983	1,378	1.02	237	885	991	1,120	4,273	1.06
Ohio	7,246	182	493	543	582	826	1.01	402	526	575	622	884	1.01	163	572	625	666	1,688	1.03
Oklahoma	1,812	430	454	635	676	767	1.03	440	523	715	757	859	1.03	99	625	768	892	2,980	1.13
Oregon	1,760	486	501	518	776	981	1.08	499	527	548	819	1,041	1.08	167	624	759	909	2,610	1.07
Pennsylvania	7,482	98	517	563	597	998	1.01	365	571	618	649	1,723	1.02	195	591	643	702	2,108	1.03
Rhode Island	1,772	7	148	198	208	245	1.03	58	160	222	234	339	1.04	46	186	246	280	1,341	1.13
South Carolina	1,723	84	751	780	839	1,079	1.02	579	781	822	880	1,227	1.02	165	801	908	1,060	3,333	1.07
South Dakota	1,660	128	148	157	164	204	1.02	131	152	165	173	232	1.03	40	162	178	201	678	1.08
Tennessee	1,864	204	971	1,014	1,158	5,099	1.49	311	1,029	1,077	1,227	5,410	1.49	199	945	1,120	1,355	4,841	1.23
Texas	6,079	576	942	1,066	1,132	3,732	1.02	673	1,008	1,133	1,205	1,950	1.01	292	1,172	1,295	1,445	5,744	1.04
Utah	1,325	391	435	500	561	1,547	1.05	391	459	527	595	914	1.04	183	501	550	613	2,594	1.07
Virginia	1,667	625	1,097	1,192	1,474	6,717	1.07	780	1,287	1,409	1,678	3,078	1.04	446	1,358	1,642	1,958	4,986	1.07
Vermont	1,909	100	105	108	111	127	1.00	101	111	115	120	152	1.01	23	118	132	145	315	1.04
Washington	1,920	64	882	905	962	1,323	1.03	72	919	967	1,086	1,506	1.03	69	1,086	1,205	1,384	4,944	1.05
Wisconsin	1,655	886	973	1,002	1,020	2,100	1.01	903	1,033	1,076	1,111	1,623	1.01	363	1,184	1,279	1,385	5,062	1.05
West Virginia	2,236	162	237	256	287	349	1.02	205	256	274	316	363	1.02	53	293	335	371	803	1.06
Wyoming	1,659	39	98	103	106	110	1.00	81	104	109	113	119	1.00	21	109	121	134	484	1.08

<sup>1</sup> Weight1-Weight6 are design-based weight components; nr = nonresponse adjustment, ps = poststratification.

<sup>2</sup> Q1 and Q3 refer to the first and third quartile of the weight distribution.

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

**Table I.2 2003 NSDUH Selected Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States**

Domain	n	Before sel.per.ps (Weight1*...*Weight10) <sup>1</sup>						After sel.per.ps (Weight1*...*Weight11) <sup>1</sup>					
		Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>	Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>
United States	81,631	21	712	1,326	3,447	91,430	2.74	6	701	1,322	3,443	57,887	2.83
Alaska	1,098	34	154	203	608	3,163	2.28	46	151	223	621	4,355	2.37
Alabama	1,029	205	1,063	1,379	5,211	36,673	2.36	107	1,000	1,411	4,703	26,280	2.65
Arkansas	1,092	209	630	886	3,020	22,909	2.12	154	628	901	2,842	13,142	2.21
Arizona	1,057	279	1,185	1,810	5,058	27,178	2.20	61	1,002	1,894	4,863	41,461	2.82
California	4,471	658	2,126	2,873	9,589	91,430	2.02	433	2,107	3,027	9,262	52,653	2.05
Colorado	1,103	176	1,084	1,436	5,459	19,234	2.05	74	1,133	1,502	5,347	18,940	2.04
Connecticut	1,128	131	740	941	3,371	16,704	2.37	56	719	1,016	3,021	28,089	2.66
District of Columbia	1,116	42	91	185	677	3,216	2.35	17	89	191	588	4,235	2.69
Delaware	1,105	42	175	268	818	7,557	2.32	19	176	276	909	4,761	2.23
Florida	4,414	205	928	1,262	5,364	22,853	2.09	41	942	1,296	5,365	25,878	2.01
Georgia	1,088	370	2,224	3,238	10,870	27,355	1.81	140	2,240	3,375	10,539	49,597	1.81
Hawaii	1,142	41	261	366	1,337	6,846	2.09	49	261	406	1,349	4,679	2.10
Iowa	993	189	782	1,040	3,189	31,414	2.18	49	722	1,085	3,131	13,948	2.34
Idaho	1,112	112	367	477	1,387	10,319	1.97	23	370	550	1,388	7,741	1.85
Illinois	4,652	241	713	968	3,354	16,214	2.01	103	715	1,006	3,409	17,220	1.99
Indiana	1,082	382	1,524	1,949	7,840	24,991	2.01	185	1,568	2,092	7,345	36,142	2.00
Kansas	1,041	201	760	977	3,199	10,343	1.91	63	724	981	3,241	13,098	2.09
Kentucky	1,102	144	1,009	1,275	4,816	16,853	2.05	38	1,022	1,375	3,957	18,754	2.26
Louisiana	1,095	396	1,121	1,431	5,071	21,633	2.14	99	1,048	1,497	4,572	23,646	2.16
Massachusetts	1,220	262	1,277	1,863	6,965	33,996	2.11	57	1,263	1,861	6,632	45,501	2.17
Maryland	1,000	302	1,449	2,287	6,540	33,636	1.94	156	1,432	2,398	6,665	29,210	1.96
Maine	1,094	41	285	362	1,628	9,578	2.59	10	285	384	1,697	6,047	2.32
Michigan	4,353	191	614	735	2,651	15,003	2.24	129	616	783	2,724	16,889	2.23
Minnesota	1,052	369	1,128	1,748	5,961	19,692	2.09	98	1,059	1,759	5,502	27,072	2.39
Missouri	1,105	366	1,393	1,716	6,864	39,267	2.22	121	1,266	1,738	6,680	27,424	2.23

<sup>1</sup> Weight1\*...\*Weight10 and Weight1\*...\*Weight11 used demographic variables from screener data; ps = poststratification.

<sup>2</sup> Q1 and Q3 refer to the first and third quartile of the weight distribution.

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

(continued)

**Table I.2 2003 NSDUH Selected Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)**

Domain	n	Before sel.per.ps (Weight1*...*Weight10) <sup>1</sup>						After sel.per.ps (Weight1*...*Weight11) <sup>1</sup>					
		Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>	Min	Q1 <sup>2</sup>	Med	Q3 <sup>2</sup>	Max	UWE <sup>3</sup>
Mississippi	1,078	91	726	1,055	3,039	27,424	2.07	59	779	1,186	3,011	20,078	1.91
Montana	1,068	62	237	275	1,029	6,470	2.19	18	246	293	968	5,467	2.47
North Carolina	1,086	294	1,824	2,339	9,447	31,453	2.25	96	1,788	2,430	9,844	48,775	2.49
North Dakota	977	46	190	278	809	3,469	1.89	14	187	303	726	2,883	1.93
Nebraska	1,071	113	448	555	2,164	8,870	2.11	44	408	563	2,097	10,379	2.26
New Hampshire	1,112	82	308	410	1,458	7,761	2.42	63	294	394	1,482	5,980	2.30
New Jersey	1,126	361	1,858	2,647	9,678	58,633	2.10	285	1,874	2,663	9,216	57,887	2.22
New Mexico	1,132	113	447	632	1,777	10,828	2.24	62	446	677	1,782	8,014	2.11
Nevada	1,072	137	508	763	2,690	9,063	1.98	110	495	792	2,650	10,332	2.03
New York	4,609	296	1,044	1,388	5,261	24,673	2.03	135	1,039	1,449	5,170	40,339	2.14
Ohio	4,313	191	692	869	3,253	30,987	2.07	132	698	940	3,319	15,011	2.05
Oklahoma	1,042	109	798	1,319	3,845	18,751	2.09	33	758	1,273	3,943	23,291	2.21
Oregon	1,095	222	798	1,082	4,193	17,197	2.19	148	812	1,103	3,797	19,796	2.42
Pennsylvania	4,214	248	736	972	3,561	29,311	2.06	94	738	1,027	3,495	16,786	2.21
Rhode Island	1,141	61	227	354	1,246	5,411	1.97	19	212	361	1,129	6,524	2.26
South Carolina	1,109	212	943	1,302	4,243	21,255	2.27	168	958	1,338	3,982	22,410	2.39
South Dakota	980	41	206	262	851	6,348	2.09	30	213	289	932	7,640	2.14
Tennessee	1,004	276	1,349	2,527	5,427	54,278	2.57	55	1,261	2,580	6,098	29,755	2.21
Texas	4,231	298	1,498	1,946	6,080	28,295	1.84	364	1,475	2,052	6,035	28,117	1.92
Utah	995	245	784	1,055	2,618	12,630	1.66	296	790	1,188	2,666	7,707	1.55
Virginia	1,076	488	1,730	2,289	9,124	29,853	2.09	454	1,696	2,399	8,377	43,439	2.19
Vermont	1,092	25	152	207	716	5,235	2.25	6	149	215	694	3,168	2.21
Washington	1,128	261	1,357	1,820	7,187	26,526	2.09	202	1,291	1,833	6,878	29,583	2.27
Wisconsin	1,046	367	1,328	1,667	6,765	25,489	2.13	198	1,380	1,798	6,811	29,645	2.14
West Virginia	1,058	71	418	555	2,212	8,363	2.13	33	409	568	2,220	11,097	2.30
Wyoming	1,032	21	129	179	535	2,325	2.01	17	130	196	546	3,218	2.15

<sup>1</sup> Weight1\*...\*Weight10 and Weight1\*...\*Weight11 used demographic variables from screener data; ps = poststratification.

<sup>2</sup> Q1 and Q3 refer to the first and third quartile of the weight distribution.

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

**Table I.3 2003 NSDUH Respondent Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States**

Domain	n	Before res.per.nr (Weight1*...*Weight11) <sup>1</sup>						After res.per.nr (Weight1*...*Weight12) <sup>1</sup>						n	Before res.per.ps (Weight1*...*Weight12) <sup>2</sup>						Final Weight After res.per.ps (Weight1*...*Weight13) <sup>2</sup>					
		Min	Q1 <sup>3</sup>	Med	Q3 <sup>3</sup>	Max	UWE <sup>4</sup>	Min	Q1 <sup>3</sup>	Med	Q3 <sup>3</sup>	Max	UWE <sup>4</sup>		Min	Q1 <sup>3</sup>	Med	Q3 <sup>3</sup>	Max	UWE <sup>4</sup>	Min	Q1 <sup>3</sup>	Med	Q3 <sup>3</sup>	Max	UWE <sup>4</sup>
United States	67,784	6	680	1,248	3,080	57,887	2.90	6	772	1,451	3,779	90,405	3.31	67,784	6	772	1,451	3,779	90,405	3.31	1	738	1,433	3,735	110,60	3.44
Alaska	883	46	151	218	573	4,355	2.37	47	177	261	772	9,263	2.88	883	47	177	261	772	9,263	2.88	11	176	258	756	6,960	2.82
Alabama	879	107	984	1,368	4,219	26,280	2.78	107	1,096	1,556	5,123	46,909	3.13	879	107	1,096	1,556	5,123	46,909	3.13	103	1,111	1,571	4,796	40,517	3.08
Arkansas	922	154	617	858	2,615	12,798	2.22	156	677	995	3,085	18,052	2.50	922	156	677	995	3,085	18,052	2.50	31	668	1,008	2,988	25,612	2.81
Arizona	897	61	964	1,849	4,487	41,461	2.87	61	1,132	2,181	4,827	60,796	3.35	897	61	1,132	2,181	4,827	60,796	3.35	23	1,075	2,201	5,130	83,961	3.75
California	3,600	433	2,066	2,825	8,422	47,676	2.10	439	2,323	3,374	10,801	90,405	2.48	3,600	439	2,323	3,374	10,801	90,405	2.48	193	2,405	3,616	10,932	110,60	2.61
Colorado	911	74	1,127	1,489	5,172	18,940	2.09	74	1,273	1,818	5,991	24,505	2.26	911	74	1,273	1,818	5,991	24,505	2.26	16	1,198	1,864	5,715	38,304	2.54
Connecticut	933	56	703	1,000	2,815	19,827	2.66	56	830	1,168	3,636	35,081	3.14	933	56	830	1,168	3,636	35,081	3.14	20	825	1,186	3,403	51,011	3.52
District of Columbia	949	17	88	175	534	4,235	2.75	17	98	206	651	11,127	3.25	949	17	98	206	651	11,127	3.25	4	92	190	565	6,607	3.17
Delaware	911	19	174	261	821	4,761	2.27	19	198	306	1,072	5,679	2.51	911	19	198	306	1,072	5,679	2.51	5	197	303	1,044	7,282	2.60
Florida	3,541	41	915	1,227	4,966	25,878	2.11	41	1,043	1,494	6,502	40,782	2.34	3,541	41	1,043	1,494	6,502	40,782	2.34	23	1,056	1,525	6,548	37,400	2.40
Georgia	902	140	2,136	3,256	10,175	49,597	1.86	274	2,469	3,781	12,326	61,668	1.98	902	274	2,469	3,781	12,326	61,668	1.98	91	2,456	3,928	12,108	48,238	2.01
Hawaii	928	49	245	365	1,116	4,495	2.18	49	262	431	1,411	9,279	2.70	928	49	262	431	1,411	9,279	2.70	36	256	422	1,349	10,278	2.92
Iowa	884	49	714	1,049	2,999	13,530	2.37	49	788	1,203	3,378	17,711	2.42	884	49	788	1,203	3,378	17,711	2.42	16	792	1,236	3,434	25,721	2.50
Idaho	912	23	358	517	1,302	7,741	1.89	24	402	604	1,713	8,415	2.06	912	24	402	604	1,713	8,415	2.06	7	400	616	1,623	13,379	2.33
Illinois	3,711	103	702	971	3,166	17,220	2.04	103	819	1,184	4,044	25,601	2.29	3,711	103	819	1,184	4,044	25,601	2.29	21	815	1,200	3,977	30,269	2.36
Indiana	903	210	1,547	2,043	7,096	36,142	2.02	210	1,724	2,478	8,809	43,318	2.17	903	210	1,724	2,478	8,809	43,318	2.17	42	1,739	2,535	8,462	35,285	2.17
Kansas	875	63	707	955	2,974	13,098	2.13	79	785	1,109	3,585	20,670	2.28	875	79	785	1,109	3,585	20,670	2.28	19	817	1,159	3,285	46,917	2.61
Kentucky	908	38	993	1,320	3,662	17,419	2.26	38	1,139	1,595	4,442	39,703	2.84	908	38	1,139	1,595	4,442	39,703	2.84	16	1,132	1,610	4,428	42,876	2.91
Louisiana	943	99	1,041	1,456	4,316	23,646	2.18	99	1,154	1,629	5,190	30,670	2.43	943	99	1,154	1,629	5,190	30,670	2.43	39	1,174	1,647	5,133	25,365	2.43
Massachusetts	964	57	1,247	1,765	6,169	45,501	2.23	57	1,396	2,125	7,958	48,759	2.49	964	57	1,396	2,125	7,958	48,759	2.49	31	1,425	2,191	8,530	44,517	2.45
Maryland	863	156	1,417	2,265	6,199	29,210	2.02	175	1,571	2,620	7,442	49,630	2.19	863	175	1,571	2,620	7,442	49,630	2.19	55	1,539	2,552	7,326	41,031	2.28
Maine	928	10	285	377	1,637	6,047	2.34	11	330	439	1,905	8,245	2.49	928	11	330	439	1,905	8,245	2.49	2	328	432	1,905	9,059	2.54
Michigan	3,667	129	612	761	2,495	16,889	2.29	258	685	886	3,148	17,887	2.52	3,667	258	685	886	3,148	17,887	2.52	132	691	893	3,134	20,804	2.54
Minnesota	909	98	1,057	1,709	5,145	27,072	2.43	98	1,159	1,915	5,699	31,963	2.63	909	98	1,159	1,915	5,699	31,963	2.63	54	1,169	1,962	5,670	39,737	2.67
Missouri	932	121	1,261	1,680	6,425	27,424	2.27	121	1,416	2,015	6,956	39,968	2.48	932	121	1,416	2,015	6,956	39,968	2.48	44	1,423	2,014	7,086	39,040	2.53

<sup>1</sup> Weight1\*...\*Weight11 and Weight1\*...\*Weight12 used demographic variables from screener data; nr = nonresponse adjustment.

<sup>2</sup> Weight1\*...\*Weight12 and Weight1\*...\*Weight13 used demographic variables from questionnaire data; ps = poststratification.

<sup>3</sup> Q1 and Q3 refer to the first and third quartile of the weight distribution.

<sup>4</sup> Unequal weighting effect defined as  $1+[(n-1)/n]*CV^2$ , where CV = coefficient of variation of weights.

(continued)



**Table I.3 2003 NSDUH Respondent Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States**  
(continued)

Domain	n	Before res.per.nr (Weight1*...*Weight11) <sup>1</sup>						After res.per.nr (Weight1*...*Weight12) <sup>1</sup>						n	Before res.per.ps (Weight1*...*Weight12) <sup>2</sup>						Final Weight After res.per.ps (Weight1*...*Weight13) <sup>2</sup>					
		Min	Q1 <sup>3</sup>	Med	Q3 <sup>3</sup>	Max	UWE <sup>4</sup>	Min	Q1 <sup>3</sup>	Med	Q3 <sup>3</sup>	Max	UWE <sup>4</sup>		Min	Q1 <sup>3</sup>	Med	Q3 <sup>3</sup>	Max	UWE <sup>4</sup>	Min	Q1 <sup>3</sup>	Med	Q3 <sup>3</sup>	Max	UWE <sup>4</sup>
Mississippi	899	59	756	1,126	2,753	10,934	1.89	59	859	1,312	3,241	20,727	2.16	899	59	859	1,312	3,241	20,727	2.16	42	854	1,298	3,306	16,625	2.12
Montana	911	36	244	288	931	5,467	2.55	84	265	339	1,099	7,453	2.83	911	84	265	339	1,099	7,453	2.83	29	262	337	1,121	9,192	3.16
North Carolina	904	96	1,768	2,382	9,082	48,775	2.54	152	1,941	2,879	10,050	66,581	2.83	904	152	1,941	2,879	10,050	66,581	2.83	57	1,926	2,855	10,102	60,039	2.85
North Dakota	867	14	186	299	711	2,883	1.92	50	207	320	814	4,650	2.04	867	50	207	320	814	4,650	2.04	42	209	327	788	3,988	2.04
Nebraska	918	44	401	546	1,737	10,379	2.29	44	460	626	1,969	30,981	2.98	918	44	460	626	1,969	30,981	2.98	34	448	625	1,944	24,507	2.87
New Hampshire	910	74	291	384	1,371	5,980	2.37	93	330	459	1,567	9,650	2.74	910	93	330	459	1,567	9,650	2.74	57	330	471	1,603	12,124	2.74
New Jersey	883	285	1,871	2,553	8,502	57,887	2.27	331	2,259	3,164	10,884	88,916	2.63	883	331	2,259	3,164	10,884	88,916	2.63	103	2,211	3,252	10,719	90,240	2.66
New Mexico	944	62	436	637	1,632	8,014	2.17	62	473	747	1,935	15,533	2.57	944	62	473	747	1,935	15,533	2.57	28	472	770	1,889	18,813	2.86
Nevada	902	110	482	749	2,515	10,332	2.10	110	548	872	3,264	12,178	2.21	902	110	548	872	3,264	12,178	2.21	32	523	855	2,938	23,042	2.57
New York	3,634	135	1,011	1,375	4,699	40,339	2.20	169	1,174	1,695	6,283	41,346	2.56	3,634	169	1,174	1,695	6,283	41,346	2.56	20	1,141	1,724	6,092	68,722	2.93
Ohio	3,559	132	691	895	3,007	15,011	2.11	145	787	1,057	3,627	21,881	2.42	3,559	145	787	1,057	3,627	21,881	2.42	36	790	1,066	3,629	21,526	2.47
Oklahoma	871	33	732	1,214	3,493	15,066	2.26	34	817	1,367	4,469	30,172	2.47	871	34	817	1,367	4,469	30,172	2.47	10	831	1,415	4,168	30,235	2.64
Oregon	912	148	809	1,077	3,593	18,423	2.46	173	907	1,279	4,388	26,000	2.68	912	173	907	1,279	4,388	26,000	2.68	35	897	1,278	4,303	35,254	2.75
Pennsylvania	3,572	94	729	1,002	3,325	16,786	2.27	101	811	1,143	4,022	27,927	2.48	3,572	101	811	1,143	4,022	27,927	2.48	10	819	1,162	4,032	34,003	2.52
Rhode Island	914	19	208	342	976	6,524	2.37	19	242	386	1,310	13,216	2.75	914	19	242	386	1,310	13,216	2.75	5	232	432	1,143	18,425	3.36
South Carolina	920	168	931	1,287	3,629	22,410	2.49	174	1,060	1,514	4,741	30,555	2.61	920	174	1,060	1,514	4,741	30,555	2.61	104	1,066	1,548	4,651	34,124	2.78
South Dakota	881	30	210	281	897	7,640	2.18	30	224	315	1,038	11,136	2.43	881	30	224	315	1,038	11,136	2.43	9	213	302	1,056	6,645	2.29
Tennessee	856	55	1,229	2,401	5,556	29,755	2.29	55	1,327	2,680	7,098	44,765	2.47	856	55	1,327	2,680	7,098	44,765	2.47	20	1,363	2,769	7,005	54,208	2.46
Texas	3,566	364	1,463	1,985	5,687	28,117	1.94	444	1,624	2,258	6,927	39,202	2.21	3,566	444	1,624	2,258	6,927	39,202	2.21	98	1,649	2,315	6,881	47,674	2.27
Utah	898	296	778	1,146	2,582	7,707	1.57	301	837	1,234	2,935	9,984	1.66	898	301	837	1,234	2,935	9,984	1.66	79	849	1,261	2,824	10,243	1.79
Virginia	907	568	1,661	2,265	7,706	43,439	2.25	609	1,823	2,649	8,958	57,763	2.55	907	609	1,823	2,649	8,958	57,763	2.55	185	1,821	2,671	8,971	71,988	2.59
Vermont	917	6	145	210	670	3,125	2.23	6	167	240	790	4,655	2.46	917	6	167	240	790	4,655	2.46	1	163	244	805	4,558	2.50
Washington	941	202	1,254	1,754	6,576	29,583	2.37	234	1,418	2,024	7,602	37,707	2.54	941	234	1,418	2,024	7,602	37,707	2.54	71	1,432	2,055	7,813	43,744	2.59
Wisconsin	887	198	1,372	1,723	6,198	29,645	2.20	353	1,494	1,925	7,654	34,990	2.51	887	353	1,494	1,925	7,654	34,990	2.51	71	1,439	1,938	7,683	53,723	2.63
West Virginia	871	33	401	563	2,156	11,097	2.33	33	466	662	2,630	13,655	2.47	871	33	466	662	2,630	13,655	2.47	11	489	684	2,688	21,976	2.51
Wyoming	885	17	128	192	529	3,218	2.16	17	143	229	639	4,399	2.25	885	17	143	229	639	4,399	2.25	8	140	230	636	4,351	2.52

<sup>1</sup> Weight1\*...\*Weight11 and Weight1\*...\*Weight12 used demographic variables from screener data; nr = nonresponse adjustment.

<sup>2</sup> Weight1\*...\*Weight12 and Weight1\*...\*Weight13 used demographic variables from questionnaire data; ps = poststratification.

<sup>3</sup> Q1 and Q3 refer to the first and third quartile of the weight distribution.

<sup>4</sup> Unequal weighting effect defined as  $1 + [(n-1)/n] * CV^2$ , where CV = coefficient of variation of weights.

