2017 NATIONAL SURVEY ON DRUG USE AND HEALTH METHODOLOGICAL RESOURCE BOOK

SECTION 11: PERSON-LEVEL SAMPLING WEIGHT CALIBRATION

Substance Abuse and Mental Health Services Administration
Center for Behavioral Health Statistics and Quality
Rockville, Maryland

March 2019

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SECTION 11: PERSON-LEVEL SAMPLING WEIGHT CALIBRATION

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List of Terms and Abbreviations

C	Center point.
CAI	Computer-assisted interviewing.
DU	Dwelling unit.
ev	Extreme weight adjustment. See Section 4.1 for more detail.
FI	Field interviewer.
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.
L	Lower bound on adjustment factor.
MPMN	Multivariate predictive mean neighbor.
nr	Nonresponse adjustment.
Outwinsor	Signifies the percentages of weights trimmed after extreme weight adjustment via winsorization.
PMN	Predictive mean neighborhood.
ps	Poststratification adjustment.
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 weight adjustment step. See Section 5.1.4 for more detail.
sel.per.ps	Selected person-level poststratification adjustment step. See Section 5.2.2 for more detail.
res.per.nr	Respondent person-level nonresponse adjustment step. See Section 5.2.3 for more detail.
res.per.ps	Respondent person-level poststratification adjustment step. See Section 5.2.4 for more detail.
res.per.ev	Respondent person-level extreme weight adjustment step. See Section 5.2.5 for more detail.
SAE	Small area estimate.
SDU	Screener dwelling unit.
SE	Standard error.
SES	Socioeconomic status indicator. See Exhibit 3.1 for more detail.
SS	State sampling.
U	Upper bound on adjustment factor.
UPMN	Univariate predictive mean neighbor.
UWE	Unequal weighting effect. It refers to the contribution in the design effect due to unequal selection probability and is defined as $1 + \left[(n-1)/n\right]*CV^2$ where CV = coefficient of variation of weights, and n is the sample size.
VESTR	Variance estimation stratum.
VEREP	Variance estimation replicates.
Winsorization	A method of extreme weight adjustment that replaces extreme weights with the critical values used for defining low and high extreme weights.

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Overview

This report contains a brief review of the sampling weight calibration methodology used for the 2017 National Survey on Drug Use and Health (NSDUH), which was known as the National Household Survey on Drug Abuse (NHSDA) before 2002. This report also lists detailed documentation on the implementation steps and evaluation results from the weight calibration application. The constrained exponential modeling (CEM) method used in the surveys before 1999 (referred to in this report as the generalized exponential model [GEM]) was modified to provide more flexibility in dealing internally with the extreme weights and for setting bounds directly on the weight adjustment factors so they can become suitable for nonresponse (nr) and poststratification (ps) adjustments. The introduction of the 50-state sample design and new baseline in 1999 provided an opportunity for this modification to occur and to include state-level predictors. GEM provides a consolidated method that can handle nonresponse, poststratification (including a much larger number of population controls for state estimation), and extreme weight adjustments. The highlights of the method are summarized as follows:

- 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 for the additional step of poststratifying the selected people to estimated controls from the large first-phase sample of people. This additional step results in stable controls for the later step of nonresponse adjustment at the respondent-person level. These two steps had been combined as one step in surveys before 1999, but they have been kept separate from 1999 onward.
- A poststratification step at the respondent-household level in the first phase of the screening interview 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 main interview. This step again takes advantage of the inherent two-phase design of the study.
- The built-in control on extreme weights in GEM can be supplemented by a separate step of extreme value adjustment after the final poststratification whenever the extreme weight percentage in the initial unadjusted weights is considered to be too large. This can be accomplished by using GEM so that the sample demographic distribution is preserved. This method represents an improvement over the trimming method implemented before the nonresponse adjustment in surveys before 1999 and the extreme value adjustment before the nonresponse adjustment used for the 1999 NHSDA. For the 2017 NSDUH, this final extreme value adjustment was judged to be unnecessary.

Several chapters in this report describe the implementation and evaluation of GEM, and the appendices contain mainly 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.

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1. Introduction

The target population for the 2017 National Survey on Drug Use and Health (NSDUH) was the civilian, noninstitutionalized population aged 12 years or older residing within the United States. A coordinated sample design was developed for the 2014 through 2017 NSDUHs. The coordinated design facilitates 50 percent overlap in third-stage units (area segments) within each successive 2-year period from 2014 through 2017. This designed sample overlap slightly increases the precision of estimates of year-to-year trends because of the expected small but positive correlation resulting from the overlapping sampled area segments between successive survey years. The 50 percent overlap of segments significantly reduces segment listing costs because only one-half of the segments will need to be listed for the 2014 through 2017 surveys.

The current design provides for estimates by state in all 50 states plus the District of Columbia. States may therefore be viewed as the first level of stratification as well as a reporting variable. Unlike the previous designs, such as the 2005 through 2013 NSDUH design, where the sample was divided into 8 "large" states and 43 "small" states (which include the District of Columbia) with the large and small sample states designed to yield 3,600 and 900 respondents per state, respectively, for 2014 through 2017, the survey's sample was designed to yield

- 4,560 completed interviews in California;
- 3,300 completed interviews each in Florida, New York, and Texas;
- 2,400 completed interviews each in Illinois, Michigan, Ohio, and Pennsylvania;
- 1,500 completed interviews each in Georgia, New Jersey, North Carolina, and Virginia;
- 967 completed interviews in Hawaii; and
- 960 completed interviews in each of the remaining 37 states and the District of Columbia.

The target national sample size for the 2017 NSDUH was 67,507 people, and the achieved sample for the 2017 NSDUH was 68,032 people—corresponding to 50,328 responding dwelling units (DUs) selected at the second phase out of 138,050[1] DUs screened at the first phase, in which the first phase is screening and the second phase is interviewing.

In addition to having a different sample allocation by state, the 2014 through 2017 survey design places more sample in the 26 or older age groups to estimate drug use and related mental health measures more accurately among the aging population. For the 2014 through 2017 NSDUHs, each state sample will be allocated to age groups as follows: 25 percent for youths aged 12 to 17, 25 percent for young adults aged 18 to 25, 15 percent for adults aged 26 to 34, 20 percent for adults aged 35 to 49, and 15 percent for adults aged 50 or older. In the 2005 through

[1] The number of DUs that completed the first-phase screening was 138,061, but some DUs did not have eligible people, so they were removed from the DU poststratification and person-level calibration steps. The number of DUs that had eligible people in them was 138,050.

2013 NSDUHs, the sample was allocated equally across the 12 to 17, 18 to 25, and 26 or older age groups.

Similar to the 2005 through 2013 NSDUHs, the first stage of selection for the 2014 through 2017 NSDUHs is census tracts. This stage was included to contain sample segments within a single census tract to the extent possible.

The 2014 through 2017 survey design includes the selection of census block groups at the second stage of selection. This additional stage of selection was included to facilitate moving to an address-based sampling (ABS) design in the future, if desired. The selection of census tracts at the first stage of selection and census block groups at the second stage has the potential to reduce sampling variance by controlling the distribution of selected areas and reducing the chance of selecting neighboring and possibly similar areas within tracts and block groups.

Finally, as mentioned in Section 1.5, the 2014 through 2017 NSDUH fourth-stage sampling frames are supplemented with new DUs on the premises of sampled DUs that were missed during the original counting and listing activities (e.g., garage apartments).

The first stage of selection began with the construction of an area sample frame that contained one record for each census tract in the United States. If necessary, census tracts were aggregated within state sampling regions (SSRs) until each first-stage sampling unit met the minimum size requirement. In California, Florida, Georgia, Illinois, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Texas, and Virginia, this minimum size requirement was 250 DUs in urban areas and 200 DUs in rural areas. In the remaining states and the District of Columbia, the minimum requirement was 150 DUs in urban areas and 100 DUs in rural areas. There were 48 census tracts per SSR selected with probabilities proportionate to a composite size measure and with minimum replacement (Chromy, 1979).

For the second stage of selection, adjacent census block groups were aggregated within selected census tracts as necessary to meet the minimum DU requirements (150 or 250 DUs in urban areas and 100 or 200 DUs in rural areas according to state). After the resulting second-stage sampling units were formed, they were sorted in the order they were formed (i.e., geographically), and one census block group was selected per sampled census tract with probability proportionate to a composite size measure and with minimum replacement (Chromy, 1979). Compared with prior years, the selection of census block groups is an additional stage of selection that was included to facilitate possible transitioning to an ABS design in the future.

Because census block groups generally exceed the minimum DU requirement, one smaller geographic region was selected within each sampled census block group. For this third stage of sampling, each selected census block group was partitioned into compact clusters[2] of DUs by aggregating adjacent census blocks. Consistent with the terminology used in previous NSDUHs, these geographic clusters of blocks are referred to as "segments." A sample DU in NSDUH refers to either a housing unit or a group quarters listing unit, such as a dormitory room

[2] Although the entire cluster is compact, the final sample of DUs represents a noncompact cluster. Noncompact clusters (selection from a list) differ from compact clusters in that not all units within the cluster are included in the sample. Although compact cluster designs are less costly and more stable, a noncompact cluster design was used because it provides for greater heterogeneity of dwellings within the sample. Also, social interaction (contagion) among neighboring dwellings is sometimes introduced with compact clusters (Kish, 1965).

or a shelter bed. Similar to census tracts and census block groups, segments were formed to contain a minimum of 150 or 250 DUs in urban areas and 100 or 200 DUs in rural areas according to state. This minimum DU requirement will support the overlapping sample design and any special supplemental samples or field tests that SAMHSA may wish to conduct.

One segment was selected within each sampled census block group with probability proportionate to size. The 48 selected segments in each SSR were then randomly assigned to a survey year and quarter of data collection.

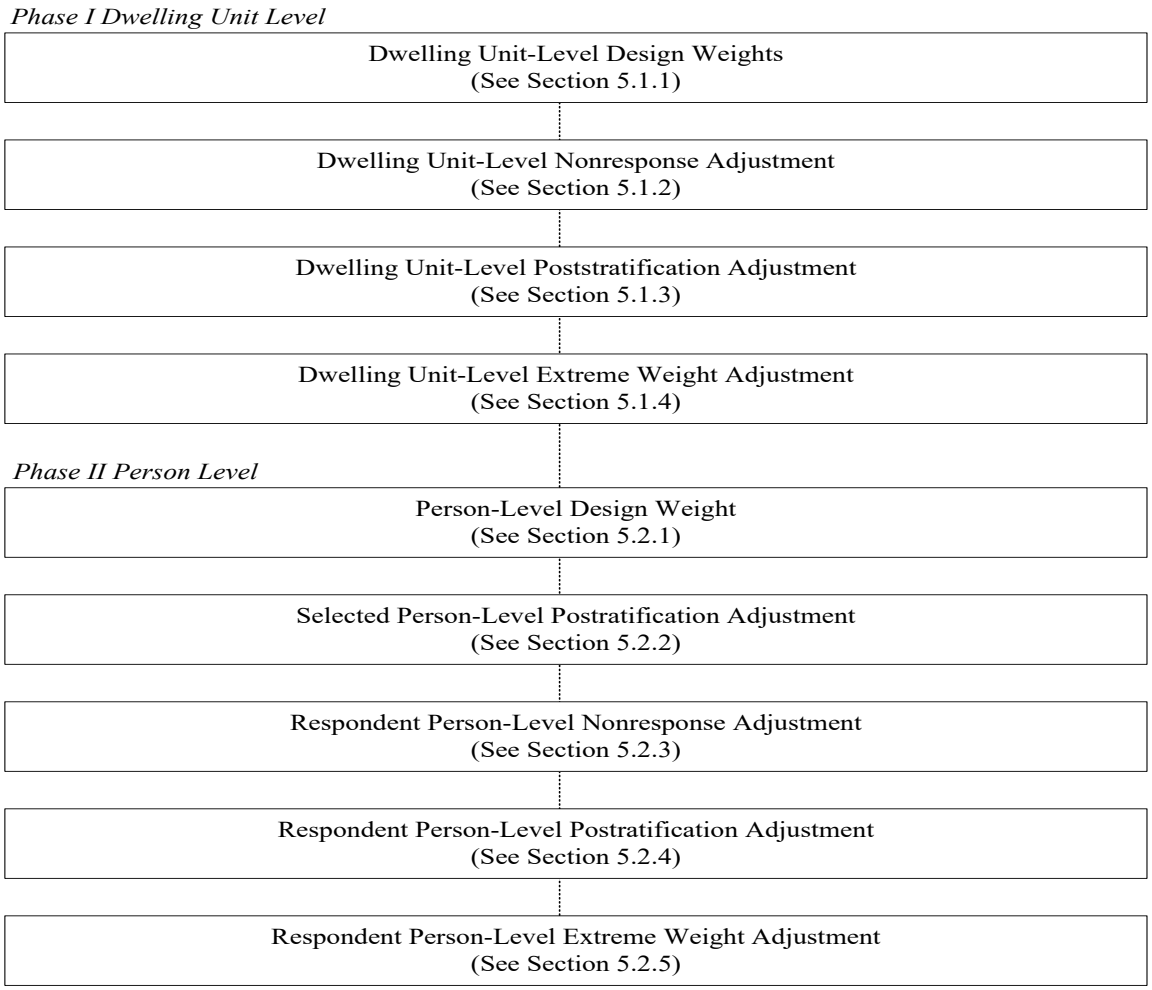
After sample segments for the 2017 NSDUH were selected, specially trained field household listers visited the areas and obtained complete and accurate lists of all eligible DUs within the sample segment boundaries. These lists served as the frames for the fourth stage of sample selection. Using a random start point and interval-based (systematic) selection, the actual listing units were selected from the segment frame. After DU selections were made, an interviewer visited each selected DU to obtain a roster of all people residing in the DU. Using the roster information obtained from an eligible member of the selected DU, zero, one, or two people were selected for the survey. Sampling rates were preset by age group and state. Roster information was entered directly into the electronic screening instrument, which automatically implemented this fifth stage of selection based on the state and age group sampling parameters.

As in previous years of the survey,[3] the 2017 NSDUH sample weighting posed challenges because of the sheer magnitude of the number of state-specific predictors used for 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. Census Bureau 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 each survey after 1999, an important feature of the 2017 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 main 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 people (including respondents and nonrespondents) to estimated controls from the large first-phase sample of people for various predictor variables at the segment, DU, and person levels. This provided 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.

[3] The survey was known as the National Household Survey on Drug Abuse (NHSDA) before 2002.

Exhibit 1.1 Sampling Weight Calibration Steps



As in previous NSDUHs, a modification of the earlier methodology of scaled constrained exponential modeling (CEM) (Folsom & Witt, 1994) was used to meet the new demands on the weighting mentioned previously (i.e., the two-phase design and large number of available predictors). The modified methodology, called the generalized exponential model (GEM) (Folsom & Singh, 2000), has several features:

- Like CEM, GEM can use 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 weight 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 weight 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 previously mentioned 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 outlines how GEM provides a unified approach to all three procedures' adjustments for nonresponse, poststratification, and extreme weight adjustment. In Chapter 3, potential predictor variables for use with nonresponse, poststratification, and extreme weight 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 2017 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, major depressive episode, and serious mental illness. 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 technical details about GEM, Appendix B documents the creation and source of the poststratification control totals, and Appendix C contains information on the imputation methodology. Appendix D summarizes the GEM modeling, and the remaining five appendices contain various tables on weighted response rates, percentages of extreme weights and outwinsors, slippage rates, and weight adjustment summary statistics.

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2. Generalized Exponential Model for Weight Calibration

In survey practice, design weights are typically adjusted in three steps via the following methods: (1) weighting class adjustments for nonresponse, (2) raking-ratio adjustments for poststratification, and (3) winsorization for extreme weights. The bias introduced by winsorization is alleviated to some extent through poststratification. The nonresponse (nr) 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 possibly due to correlation between the study and control, usually demographic, variables). If weights are not treated for extreme weight adjustment, the resulting estimates, although unbiased, will tend to have lower precision.

There are limitations in the existing methods of weight adjustment for nonresponse, poststratification, and extreme weight. 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 1 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 weights. It would be advantageous to adjust for bias introduced in the extreme weight adjustment step (such as when extreme weights are treated via winsorization) so that the sample distribution for various demographic characteristics is preserved.

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 nonresponse, poststratification, and extreme weight, and it has the valuable features mentioned previously. 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 weights, during both nonresponse adjustments and poststratification. 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 weights is low after the final poststratification, a separate extreme weight 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 weight

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. (See the example in Section 4.2 for details.)

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 weights. 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 weights. The percentage of "outwinsors" (a term coined to signify the extent of residual weights after extreme weight adjustment via winsorization) is probably a more realistic benchmark in determining the robustness of estimates in the presence of extreme weights. Chapter 4 provides details about the GEM process 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 UWE, indicating a possible loss in precision. By looking at the change in variance calculated for a model run with the minimal number of predictor variables versus the final model that was reached during the weighting process, a more precise measure of loss (or gain) in precision can be obtained for variance of selected study variables. The results are presented in Chapter 6.

3. Predictor Variables in GEM for the 2017 NSDUH

For the 2017 National Survey on Drug Use and Health (NSDUH), the initial set of predictor variables was identical to the set used for the 2016 NSDUH and have been the same since 1999. Exhibit 3.1 shows the definitions and levels of these predictor variables. Typical predictors used for the screener dwelling unit (DU) nonresponse adjustment were State, Quarter, Group Quarters Indicator, Population Density, Percentage Hispanic or Latino in Segment, Percentage Black or African American in Segment, Percentage Owner-Occupied DUs in Segment, and Segment-Combined Median Rent and Housing Value, which is also called the 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 previously, Age, Gender, Race, Hispanicity, and Relation to Householder (i.e., the head of the 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 weight adjustment with the generalized exponential model (GEM) after poststratification, the predictors were the same as those used in the poststratification (ps) 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 (nr) 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 NSDUH's, this problem does not exist 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, or both edit and 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 also can 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.

Exhibit 3.1 Definition of Levels for Variables

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

Gender
1: Male, 2: Female[1]

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

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

Percent of Owner-Occupied Dwelling Units in Segment (% Owner-Occupied)
1: 50–100%,[1] 2: 10–<50%, 3: 0–<10%

Percent of Segments That Are Black or African American
1: 50–100%, 2: 10–<50%, 3: 0–<10%[1]

Percent of Segments That Are Hispanic or Latino
1: 50–100%, 2: 10–<50%, 3: 0–<10%[1]

Population Density
1: MSA 1,000,000 or More, 2: MSA Less than 1,000,000, 3: Non-MSA Urban, 4: Non-MSA Rural[1]

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

Race (3 levels)
1: White,[1] 2: Black or African American, 3: Other

Race (5 levels)
1: White,[1] 2: Black or African American, 3: American Indian or Alaska Native, 4: Asian, 5: Two or More Races

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

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

States[4]

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

MSA = metropolitan statistical area.

[1] The reference level for this variable. This is the level against which effects of other factor levels are measured.

[2] The age group 50+ was further broken down into 50–64 and 65+ for Person-Level Poststratification Adjustment and Person-Level Extreme Weight Adjustment, for which 65+ was used as the reference level.

[3] Segment-Combined Median Rent and Housing Value (also known as the Socioeconomic Status indicator) is a composite measure based on rent, housing value, and percent owner occupied.

[4] The states or district assigned to a particular model are based on census divisions.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

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 2017 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 typically were 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 previously 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 largest states were not combined with other smaller states, to the extent possible, so that direct state-level estimates could be obtained without relying on SAE.

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 was checked.

For the 2017 NSDUH data, as for the previous years' 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 the 2017 NSDUH, as in the 1999 through 2016 surveys, nine model groups corresponding to the nine census divisions were used.

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4. Practical Aspects of Implementing GEM for NSDUH

As explained in Chapter 2, the generalized exponential model (GEM) can be used for nonresponse (nr) adjustment, poststratification (ps), and extreme weight (ev) adjustment (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 Weights of Sampling Weights

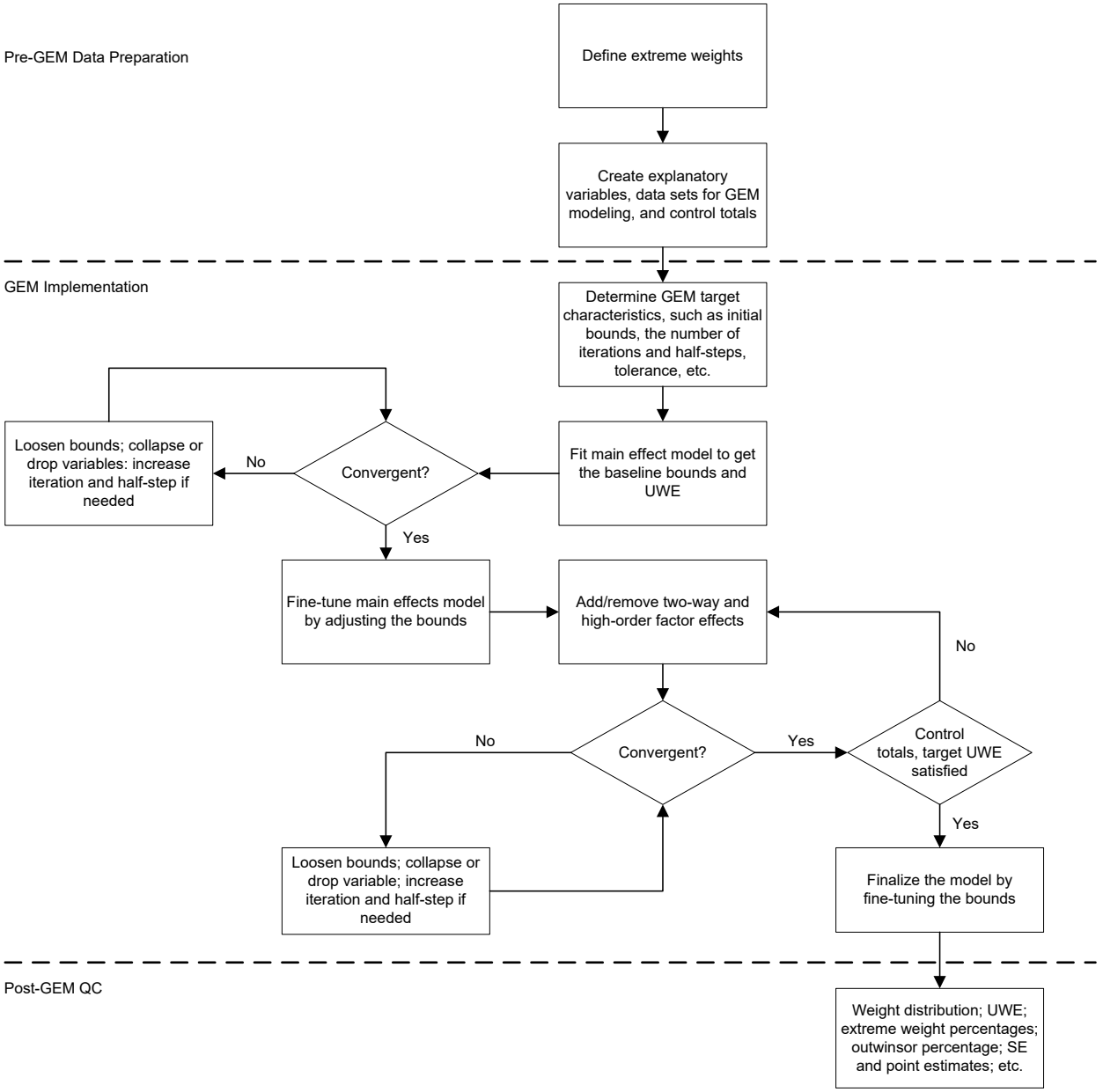
An important aspect of GEM is the built-in provision of extreme weight adjustment. Sampling weights for the survey generally were classified as extreme (high or low) if they fell outside the commonly used interval defined by the median $\pm 3 \times$ interquartile range (IQR) for some prespecified domains; these domains were usually defined by design strata, taking into account deep stratification. For example, the dwelling unit (DU)-level weight for the 2017 National Survey on Drug Use and Health (NSDUH) used the state sampling region (SSR) as the domain. The person-level weight adjustments used a hierarchy of four domains: (1) SSR × Age group, (2) State × Age group, (3) SSR, 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 SSR × Age group domain corresponded to a deep stratum, it could be unsuitable for defining extreme weights because of insufficient sample sizes. So, collapsing SSRs within a state gave rise to such domains as State × Age group. Even at this level, sample sizes could be insufficient, so SSRs and, later, states themselves could be used as domains to define extreme weights. The critical values for low and high extreme weights 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, to better prevent the adjusted weights from crossing the standard boundary and 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.

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 $b_{k(u)} / w_k$ for high extreme weights, and $b_{k(1)} / w_k$ 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, nonextreme weights have a value of 1 for m_k; 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.)

Exhibit 4.1 Generalized Exponential Model Steps



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

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 specified in the modeling of GEM. GEM allows inputs of three different upper (U) and lower (L) 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 1 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, centers were set to 1 so the adjusted weights would not be too far away from the original design weights. Here, lower bounds were chosen to be less than 1 and upper bounds were greater than 1 because the control totals could be larger or smaller than the estimated totals based on the design weights. The extreme weight adjustment is analogous to the poststratification adjustment (see Appendix A) in that it is a repeated poststratification with tighter bounds for extreme weights identified after the poststratification step. Section 4.7 gives guidelines for the choice of lower, center, and upper parameters.

The following example shows how the built-in extreme weight works. Table 4.1 lists 30 respondents from the dwelling-unit nonresponse (DUNR) adjustment step. Outlier level 0 is for nonextreme weight, 1 for high extreme weight, and 2 for low extreme weight. PRE_WT is the weight before PLNR adjustment, which is the product of weight 1 to weight 13. The critical values $b_{k(l)}$ and $b_{k(u)}$ are defined as median $\pm 2.5 \times$ IQR. L and U are nominal bounds that are specified in GEM modeling. The bound m_k is defined as 1 for nonextreme weights, $b_{k(u)}$ /PRE_WT for high extreme weights, and $b_{k(l)}$ /PRE_WT for low extreme weights. L_k is the actual lower bound for a certain respondent, which is the product of nominal lower bound L and m_k, whereas U_k is the upper bounds for the respondent, which is the product of nominal upper bound U and m_k. Alpha is the final nonresponse adjustment calculated from GEM, and POST_WT is weight after nonresponse adjustment, which is the product of PRE_WT and adjustment factor alpha.

Although GEM requires the nonresponse adjustment factor to be greater than 1, the actual adjustment could be less than 1 because of m_k. For example, respondent Case 18 has a high extreme weight of 2,134.50. The nominal lower bounds for GEM is 1.24, the actual lower and upper bounds are 0.5252 and 1.1437, and the adjustment factor is 0.9048, which is less than 1. Meanwhile, GEM also requires the nonresponse adjustment factor to be less than 5 (less than 3 for high extreme weights), but the actual adjustment could be greater than 5 because of m_k. For example, Case 30 has a low extreme weight of 693.58. The nominal higher bounds for GEM is 5.00, the actual lower and upper bounds are 1.0294 and 5.1468, and the adjustment factor is 5.1466, which is greater than 5.

Tighter upper bounds were applied for the high extreme weights, and tighter lower bounds were applied for the low extreme weights. This was done so that the high extreme

weights will not have a large adjustment factor to make them more extreme, and the low extreme weights will not have a small adjustment factor to make them more extreme.

Table 4.1 Examples of Respondents with Pre- and Post-Weights, Critical Values, Bounds, and Adjustment Factors

Case ID	Outlier	PRE_WT	$b_{k(l)}$	$b_{k(u)}$	m_k	L	U	L_k	U_k	Alpha	POST_WT
1	0	575.79	109.66	1444.48	1.0000	1.00	5.00	1.0000	5.0000	1.1378	655.11
2	0	671.19	459.18	895.06	1.0000	1.00	5.00	1.0000	5.0000	1.4735	989.01
3	0	743.88	518.86	968.91	1.0000	1.00	5.00	1.0000	5.0000	1.3235	984.50
4	0	660.85	518.46	945.53	1.0000	1.00	5.00	1.0000	5.0000	2.1374	1412.52
5	0	785.59	672.61	882.02	1.0000	1.00	5.00	1.0000	5.0000	1.2383	972.80
6	0	663.66	507.38	853.57	1.0000	1.00	5.00	1.0000	5.0000	1.1486	762.26
7	0	774.84	483.18	1049.59	1.0000	1.00	5.00	1.0000	5.0000	1.1243	871.11
8	0	1066.54	684.26	1489.76	1.0000	1.00	5.00	1.0000	5.0000	1.2771	1362.07
9	0	742.36	483.18	1049.59	1.0000	1.00	5.00	1.0000	5.0000	1.2667	940.35
10	0	660.27	464.34	896.74	1.0000	1.00	5.00	1.0000	5.0000	1.4735	972.92
11	1	941.42	683.84	924.15	0.9604	1.24	2.70	1.1909	2.5930	1.3009	1224.67
12	1	928.17	675.04	879.18	0.9289	1.24	2.70	1.1518	2.5080	1.2582	1167.84
13	1	928.17	675.04	879.18	0.9289	1.24	2.70	1.1518	2.5080	1.2582	1167.84
14	1	1343.00	793.12	1384.10	0.9939	1.24	2.70	1.2325	2.6836	1.3685	1837.86
15	1	863.38	542.91	805.55	0.9077	1.24	2.70	1.1255	2.4507	1.1939	1030.80
16	1	898.12	675.04	879.18	0.9600	1.24	2.70	1.1904	2.5919	1.2644	1135.56
17	1	898.12	675.04	879.18	0.9600	1.24	2.70	1.1904	2.5919	1.2644	1135.56
18	1	2134.50	683.84	924.15	0.4236	1.24	2.70	0.5252	1.1437	0.9048	1931.33
19	1	941.42	683.84	924.15	0.9604	1.24	2.70	1.1909	2.5930	1.3009	1224.67
20	1	2134.50	683.84	924.15	0.4236	1.24	2.70	0.5252	1.1437	0.9048	1931.33
21	2	678.72	713.37	829.53	1.0653	1.00	5.00	1.0653	5.3265	1.4830	1006.53
22	2	549.91	551.37	794.27	1.0395	1.00	5.00	1.0395	5.1973	1.5777	867.58
23	2	549.57	530.81	822.96	1.0102	1.00	5.00	1.0102	5.0508	1.1225	616.90
24	2	687.58	672.61	882.02	1.0036	1.00	5.00	1.0036	5.0180	1.1679	803.04
25	2	538.18	519.53	759.40	1.0025	1.00	5.00	1.0025	5.0125	1.2177	655.34
26	2	549.57	530.81	822.96	1.0102	1.00	5.00	1.0102	5.0508	1.1225	616.90
27	2	532.41	542.91	805.55	1.0608	1.00	5.00	1.0608	5.3042	1.1898	633.43
28	2	549.91	551.37	794.27	1.0395	1.00	5.00	1.0395	5.1973	1.5777	867.58
29	2	549.91	551.37	794.27	1.0395	1.00	5.00	1.0395	5.1973	1.5777	867.58
30	2	693.58	701.17	854.36	1.0294	1.00	5.00	1.0294	5.1468	5.1466	3569.54

NOTE: Data are from the dwelling unit–level nonresponse adjustment step in Model Group 3 of 2016 NSDUH weighting.

4.3 Definition of Control Totals

GEM modeling for nonresponse adjustment, poststratification, and extreme weight adjustment 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 2017 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 (respondents who completed the screening phase) 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

weight 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 people) 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. Also, 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 upper and lower bounds, the number of the Newton-Raphson iterations and half-steps, and the type of weight adjustment (nonresponse adjustment, poststratification, or extreme weight 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 upper and lower 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 weight percentages. Convergence problems were addressed by loosening lower bounds and upper bounds 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 2017 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 upper bounds

and lower bounds 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 weights were checked after each adjustment to see how effective the modeling was in controlling extreme weights. Coverage bias analysis based on the slippage (the distance between the total sample weighted count and the target population count) rates also was conducted to check the impact of poststratification on various noncontrolled domains (i.e., those factors that were dropped or collapsed in the 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 0 and the control total corresponding to this domain also was 0, the factor generally was dropped. This automatically collapsed the factor level with the reference level; however, if the control total was not 0, the factor could not be dropped because collapsing the domains together for the sample also would 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 a 0 domain sample size should be collapsed with another level to satisfy the control total.

In general, domains with small sample sizes may cause problems during GEM modeling and prevent the model from converging. For the 2017 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., linear dependence checks of realized value columns of the predictors) were performed for the baseline model; in addition, 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. 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 because 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 then was found, and the model was optimized using criteria described in Guideline 4. 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 weight 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 surveys before 2002, an adaptive approach was used to choose the bounds starting from the 2003 NSDUH; that is, starting with loose bounds of (0.1, 10), GEM was performed iteratively four times, each with the realized bounds from the previous iteration. The final bounds for nonextreme weights were desired to be around (0.2, 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 be as close to 1 as possible to better control high and low extreme weights, while maintaining $L_3 \geq L_2$ and $U_1 \leq U_2$.

- In the case of nonresponse, the centers 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 center as possible, while maintaining $L_3 \geq L_2$ and $U_1 \leq U_2$.
- Targets for the maximum acceptable percentages of extreme weights and outwinsors within GEM for nonresponse and poststratification were as follows: 3 percent for the unweighted extreme weights, 15 percent for weighted extreme weights, 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 calibration, a separate GEM for adjustment of extreme weights 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 weights 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 standard errors (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 because of 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. The following 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, following the order. For example, the combined Rent/Housing quintile had five levels (i.e., 1st, 2nd, 3rd, 4th, and 5th quintile) with the 5th quintile set for the reference. If the 4th quintile needed to be collapsed, it would be collapsed with either the 3rd or 5th quintile.
- *Age groups*. Age group had five levels: 12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older (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 weight

adjustment 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 states separately in the model was not a problem. For the state-specific interactions, collapsing was done within the state first; collapsing with other adjacent states was done only if needed. For the eight states with the largest sample sizes (California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania, and Texas), 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 or African American, American Indian or Alaska Native, Asian, and two or more races), while in non-state-specific two- and three-factor effects, Race had three levels (white, black or African American, and other). If maintaining all five levels was difficult in the main effects or State × Race interactions, the following guidelines were followed: (1) collapse American Indian or Alaska Native and Asian if either of them caused a convergence problem; (2) collapse black or African American with two or more races if black or African American caused a convergence problem; (3) collapse two or more races with American Indian or Alaska Native or Asian, whichever had a smaller sample size, if two or more races caused a convergence problem; and (4) collapse American Indian or Alaska Native, Asian, and two or more races, or collapse all other Race groups if necessary. In the State × Race interactions, collapsing Race was done within State. If the three-level Race could not be maintained, the levels were collapsed to white and all other Race groups.

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

The 2017 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 five 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 five stages of selection were as follows: within Phase I, (1) the selection of census tracts within the state sampling region (SSR); (2) the selection of census block groups from census tracts; (3) the selection of segments within each sampled census block group; (4) the selection of DUs within these segments, and within Phase II, and (5) 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 2017 sample design report in the *NSDUH Methodological Resource Book* (Center for Behavioral Health Statistics and Quality, 2018).

As part of the postsurvey data-processing activities, analysis weights were calculated for the 2017 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 (main interview sample) to account for bias due to extreme weights, nonresponse, and coverage.

The final Phase I DU-level and Phase II person-level sample weights for the 2017 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 weight, nonresponse, or poststratification adjustment. In the following sections, these components are described in greater detail. In summary, the first 11 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 weight, nonresponse, and poststratification error. Note that the unconditional, final person-level weights for the 2017 NSDUH sample are the product of all 16 weight components, as illustrated in Exhibit 5.1.

Exhibit 5.2 shows the U.S. Census Bureau divisions and model groups used in the 2017 NSDUH person-level weight calibration.

Exhibit 5.1 Summary of 2017 NSDUH Sample Weight Components

Phase I Dwelling Unit Level

	2014–2017 Design Weight Components	Corresponding 2005–2013 Design Weight Components
#1	Inverse Probability of Selecting Census Tract	#1
#2	Inverse Probability of Selecting Census Block Group	
#3	Inverse Probability of Selecting Segment	#2
#4	Quarter Segment Weight Adjustment	#3
#5	Subsegmentation Inflation Adjustment	#4
#6	Inverse Probability of Selecting Dwelling Unit	#5
#7	Inverse Probability of Added/Subsampled Dwelling Unit	#6
#8	Dwelling Unit Release Adjustment	#7

	2014–2017 Weight Adjustment Components	Corresponding 2005–2013 Weight Adjustment Components
#9	Dwelling Unit Nonresponse Adjustment ***(res.sdu.nr)****	#8
#10	Dwelling Unit Poststratification Adjustment ***(res.sdu.ps)****	#9
#11	Dwelling Unit Extreme Weight Adjustment ***(res.sdu.ev)****	#10

Phase II Person Level

	2014–2017 Design Weight Component	Corresponding 2005–2013 Design Weight Component
#12	Inverse Probability of Selecting a Person within a Dwelling Unit	#11

	2014–2017 Weight Adjustment Components	Corresponding 2005–2013 Weight Adjustment Components
#13	Selecting Person-Level Poststratification Adjustment to Screener Data Controls ***(sel.per.ps)****	#12
#14	Person-Level Nonresponse Adjustment ***(res.per.nr)****	#13
#15	Person-Level Poststratification Adjustment ***(res.per.ps)****	#14
#16	Person-Level Extreme Weight Adjustment ***(res.per.ev)****	#15

*These adjustments use the generalized exponential model (GEM), which also involves pre- and postprocessing 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 Bureau Divisions/Model Groups

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

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

Model Group	Eligible DUs	Completed DUs	Eligible People	Selected People	Completed People
1	18,564	13,888	29,063	8,862	5,958
2	22,938	15,540	33,665	10,921	7,303
3	24,791	18,606	38,600	13,389	9,083
4	16,816	13,641	27,803	9,658	6,839
5	37,738	27,761	57,864	17,901	12,751
6	9,367	7,551	15,650	5,450	3,859
7	13,582	10,977	23,328	8,603	6,229
8	16,955	13,497	28,572	10,189	7,623
9	23,515	16,600	37,918	12,694	8,387
Total	184,266	138,061	292,463	97,667	68,032

DU = dwelling unit.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

In the 2017 NSDUH, as in the 2000 through 2016 surveys, the order of the extreme weight 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 weight 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 the surveys after 1999, the generalized exponential model (GEM) first was allowed to control the extreme weights during the nonresponse and poststratification steps, and then a separate extreme weight adjustment step was performed after poststratification, if necessary. This step would be like a repeated poststratification, except that the extreme weights identified after poststratification would have tighter bounds, thus preserving the sample distributions in various domains (equivalent to satisfying the poststratification controls). For the 2017 NSDUH, the extreme weight adjustment step was not necessary either at the DU level or at the person level.

5.1 Phase I Household-Level Weight Components

5.1.1 Weight Components #1 to #8: Selection of a Dwelling Unit

The first eight 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 census tract within each SSR, (2) the probability of selecting the census block group, (3) the probability of selecting the segment within each census tract, (4) a quarter segment weight adjustment, (5) a subsegmentation inflation factor, (6) the probability of selecting a DU from within each counted and listed sampled segment, (7) the probability of inclusion of added DUs, and (8) DU percent release adjustment.

Segments were selected with probabilities representing a full year's sample; therefore, Weight Component #4 was set to 1 in the 12-month analysis and was set to 2 in 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 2010 U.S. Census Bureau data adjusted for more recent 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. There was an occasional second subsegmentation step when the initial partitioning of segments was insufficient due to out-of-date census counts or the segment was still too large to list after the original subsegmentation. Weight Component #5 (i.e., subsegmentation inflation factor) is an adjustment that accounts for this selection process.

As noted in the 2017 and earlier sample design reports, a lengthy process of determining the optimal DU sample was used during the design of the survey. Weight Component #6 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 within a selected segment.

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 2016. Because the listing was done a short time before the 2017 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. If the number of added DUs linked to any particular DU did not exceed 5, 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 #7 accounts for any subsampling that occurred because of added DUs.

To account for corrections, modifications, or both that occurred during the process of design optimization, an additional sample was included throughout all four quarters. Weight Component #8 is the adjustment for the percentage of the DU sample released to FIs in these quarters.

For more detailed information on Weight Components #1 through #8, refer to the 2017 sample design report (Center for Behavioral Health Statistics and Quality, 2018).

5.1.2 Weight Component #9: 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 #8) were adjusted using a multiplicative adjustment factor derived from modeling response propensity via GEM.

5.1.3 Weight Component #10: 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 first were adjusted for nonresponse and poststratification. 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 people, no controls were available for person pairs. Note that for SDU poststratification, census controls still could be used because each SDU's contribution was computed as the number of people 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 still could 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 people in this age category within a DU, and so on. The intercept was the total number of people 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 × Gender) were used.

In addition, 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 or Latino origin, gender, and two or more races) were missing. Missing data for race and Hispanic or Latino origin were imputed using the predictive mean neighborhood (PMN) methodology (see Appendix C). The probability of observing race (white, black or African American, American Indian or Alaska Native, Asian, and two or more races) was modeled using PROC MULTILOG in SUDAAN®, and the probability of observing Hispanic or Latino origin was modeled using PROC LOGISTIC in SAS. Those probabilities were used in computing predictive means and delta neighborhoods. The "hot deck" method then was used to randomly pick a donor from the neighborhood to impute a missing value for each case. Missing data for gender were imputed using an unweighted hot-deck methodology (see Appendix C). The data file was sorted by auxiliary variables that were considered relevant to the variable being imputed. The sort order of these auxiliary variables was chosen to reflect the degree of importance of the auxiliary variables in relation to the variable being imputed. Exhibit 5.3 displays the order in which demographic variables were imputed, along with explanatory variables used in the model or in hot-deck sorting.

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

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

5.1.4 Weight Component #11: Dwelling Unit–Level Extreme Weight Adjustment

The product of Weight Components #1 through #10 was checked to see if the extreme weight adjustment step was needed. Using the SSR 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. Because the unweighted, weighted, and winsorized extreme weight percentages were not high, the extreme weight adjustment was not necessary (see results in Appendix F). Therefore, Weight Component #11 was set to 1 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 #11 described previously. 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 11 weight components became the first 11 components of the final interview respondent sample weight. The remaining five weight components discussed in the next section account for the person-level probability of selection for those people for whom a NSDUH interview was sought; they also account for person-level nonresponse, extreme weights, and coverage errors resulting from the last stages of the sample design.

Details on the final models used for DU nonresponse (nr) and poststratification (ps) adjustment for each respective model group can be found in Appendix D.

Table 5.2 presents the weight distribution for design-based weight and unequal weighting effect (UWE) before the implementation of any weight adjustment and after the DU-level nonresponse adjustment and poststratification.

Table 5.2 Weight Distribution for Design-Based Weight and Weight after DU-Level Adjustments

Weight	Minimum	25% Percentile	Median	75% Percentile	Maximum	Mean	*n*	UWE
Design-Based Weight	31	345	644	819	6,601	618	184,266	1.33
Weight after DU-Level Adjustments	7	452	884	1,231	9,287	906	138,050	1.43

DU = dwelling unit; UWE = unequal weighting effect.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

5.2 Phase II Person-Level Weight Components

5.2.1 Weight Component #12: Selection of a Person within a Dwelling Unit

The rate at which people were selected within each DU depended on the age group and was determined during the design of the 2017 study; this also was done for the probabilities of selecting DUs (i.e., Weight Component #6). Note that, similar to the previous surveys, all possible pairs of eligible rostered people were given some nonzero probability of selection to facilitate unbiased variance estimation. With the FIs' use of the Samsung tablets, 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 people from the DU. (Three ghost units were defined for each DU to allow for the selection of no people and to avoid division by 0 in Brewer's algorithm.) In short, if the sum of the selection probabilities for all eligible DU members was greater than 2, then the probabilities were ratio-adjusted to sum to 2; sums less than 2 were unadjusted. These adjusted rates then were retained as the final selection probabilities. An additional design change was made in 2002 and continued through 2017. A new pair-sampling strategy was implemented that increased the number of person pairs selected in DUs with older people on the roster (Chromy & Penne, 2002). Weight Component #12 represents the inverse of this probability of selection.

5.2.2 Weight Component #13: Selected Person-Level Poststratification Adjustment

The selected person-level poststratification step was started during the 1999 NHSDA. In NHSDAs before 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 previous surveys, the combined step was divided into two separate steps; the first step was poststratification of the selected people (i.e., respondents and nonrespondents) to estimate control totals from the screener person data; the second step was respondent person-level nonresponse adjustment (see Component #14) 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 viewed primarily 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 the member demographics of the selected DUs. See Appendix D for details on the final models.

5.2.3 Weight Component #14: 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 main interview 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 data source, 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 people were not required, and imputation procedures were needed to replace missing data for race/ethnicity and gender. For race/ethnicity, imputations were created using PMN methodology, and for gender, imputations were created using hot-deck methodology. It should be noted that answers from the questionnaire respondents potentially could cause discrepancies between screener values of demographics and their final imputation-revised values. Details on the final models used for the person nonresponse adjustment for each model group can be found in Appendix D.

5.2.4 Weight Component #15: 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 2017 based on the 2010 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 GEM to (1) control the resulting UWE 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 #16: Respondent Person-Level Extreme Weight Adjustment

The weights for the product of Weight Components #1 through #15 were checked to see if the extreme weight adjustment step was needed, with extreme weights defined as described in Section 4.1. As in the case of Weight Component #11, unweighted, weighted, and winsorized extreme weight percentages were acceptably low. Therefore, it was decided that the extreme weight adjustment was not required at this stage either. See Appendix G for results. Therefore, Weight Component #16 was set to 1 for each responding person.

Table 5.3 presents the weight distribution and UWE before the implementation of any person-level weight adjustment and after selected person-level poststratification and person-level nonresponse adjustment and poststratification.

Table 5.3 Weight Distribution for Weight before Any Person-Level Adjustment and after Person-Level Adjustments

Weight	Minimum	25% Percentile	Median	75% Percentile	Maximum	Mean	*n*	UWE
Weight before Any Person-Level Adjustment	7	920	1,786	3,464	40456	2,763	97,667	2.09
Weight after Person-Level Adjustments	1	1,071	2,360	4,944	71,030	4,000	68,032	2.44

UWE = unequal weighting effect.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

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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. More details can be found in the supplement to the appendices.

6.1 Response Rates

Table E.1 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 2017 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[4] for DU screeners and person-level interviews. Table E.1, at the national level, indicates an overall eligibility rate of 84.49 percent as compared with 84.12 percent for 2016. This similarity in overall rates held in nearly all states, with a few notable exceptions: the eligibility rate decreased from 88.52 to 80.31 percent for New Jersey and increased from 69.10 to 73.27 percent for Alaska. The screening rate at the national level decreased from 77.88 percent for 2016 to 75.08 percent for 2017. The national interview response rate was 67.09 percent, a decrease of 1.31 percentage points compared with 68.41 percent for 2016, with the biggest decrease for Nevada (from 72.97 percent for 2016 to 64.72 percent for 2017) and the biggest increase for Minnesota (from 68.19 percent for 2016 to 71.79 percent for 2017). 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	National Level	Minimum	Median	Maximum
Dwelling Unit Level				
Eligibility Rate	84.49%	69.72% (New Mexico)	84.03% (Iowa)	91.59% (Nevada)
Screener Response Rate	75.08%	58.58% (District of Columbia)	78.70% (North Carolina)	85.38% (North Dakota)
Person Level				
Interview Response Rate	67.09%	57.96% (Massachusetts)	68.78% (Maine)	78.80% (New Mexico)

6.2 Percentages of Extreme Weights and Outwinsors

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 weights among the weights. As explained in Section 4.1, the percentages of extreme weights for

[4] Screening and interview response rates were computed using American Association for Public Opinion Research (AAPOR)'s Response Rate 1 and Response Rate 2, respectively. See AAPOR's Standard Definitions (AAPOR, 2016) for more information.

the input weight were calculated for some domains of interest prior to adjustment. These values then were compared with the resulting percentages of extreme weights using the product of weight components that included the new adjustment.

Table F.1 in Appendix F and Tables G.1 and G.2 in Appendix G present percentages of extreme weights 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 weights 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 weight 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 2017 NSDUH sample, domains for extreme weight definitions were defined as follows for various weight adjustments via the generalized exponential model (GEM) (see Section 4.1):

- DU nonresponse by state sampling region (SSR);
- DU poststratification by SSR;
- selected person-level poststratification by SSR and age group,[5] state and age group, SSR, and state;
- person-level nonresponse by SSR and age group, state and age group, SSR, and state; and
- person-level poststratification by SSR and age group, state and age group, SSR, and state.

Before any weight adjustment was implemented, the percentage of unweighted extreme weights was 3.47 percent and the outwinsor was 0.57 percent for the product of design Weight Components #1 to #8. After DU-level nonresponse adjustment and poststratification, the percentage of unweighted extreme weights decreased to 1.49 percent and the outwinsor increased to 0.86 percent. When the design Weight Component #12 (inverse probability of selecting a person within a dwelling unit) was introduced, the percentage of unweighted extreme weights increased to 2.81 percent and the outwinsor increased to 1.63 percent. The person-level adjustments, which consisted of selected person-level poststratification, person-level nonresponse adjustment, and person-level poststratification, were able to bring down the percentage of unweighted extreme weights to 0.92 percent and the outwinsor to 0.67 percent.

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

[5] Age group categories are 12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older.

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.11 for Florida, which indicates a sample size of 2,300 for race domain "white"; an initial total, also known as the design-based weight, of 13,113,669; a census total of 14,135,854; and an initial slippage rate of -7.23 percent. The ratio of the census total to the initial total gives the value of the weight adjustment: 1.08. Similar to this example, but in the opposite direction, is Table H.38 for Oklahoma. The domain "Age Group 50–64" contains a sample size of 94 and an initial slippage rate of 6.75 percent. The initial total of 768,507 and the census total of 719,902 indicate that an adjustment of 0.94 would be required.

Occasionally, the final population estimates after poststratification do not match census control totals. Consider Table H.24 for Michigan, the domain "American Indian/Alaska Native" contains a sample size of 30, an initial total of 104,148, and a final total of 29,220, which does not match the census total of 60,129. The large difference between the initial total and the census total caused the GEM weight calibration model to not converge and so "American Indian/Alaska Native" had to be collapsed with "Asian." At the end, the combined domain for "American Indian/Alaska Native" and "Asian" has a sample size of 115 and a combined final total of 336,872 (29,220 + 307,652) that matches the census total of 336,872 (60,129 + 276,743).

6.4 Weight Adjustment Summary Statistics

Tables I.1 to I.3 in Appendix I display summary statistics on the product of weight components for before and after all stages of adjustment, for both the DU and person levels. Note that these tables have before and after categories for all adjustments except for the DU poststratification (res.du.ps); this is because the before and after statistics are the same and are, therefore, displayed only as the category after. Note also that there could be changes, although minimal, in person-level specific demographic distributions from screener data to questionnaire data, so the respondent sample unequal weighting effect prior to poststratification based on the questionnaire data (e.g., see Table I.3, under the heading "After res.per.nr") would be only slightly different from what would be obtained after the nonresponse adjustment (e.g., see Table I.3, 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, a sensitivity analysis was conducted for the final poststratification step, where a simple baseline model was

fitted with the same bounds and maximum number of iterations as those 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 the more complex model could be fit.

The 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, Gordek, & Singh, 2000) is designed to provide an estimate of the variance that adjusts for the random calibration factors to sampling weights via GEM. This "sandwich variance," adjusting for the poststratification 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), major depressive episode, and serious mental illness variables across four age groups (12 to 17, 18 to 25, 26 to 34, and 35 or older), for the eight states with the largest sample sizes.

The standard SUDAAN variance estimator for a survey weighted prevalence estimator is called the "naïve Taylor Series" standard error. The sandwich variance, also referred to as the variance estimate from a bias corrected estimating function (BCEF) (Singh & Folsom, 2000), is the "correct" Taylor Series linearization for the survey weighted prevalence estimate when the weights have been calibrated for nonresponse or poststratification. The sandwich variance estimates account for the variance contribution from the weight calibration. It was found in a preliminary study that the naïve Taylor linearization variance is somewhat conservative in comparison with the sandwich variance. The variance estimates of selected outcomes in Tables 6.2 to 6.8 show that, in general, sandwich variances (SE2) are smaller than the naïve Taylor linearization variances (SE1), with a few exceptions. These results confirm the conjecture that BCEF variances, or sandwich variances, are smaller despite the possibility of inflating variance due to adding the weight adjustment variation.

As noted previously, to check for overfitting, the variances of the baseline and final models were compared. In Tables 6.2 to 6.8, there are cases where the SE from the final model is slightly larger than the SE from the baseline model, indicating possible overfitting. However, the variance estimates for the two models (baseline and final) are generally similar to each other. Note that smaller variance estimates for the final model would indicate that the complex model for the poststratification adjustment resulted in better variance reduction (because of correlation between study and predictor variables) and bias reduction (because of 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.

Table 6.2 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Licit Drug Estimates, Cigarettes and Alcohol: 2017 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Lifetime											
Total	Point Estimates	57.25	57.13	51.23	50.82	55.78	55.99	57.97	58.05	62.07	62.20
	SE1	0.31	0.31	1.13	1.15	1.34	1.37	1.49	1.49	1.23	1.21
	SE2	0.28	0.27	0.99	0.97	1.28	1.23	1.42	1.33	1.23	1.15
12–17	Point Estimates	10.78	10.75	7.49	7.10	12.48	12.34	10.88	10.99	12.09	12.27
	SE1	0.30	0.30	0.91	0.92	1.32	1.29	1.62	1.67	1.47	1.49
	SE2	0.30	0.30	0.91	0.89	1.31	1.24	1.61	1.64	1.47	1.46
18–25	Point Estimates	49.52	49.52	43.65	43.39	44.62	44.93	49.55	50.13	52.27	53.07
	SE1	0.54	0.54	1.93	1.94	2.24	2.20	2.51	2.52	2.68	2.75
	SE2	0.54	0.52	1.94	1.90	2.25	1.95	2.50	2.28	2.72	2.94
26–34	Point Estimates	62.98	62.83	56.07	55.96	58.54	58.85	65.61	65.75	67.27	67.20
	SE1	0.64	0.65	2.42	2.49	2.09	2.21	3.01	3.11	2.84	2.84
	SE2	0.62	0.61	2.40	2.34	2.09	2.03	2.99	2.86	2.84	2.79
35+	Point Estimates	64.16	64.01	57.99	57.55	62.09	62.34	64.85	64.76	69.93	70.01
	SE1	0.42	0.42	1.56	1.58	1.74	1.74	1.96	2.03	1.82	1.77
	SE2	0.39	0.39	1.44	1.41	1.69	1.69	1.90	1.92	1.80	1.67
Alcohol Lifetime											
Total	Point Estimates	80.99	80.87	79.50	79.10	80.72	80.70	84.37	84.60	83.45	83.68
	SE1	0.25	0.26	0.85	0.88	1.01	1.03	0.94	0.98	1.16	1.10
	SE2	0.22	0.21	0.74	0.72	0.97	0.90	0.88	0.84	1.14	0.96
12–17	Point Estimates	27.22	27.12	24.03	23.30	29.95	29.71	29.74	30.17	27.63	27.75
	SE1	0.45	0.46	1.48	1.42	1.94	1.95	2.46	2.47	1.95	2.09
	SE2	0.45	0.45	1.49	1.41	1.92	1.85	2.46	2.46	1.95	2.12
18–25	Point Estimates	81.15	81.05	80.31	80.01	77.84	78.23	86.10	85.81	83.57	83.83
	SE1	0.43	0.44	1.44	1.50	1.77	1.78	1.95	2.01	1.75	1.73
	SE2	0.43	0.42	1.45	1.47	1.74	1.83	1.97	1.97	1.75	1.78
26–34	Point Estimates	90.23	90.08	89.37	89.19	89.53	89.82	92.32	92.51	92.29	92.07
	SE1	0.39	0.41	1.42	1.48	1.33	1.34	1.64	1.63	1.69	1.70
	SE2	0.38	0.38	1.41	1.52	1.33	1.34	1.64	1.45	1.70	1.82
35+	Point Estimates	86.59	86.47	84.92	84.59	85.37	85.31	90.31	90.55	89.42	89.79
	SE1	0.31	0.33	1.09	1.15	1.26	1.29	1.11	1.22	1.61	1.49
	SE2	0.30	0.29	1.03	1.01	1.24	1.18	1.08	1.19	1.59	1.28

(continued)

Table 6.2 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Licit Drug Estimates, Cigarettes and Alcohol: 2017 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Lifetime									
Total	Point Estimates	53.89	53.58	62.86	63.19	60.98	60.86	52.27	52.10
	SE1	1.33	1.39	1.44	1.42	1.44	1.46	1.13	1.13
	SE2	1.23	1.13	1.43	1.32	1.43	1.41	0.99	0.96
12–17	Point Estimates	6.16	6.21	11.46	11.45	9.35	9.47	10.53	10.49
	SE1	0.94	0.94	1.42	1.44	1.17	1.19	1.16	1.19
	SE2	0.95	0.95	1.42	1.39	1.17	1.19	1.16	1.21
18–25	Point Estimates	42.80	43.00	56.21	56.55	52.72	52.97	48.72	48.43
	SE1	2.05	2.11	2.14	2.13	2.52	2.47	1.80	1.86
	SE2	2.04	2.08	2.14	2.19	2.53	2.49	1.81	1.80
26–34	Point Estimates	58.09	57.22	69.26	69.89	65.18	64.77	61.82	61.43
	SE1	2.45	2.50	2.67	2.72	2.79	2.86	2.51	2.56
	SE2	2.38	2.37	2.68	2.68	2.78	2.67	2.48	2.46
35+	Point Estimates	61.41	60.95	70.18	70.39	68.32	68.13	58.00	57.88
	SE1	1.78	1.89	1.99	1.95	1.94	1.99	1.54	1.50
	SE2	1.69	1.61	1.99	1.93	1.94	1.97	1.44	1.37
Alcohol Lifetime									
Total	Point Estimates	80.98	80.68	83.73	83.81	83.93	83.99	77.30	77.15
	SE1	1.12	1.23	1.01	1.01	1.00	1.02	1.09	1.13
	SE2	1.06	1.05	0.99	0.87	0.99	0.89	0.88	0.82
12–17	Point Estimates	25.20	25.31	25.71	25.96	23.48	23.39	27.38	27.44
	SE1	1.87	1.91	2.07	2.14	1.75	1.75	1.74	1.76
	SE2	1.88	1.84	2.08	2.34	1.77	1.73	1.74	1.79
18–25	Point Estimates	81.52	81.12	86.17	86.00	82.67	82.68	78.67	78.49
	SE1	1.73	1.75	1.52	1.60	1.79	1.87	2.16	2.18
	SE2	1.71	1.63	1.51	1.56	1.79	1.84	2.13	2.09
26–34	Point Estimates	89.21	88.91	91.29	90.94	91.84	92.01	88.78	88.65
	SE1	1.69	1.70	2.02	2.09	1.84	1.87	1.69	1.75
	SE2	1.65	1.57	2.00	1.86	1.81	1.63	1.64	1.62
35+	Point Estimates	86.20	85.79	89.99	90.10	90.37	90.37	82.88	82.69
	SE1	1.42	1.67	1.23	1.20	1.25	1.30	1.35	1.41
	SE2	1.38	1.48	1.22	1.12	1.26	1.24	1.23	1.19

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table 6.3 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Illicit Drug Estimates, Marijuana and Cocaine: 2017 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Lifetime											
Total	Point Estimates	45.36	45.18	46.21	45.74	42.33	42.38	47.05	46.46	51.09	51.28
	SE1	0.33	0.33	1.16	1.17	1.33	1.32	1.66	1.64	1.37	1.37
	SE2	0.29	0.28	0.97	0.91	1.25	1.14	1.59	1.40	1.37	1.26
12–17	Point Estimates	15.34	15.26	16.08	15.14	17.24	17.06	17.58	18.10	16.71	17.15
	SE1	0.37	0.37	1.20	1.16	1.70	1.66	1.83	1.91	1.91	2.06
	SE2	0.36	0.36	1.18	1.13	1.69	1.59	1.82	1.83	1.91	1.91
18–25	Point Estimates	52.79	52.72	53.82	53.50	55.13	55.62	55.26	55.78	54.82	55.11
	SE1	0.55	0.56	2.09	2.15	1.92	1.96	3.25	3.40	2.05	2.14
	SE2	0.55	0.54	2.10	2.04	1.89	1.92	3.26	3.30	2.05	2.15
26–34	Point Estimates	56.57	56.35	54.72	54.78	55.53	56.08	56.02	56.44	63.94	63.86
	SE1	0.68	0.69	2.56	2.63	2.20	2.21	3.19	3.27	2.88	2.85
	SE2	0.66	0.63	2.50	2.31	2.15	1.99	3.17	2.87	2.88	2.93
35+	Point Estimates	45.65	45.45	46.84	46.31	40.58	40.53	47.73	46.51	52.58	52.74
	SE1	0.46	0.47	1.68	1.69	1.79	1.77	2.37	2.38	2.02	1.98
	SE2	0.42	0.39	1.49	1.36	1.71	1.60	2.29	2.02	1.99	1.74
Cocaine Lifetime											
Total	Point Estimates	14.84	14.90	17.60	17.49	14.16	14.32	16.43	16.43	12.89	13.10
	SE1	0.23	0.24	0.85	0.84	0.94	0.96	1.17	1.14	1.04	1.06
	SE2	0.21	0.21	0.76	0.71	0.90	0.87	1.14	1.01	1.02	0.99
12–17	Point Estimates	0.68	0.68	0.75	0.74	0.44	0.48	0.56	0.43	0.48	0.49
	SE1	0.07	0.07	0.21	0.23	0.24	0.26	0.38	0.34	0.28	0.28
	SE2	0.07	0.07	0.21	0.23	0.24	0.26	0.38	0.34	0.28	0.27
18–25	Point Estimates	12.01	12.02	12.86	12.71	10.83	11.12	11.80	12.19	9.24	9.15
	SE1	0.36	0.36	1.30	1.32	1.27	1.33	1.72	1.80	1.42	1.37
	SE2	0.36	0.35	1.31	1.27	1.27	1.29	1.73	1.79	1.42	1.39
26–34	Point Estimates	18.20	18.14	18.75	18.70	18.71	18.69	17.65	17.41	19.32	19.30
	SE1	0.52	0.53	1.90	1.92	1.99	2.08	2.13	2.12	2.12	2.22
	SE2	0.52	0.50	1.88	1.79	1.97	1.89	2.13	2.05	2.13	2.40
35+	Point Estimates	16.67	16.78	20.78	20.67	15.41	15.60	19.42	19.39	14.09	14.40
	SE1	0.33	0.34	1.28	1.28	1.33	1.34	1.68	1.65	1.50	1.52
	SE2	0.31	0.30	1.18	1.10	1.29	1.24	1.66	1.51	1.47	1.37

(continued)

Table 6.3 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Illicit Drug Estimates, Marijuana and Cocaine: 2017 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Lifetime									
Total	Point Estimates	43.34	43.02	46.96	47.09	48.29	47.82	37.62	37.57
	SE1	1.33	1.38	1.37	1.40	1.55	1.58	1.31	1.35
	SE2	1.24	1.10	1.35	1.29	1.53	1.45	1.16	1.10
12–17	Point Estimates	12.88	13.19	15.05	14.88	11.90	12.17	13.48	13.58
	SE1	1.36	1.39	1.62	1.65	1.33	1.35	1.36	1.39
	SE2	1.36	1.36	1.61	1.87	1.33	1.34	1.36	1.41
18–25	Point Estimates	51.78	51.91	55.87	56.03	55.43	55.34	44.05	44.00
	SE1	2.27	2.19	2.40	2.38	2.32	2.33	1.98	1.96
	SE2	2.27	2.08	2.41	2.39	2.32	2.35	1.96	1.89
26–34	Point Estimates	50.98	49.94	63.05	62.83	55.93	55.80	48.72	47.97
	SE1	3.26	3.20	2.56	2.72	3.09	3.11	2.73	2.77
	SE2	3.19	2.91	2.56	2.55	3.08	2.95	2.70	2.67
35+	Point Estimates	43.76	43.46	46.41	46.64	50.13	49.36	37.56	37.66
	SE1	1.72	1.80	1.94	1.97	2.12	2.19	1.80	1.83
	SE2	1.66	1.49	1.91	1.84	2.10	2.04	1.61	1.50
Cocaine Lifetime									
Total	Point Estimates	13.27	13.20	13.61	13.54	14.99	15.03	12.12	12.26
	SE1	1.01	1.05	0.89	0.89	1.12	1.14	0.80	0.82
	SE2	0.97	0.92	0.88	0.86	1.10	1.02	0.77	0.73
12–17	Point Estimates	0.22	0.25	0.89	0.94	1.04	1.05	0.51	0.52
	SE1	0.16	0.19	0.41	0.42	0.44	0.44	0.26	0.27
	SE2	0.16	0.18	0.40	0.42	0.44	0.44	0.27	0.27
18–25	Point Estimates	13.08	13.13	11.56	11.30	11.78	11.87	10.69	10.44
	SE1	1.77	1.80	1.74	1.65	1.47	1.49	1.15	1.11
	SE2	1.73	1.70	1.74	1.59	1.46	1.40	1.16	1.11
26–34	Point Estimates	14.35	13.93	20.33	19.93	18.84	18.59	17.13	17.25
	SE1	1.98	1.94	2.37	2.30	2.05	2.03	2.26	2.27
	SE2	1.94	1.76	2.37	2.22	2.06	1.98	2.27	2.19
35+	Point Estimates	14.76	14.72	14.42	14.42	16.61	16.67	13.20	13.46
	SE1	1.38	1.40	1.21	1.22	1.54	1.57	1.13	1.16
	SE2	1.35	1.28	1.20	1.19	1.51	1.40	1.09	1.04

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table 6.4 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Licit Drug Estimates, Cigarettes and Alcohol: 2017 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Past Year											
Total	Point Estimates	21.38	21.47	16.22	16.25	20.56	20.46	21.05	21.09	23.38	23.90
	SE1	0.26	0.27	0.89	0.90	1.15	1.16	1.29	1.34	1.18	1.24
	SE2	0.25	0.24	0.86	0.86	1.15	1.11	1.27	1.29	1.17	1.20
12–17	Point Estimates	6.30	6.28	4.11	3.99	6.54	6.41	5.41	5.40	6.42	6.33
	SE1	0.23	0.23	0.63	0.63	0.97	0.94	1.13	1.16	0.97	0.93
	SE2	0.23	0.23	0.63	0.63	0.98	0.91	1.13	1.14	0.97	0.92
18–25	Point Estimates	31.10	31.03	23.78	23.61	26.91	27.04	28.60	29.03	31.70	32.02
	SE1	0.49	0.49	1.65	1.68	1.82	1.83	2.44	2.48	2.13	2.19
	SE2	0.48	0.47	1.66	1.63	1.83	1.74	2.44	2.38	2.16	2.30
26–34	Point Estimates	31.51	31.48	25.06	24.73	30.18	29.84	31.87	31.79	33.97	34.02
	SE1	0.60	0.60	1.97	2.04	2.06	2.11	2.88	3.00	2.84	2.94
	SE2	0.59	0.57	1.96	1.90	2.03	1.96	2.89	3.06	2.84	2.94
35+	Point Estimates	19.32	19.47	14.11	14.33	19.26	19.20	19.37	19.38	22.00	22.68
	SE1	0.34	0.35	1.08	1.09	1.58	1.57	1.65	1.73	1.61	1.75
	SE2	0.33	0.33	1.07	1.07	1.58	1.51	1.65	1.70	1.61	1.76
Alcohol Past Year											
Total	Point Estimates	65.87	65.69	66.37	65.98	64.44	64.25	70.78	70.27	68.63	68.76
	SE1	0.32	0.33	1.03	1.06	1.51	1.54	1.35	1.43	1.47	1.48
	SE2	0.30	0.29	0.96	0.98	1.48	1.39	1.28	1.21	1.47	1.39
12–17	Point Estimates	21.95	21.91	19.08	18.78	24.04	23.83	23.84	24.23	23.85	23.97
	SE1	0.43	0.43	1.33	1.29	1.76	1.76	2.22	2.28	1.79	1.95
	SE2	0.43	0.42	1.33	1.28	1.74	1.64	2.22	2.27	1.80	1.97
18–25	Point Estimates	74.02	73.99	72.49	72.07	71.37	71.96	77.72	77.96	76.28	76.64
	SE1	0.50	0.51	1.69	1.79	1.95	1.96	2.30	2.34	2.03	2.01
	SE2	0.49	0.49	1.69	1.74	1.93	2.07	2.29	2.20	2.04	2.10
26–34	Point Estimates	80.23	80.01	77.32	77.08	79.72	79.91	82.79	82.83	82.13	82.04
	SE1	0.52	0.54	1.92	2.04	1.62	1.64	2.18	2.17	2.13	2.13
	SE2	0.51	0.51	1.91	2.01	1.62	1.65	2.19	2.09	2.15	2.11
35+	Point Estimates	67.30	67.07	69.19	68.84	65.01	64.67	73.59	72.64	70.65	70.76
	SE1	0.44	0.45	1.35	1.39	2.04	2.10	1.84	2.01	2.11	2.12
	SE2	0.42	0.40	1.33	1.32	2.03	1.90	1.79	1.81	2.09	1.91

(continued)

Table 6.4 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Licit Drug Estimates, Cigarettes and Alcohol: 2017 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Past Year									
Total	Point Estimates	18.29	18.43	26.34	26.48	22.89	22.82	20.57	20.53
	SE1	1.03	1.08	1.38	1.44	1.29	1.31	0.92	0.93
	SE2	1.00	1.01	1.38	1.36	1.27	1.14	0.84	0.81
12–17	Point Estimates	4.22	4.32	6.35	6.24	5.89	5.99	6.26	6.11
	SE1	0.77	0.78	1.10	1.10	1.04	1.04	0.91	0.93
	SE2	0.77	0.78	1.10	1.07	1.04	1.04	0.91	0.95
18–25	Point Estimates	26.36	26.44	37.71	37.41	32.67	32.62	30.85	30.88
	SE1	1.89	1.88	2.31	2.26	2.25	2.28	1.73	1.78
	SE2	1.91	1.94	2.32	2.31	2.26	2.33	1.72	1.73
26–34	Point Estimates	31.06	30.43	38.35	38.38	36.79	36.82	33.10	33.20
	SE1	2.43	2.43	3.17	3.34	2.91	2.97	2.21	2.20
	SE2	2.40	2.48	3.17	3.23	2.92	2.89	2.21	2.09
35+	Point Estimates	15.34	15.75	24.47	24.75	20.49	20.26	17.51	17.44
	SE1	1.29	1.41	1.79	1.86	1.69	1.72	1.25	1.26
	SE2	1.29	1.32	1.78	1.80	1.67	1.51	1.19	1.16
Alcohol Past Year									
Total	Point Estimates	68.27	67.68	65.98	66.23	72.21	72.22	63.17	62.88
	SE1	1.35	1.42	1.43	1.42	1.28	1.30	1.29	1.32
	SE2	1.30	1.29	1.43	1.35	1.26	1.27	1.16	1.15
12–17	Point Estimates	21.22	21.15	20.30	20.49	21.03	20.95	21.49	21.45
	SE1	1.91	1.91	2.02	2.07	1.76	1.76	1.66	1.70
	SE2	1.92	1.83	2.02	2.04	1.77	1.75	1.66	1.70
18–25	Point Estimates	76.41	76.04	76.39	76.30	76.95	76.99	70.89	70.65
	SE1	1.84	1.89	2.04	2.08	1.98	2.06	2.43	2.46
	SE2	1.81	1.73	2.03	1.95	1.97	2.01	2.38	2.31
26–34	Point Estimates	81.47	80.64	81.53	81.11	82.98	83.33	80.38	80.15
	SE1	1.78	1.82	2.22	2.24	2.46	2.47	2.20	2.28
	SE2	1.76	1.77	2.22	2.18	2.43	2.15	2.14	2.17
35+	Point Estimates	69.56	68.92	67.23	67.65	75.78	75.64	64.35	63.97
	SE1	1.81	1.95	1.99	1.98	1.71	1.73	1.68	1.72
	SE2	1.78	1.80	1.99	1.89	1.69	1.76	1.62	1.63

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table 6.5 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Illicit Drug Estimates, Marijuana and Cocaine: 2017 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Past Year											
Total	Point Estimates	15.09	15.04	17.92	17.74	14.20	14.19	15.41	15.18	17.30	17.52
	SE1	0.21	0.22	0.78	0.79	0.77	0.76	0.96	0.97	1.07	1.09
	SE2	0.19	0.18	0.75	0.75	0.73	0.69	0.93	0.85	1.04	0.91
12–17	Point Estimates	12.44	12.40	12.73	12.05	14.67	14.55	15.17	15.56	14.13	14.37
	SE1	0.34	0.34	1.12	1.05	1.55	1.50	1.85	1.93	1.69	1.85
	SE2	0.33	0.33	1.11	1.04	1.54	1.46	1.84	1.87	1.69	1.75
18–25	Point Estimates	34.85	34.85	37.51	37.55	36.65	36.77	37.05	37.83	38.81	39.11
	SE1	0.53	0.53	1.76	1.81	2.42	2.50	2.77	2.81	2.41	2.51
	SE2	0.53	0.52	1.78	1.74	2.41	2.46	2.79	2.79	2.40	2.51
26–34	Point Estimates	23.54	23.36	27.01	26.78	23.11	23.14	23.17	22.54	28.97	28.84
	SE1	0.56	0.56	2.14	2.18	1.90	1.93	2.72	2.63	2.22	2.23
	SE2	0.55	0.53	2.12	2.09	1.87	1.87	2.72	2.61	2.22	2.20
35+	Point Estimates	9.63	9.60	12.21	12.08	8.76	8.74	9.37	8.97	11.16	11.34
	SE1	0.25	0.25	0.88	0.87	0.90	0.89	1.03	1.01	1.14	1.15
	SE2	0.24	0.22	0.86	0.84	0.89	0.87	1.02	0.97	1.12	1.08
Cocaine Past Year											
Total	Point Estimates	2.17	2.18	2.81	2.75	2.08	2.09	2.24	2.32	1.55	1.57
	SE1	0.08	0.08	0.31	0.30	0.22	0.23	0.44	0.46	0.26	0.26
	SE2	0.08	0.07	0.30	0.29	0.22	0.22	0.43	0.40	0.25	0.24
12–17	Point Estimates	0.51	0.51	0.67	0.70	0.29	0.32	0.56	0.43	0.48	0.49
	SE1	0.06	0.06	0.23	0.25	0.21	0.23	0.38	0.34	0.28	0.28
	SE2	0.06	0.06	0.24	0.25	0.21	0.23	0.38	0.34	0.28	0.27
18–25	Point Estimates	6.12	6.20	7.45	7.48	6.32	6.47	7.03	7.24	5.29	5.40
	SE1	0.26	0.27	1.06	1.08	1.02	1.07	1.47	1.53	1.01	1.06
	SE2	0.26	0.26	1.06	1.03	1.02	1.08	1.48	1.55	1.01	1.04
26–34	Point Estimates	4.50	4.47	6.14	6.02	6.78	6.63	4.31	4.56	4.88	4.78
	SE1	0.28	0.28	1.10	1.10	1.24	1.29	1.34	1.45	1.09	1.07
	SE2	0.28	0.27	1.11	1.07	1.23	1.22	1.34	1.40	1.09	1.06
35+	Point Estimates	1.10	1.11	1.28	1.22	0.68	0.70	1.07	1.12	0.30	0.29
	SE1	0.09	0.09	0.32	0.29	0.19	0.19	0.34	0.37	0.14	0.14
	SE2	0.09	0.08	0.31	0.29	0.19	0.19	0.34	0.35	0.14	0.14

(continued)

Table 6.5 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Illicit Drug Estimates, Marijuana and Cocaine: 2017 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Past Year									
Total	Point Estimates	14.50	14.35	13.54	13.51	13.01	12.96	11.15	11.05
	SE1	0.87	0.87	0.94	0.93	0.76	0.76	0.80	0.80
	SE2	0.81	0.75	0.92	0.76	0.76	0.73	0.70	0.66
12–17	Point Estimates	11.48	11.99	12.66	12.47	9.38	9.62	10.18	10.22
	SE1	1.32	1.36	1.50	1.50	1.22	1.22	1.19	1.20
	SE2	1.32	1.34	1.49	1.53	1.22	1.22	1.20	1.23
18–25	Point Estimates	36.30	36.40	36.29	36.57	36.89	36.52	27.22	27.11
	SE1	2.16	2.15	2.67	2.60	2.23	2.19	2.06	2.02
	SE2	2.17	2.10	2.67	2.58	2.24	2.24	2.01	1.85
26–34	Point Estimates	21.49	20.99	20.61	20.74	18.99	19.14	16.12	15.62
	SE1	2.41	2.30	2.23	2.27	2.25	2.22	1.99	1.97
	SE2	2.40	2.14	2.24	2.30	2.27	2.19	2.02	1.98
35+	Point Estimates	8.76	8.66	7.75	7.71	7.87	7.75	6.41	6.38
	SE1	1.09	1.11	1.05	1.04	0.95	0.97	0.80	0.81
	SE2	1.07	1.02	1.03	0.96	0.95	0.93	0.76	0.74
Cocaine Past Year									
Total	Point Estimates	2.57	2.63	1.90	1.85	1.88	1.89	1.64	1.62
	SE1	0.43	0.45	0.30	0.28	0.33	0.33	0.29	0.29
	SE2	0.42	0.41	0.29	0.25	0.33	0.33	0.29	0.27
12–17	Point Estimates	0.07	0.06	0.89	0.94	0.74	0.75	0.31	0.32
	SE1	0.07	0.06	0.41	0.42	0.38	0.38	0.18	0.18
	SE2	0.07	0.06	0.40	0.42	0.38	0.38	0.18	0.18
18–25	Point Estimates	6.81	7.02	6.42	6.16	6.04	6.14	4.13	3.96
	SE1	1.19	1.21	1.61	1.47	0.97	1.01	0.68	0.64
	SE2	1.17	1.17	1.61	1.40	0.96	0.98	0.68	0.64
26–34	Point Estimates	5.15	5.18	2.31	2.25	3.17	3.11	2.52	2.63
	SE1	1.33	1.35	0.86	0.84	0.97	0.95	0.94	0.91
	SE2	1.31	1.27	0.86	0.84	0.97	0.95	0.95	0.92
35+	Point Estimates	1.40	1.46	1.09	1.07	1.00	0.99	1.08	1.07
	SE1	0.42	0.47	0.23	0.22	0.37	0.37	0.39	0.39
	SE2	0.42	0.42	0.23	0.21	0.37	0.38	0.38	0.37

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table 6.6 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Licit Drug Estimates, Cigarettes and Alcohol: 2017 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Past Month											
Total	Point Estimates	17.83	17.89	12.67	12.72	17.11	17.03	16.98	16.92	19.83	20.44
	SE1	0.24	0.25	0.80	0.81	1.06	1.06	1.19	1.23	1.15	1.24
	SE2	0.23	0.23	0.78	0.78	1.06	1.02	1.19	1.23	1.15	1.21
12–17	Point Estimates	3.20	3.16	2.01	1.92	3.03	3.13	2.78	2.68	2.43	2.39
	SE1	0.17	0.17	0.50	0.50	0.66	0.67	0.77	0.76	0.64	0.59
	SE2	0.17	0.17	0.50	0.50	0.66	0.64	0.77	0.75	0.64	0.60
18–25	Point Estimates	22.36	22.31	16.51	16.43	18.49	18.74	20.57	20.74	21.20	21.33
	SE1	0.44	0.44	1.49	1.51	1.68	1.71	1.91	1.96	2.03	2.11
	SE2	0.44	0.43	1.49	1.46	1.69	1.66	1.91	1.93	2.05	2.18
26–34	Point Estimates	26.10	26.04	18.43	18.00	25.74	25.47	24.82	24.64	30.85	31.00
	SE1	0.57	0.57	1.77	1.83	2.05	2.07	2.97	3.06	2.72	2.84
	SE2	0.56	0.55	1.77	1.73	2.03	1.91	3.00	3.09	2.72	2.85
35+	Point Estimates	17.15	17.28	11.94	12.18	16.82	16.73	16.55	16.49	19.80	20.65
	SE1	0.33	0.33	1.02	1.04	1.40	1.39	1.53	1.59	1.60	1.76
	SE2	0.32	0.31	1.01	1.02	1.39	1.34	1.53	1.59	1.60	1.76
Alcohol Past Month											
Total	Point Estimates	51.88	51.67	52.71	52.35	50.90	50.75	57.22	56.53	53.06	53.27
	SE1	0.34	0.34	1.21	1.24	1.46	1.48	1.57	1.58	1.68	1.70
	SE2	0.31	0.30	1.11	1.10	1.43	1.33	1.48	1.28	1.69	1.61
12–17	Point Estimates	9.93	9.88	8.48	8.26	11.67	11.48	11.35	11.51	10.55	11.23
	SE1	0.30	0.30	0.82	0.80	1.36	1.40	1.73	1.77	1.46	1.63
	SE2	0.30	0.30	0.82	0.79	1.35	1.34	1.73	1.75	1.45	1.62
18–25	Point Estimates	56.39	56.34	53.72	53.27	55.13	55.54	59.13	59.97	59.77	60.03
	SE1	0.60	0.60	2.06	2.08	2.02	2.05	2.48	2.56	2.35	2.30
	SE2	0.59	0.56	2.04	1.94	2.02	2.11	2.47	2.40	2.36	2.33
26–34	Point Estimates	64.44	64.22	61.90	61.84	64.50	65.26	68.13	67.85	63.86	63.21
	SE1	0.64	0.65	2.36	2.44	2.09	2.12	2.92	2.95	2.63	2.60
	SE2	0.63	0.61	2.32	2.36	2.09	2.12	2.89	2.65	2.66	2.53
35+	Point Estimates	54.17	53.89	56.62	56.25	52.11	51.73	61.12	59.86	55.48	55.78
	SE1	0.46	0.48	1.61	1.65	2.01	2.04	2.13	2.20	2.50	2.54
	SE2	0.44	0.42	1.53	1.49	1.99	1.85	2.06	1.87	2.48	2.31

(continued)

Table 6.6 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Licit Drug Estimates, Cigarettes and Alcohol: 2017 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Past Month									
Total	Point Estimates	14.83	14.98	23.12	23.26	19.59	19.51	16.80	16.77
	SE1	0.98	1.03	1.36	1.40	1.23	1.24	0.88	0.89
	SE2	0.97	0.98	1.35	1.33	1.21	1.09	0.82	0.80
12–17	Point Estimates	2.38	2.37	4.30	4.26	3.54	3.63	2.88	2.67
	SE1	0.60	0.60	0.97	0.96	0.80	0.82	0.59	0.60
	SE2	0.61	0.59	0.97	0.95	0.80	0.83	0.59	0.63
18–25	Point Estimates	18.09	18.11	29.10	28.78	24.03	23.92	20.77	20.68
	SE1	1.74	1.74	2.14	2.10	2.20	2.19	1.49	1.52
	SE2	1.74	1.80	2.14	2.11	2.20	2.27	1.50	1.52
26–34	Point Estimates	24.22	23.13	34.76	34.27	29.74	29.79	27.67	27.91
	SE1	2.37	2.29	3.01	3.13	2.91	2.97	2.18	2.22
	SE2	2.35	2.26	3.02	3.04	2.90	2.88	2.17	2.16
35+	Point Estimates	13.48	14.01	22.21	22.57	18.80	18.60	15.54	15.48
	SE1	1.21	1.32	1.78	1.83	1.58	1.61	1.20	1.21
	SE2	1.20	1.25	1.77	1.76	1.57	1.42	1.14	1.11
Alcohol Past Month									
Total	Point Estimates	54.10	53.91	49.97	50.04	58.45	58.20	48.90	48.67
	SE1	1.54	1.58	1.42	1.46	1.41	1.46	1.33	1.33
	SE2	1.46	1.37	1.40	1.33	1.37	1.26	1.19	1.16
12–17	Point Estimates	9.09	9.10	9.02	9.08	9.54	9.66	9.15	9.18
	SE1	1.29	1.26	1.43	1.45	1.37	1.39	1.12	1.15
	SE2	1.27	1.21	1.43	1.36	1.37	1.40	1.12	1.16
18–25	Point Estimates	60.70	60.56	58.90	59.06	60.25	60.38	53.08	52.92
	SE1	2.30	2.37	2.67	2.67	2.57	2.62	2.81	2.79
	SE2	2.25	2.19	2.68	2.54	2.54	2.41	2.76	2.58
26–34	Point Estimates	65.66	65.03	64.98	64.69	64.16	64.10	64.74	64.38
	SE1	2.58	2.53	2.79	2.83	2.62	2.61	2.41	2.44
	SE2	2.56	2.43	2.78	2.78	2.62	2.42	2.31	2.31
35+	Point Estimates	55.85	55.71	50.95	51.03	63.28	62.82	50.88	50.62
	SE1	2.01	2.10	1.93	2.00	1.88	1.99	1.85	1.84
	SE2	1.94	1.87	1.90	1.82	1.85	1.82	1.76	1.71

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table 6.7 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Illicit Drug Estimates, Marijuana and Cocaine: 2017 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Past Month											
Total	Point Estimates	9.59	9.55	11.40	11.29	9.49	9.48	9.53	9.34	12.31	12.54
	SE1	0.17	0.17	0.70	0.70	0.64	0.65	0.77	0.76	0.83	0.84
	SE2	0.16	0.15	0.68	0.66	0.61	0.60	0.74	0.66	0.82	0.78
12–17	Point Estimates	6.40	6.47	5.83	5.82	7.57	7.73	7.05	7.14	8.03	8.55
	SE1	0.24	0.25	0.80	0.82	1.10	1.12	1.19	1.23	1.23	1.42
	SE2	0.24	0.24	0.80	0.81	1.09	1.10	1.19	1.18	1.23	1.36
18–25	Point Estimates	22.21	22.13	22.58	22.53	26.06	26.08	24.43	25.16	25.38	25.74
	SE1	0.44	0.44	1.44	1.49	1.80	1.86	2.56	2.65	2.28	2.30
	SE2	0.45	0.44	1.47	1.44	1.80	1.81	2.57	2.65	2.26	2.27
26–34	Point Estimates	15.01	14.84	19.10	19.04	15.06	14.78	15.31	14.83	21.50	21.36
	SE1	0.46	0.46	1.78	1.84	1.68	1.73	2.16	2.06	2.13	2.14
	SE2	0.45	0.44	1.77	1.77	1.65	1.67	2.16	2.08	2.13	2.06
35+	Point Estimates	6.32	6.30	7.87	7.74	5.93	5.97	5.62	5.29	8.49	8.67
	SE1	0.20	0.21	0.83	0.82	0.77	0.77	0.75	0.71	0.93	0.95
	SE2	0.19	0.19	0.81	0.78	0.77	0.77	0.74	0.71	0.92	0.93
Cocaine Past Month											
Total	Point Estimates	0.78	0.80	1.04	1.04	0.79	0.80	0.64	0.65	0.44	0.44
	SE1	0.05	0.05	0.17	0.16	0.15	0.15	0.17	0.17	0.11	0.11
	SE2	0.05	0.04	0.17	0.16	0.15	0.15	0.17	0.16	0.11	0.11
12–17	Point Estimates	0.10	0.11	0.23	0.23	0.29	0.32	0.00	0.00	0.00	0.00
	SE1	0.03	0.03	0.12	0.12	0.21	0.23	0.00	0.00	0.00	0.00
	SE2	0.03	0.03	0.12	0.12	0.21	0.23	0.00	0.00	0.00	0.00
18–25	Point Estimates	1.89	1.94	2.36	2.39	1.52	1.52	2.53	2.64	2.04	2.06
	SE1	0.13	0.14	0.49	0.51	0.43	0.44	0.76	0.80	0.59	0.59
	SE2	0.13	0.14	0.49	0.51	0.43	0.43	0.76	0.80	0.59	0.58
26–34	Point Estimates	1.70	1.71	2.61	2.67	2.69	2.77	1.72	1.73	1.08	1.07
	SE1	0.17	0.17	0.73	0.76	0.78	0.81	0.79	0.79	0.50	0.49
	SE2	0.17	0.17	0.74	0.76	0.78	0.80	0.79	0.78	0.50	0.51
35+	Point Estimates	0.45	0.46	0.48	0.45	0.35	0.36	0.11	0.10	0.05	0.05
	SE1	0.06	0.06	0.20	0.18	0.13	0.13	0.11	0.10	0.05	0.05
	SE2	0.06	0.05	0.19	0.18	0.13	0.13	0.11	0.10	0.05	0.05

(continued)

Table 6.7 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Illicit Drug Estimates, Marijuana and Cocaine: 2017 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Past Month									
Total	Point Estimates	9.75	9.60	8.13	8.14	7.87	7.87	5.94	5.88
	SE1	0.70	0.68	0.66	0.65	0.66	0.67	0.57	0.58
	SE2	0.67	0.63	0.64	0.58	0.66	0.66	0.52	0.50
12–17	Point Estimates	7.27	7.57	6.95	6.84	4.49	4.59	4.32	4.30
	SE1	1.06	1.08	1.29	1.27	1.04	1.04	0.77	0.77
	SE2	1.07	1.08	1.29	1.27	1.04	1.04	0.77	0.78
18–25	Point Estimates	24.31	24.40	22.65	22.67	22.67	22.47	14.94	14.82
	SE1	1.93	1.91	2.14	2.12	1.93	1.90	1.65	1.68
	SE2	1.94	1.91	2.15	2.13	1.93	1.87	1.64	1.64
26–34	Point Estimates	12.80	12.38	12.18	12.54	11.33	11.34	9.79	9.44
	SE1	1.83	1.76	1.73	1.81	1.85	1.84	1.56	1.53
	SE2	1.83	1.74	1.73	1.78	1.84	1.85	1.55	1.45
35+	Point Estimates	6.38	6.24	4.62	4.61	4.88	4.86	3.18	3.22
	SE1	0.92	0.91	0.72	0.71	0.79	0.81	0.58	0.59
	SE2	0.91	0.87	0.70	0.66	0.79	0.79	0.56	0.57
Cocaine Past Month									
Total	Point Estimates	1.05	1.13	0.54	0.54	0.61	0.61	0.40	0.40
	SE1	0.28	0.31	0.18	0.18	0.13	0.13	0.13	0.13
	SE2	0.28	0.28	0.18	0.17	0.13	0.13	0.13	0.13
12–17	Point Estimates	0.00	0.00	0.30	0.31	0.16	0.16	0.00	0.00
	SE1	0.00	0.00	0.21	0.22	0.16	0.16	0.00	0.00
	SE2	0.00	0.00	0.21	0.22	0.16	0.16	0.00	0.00
18–25	Point Estimates	1.81	1.99	2.03	2.03	2.41	2.40	0.80	0.75
	SE1	0.59	0.65	1.12	1.10	0.70	0.69	0.31	0.30
	SE2	0.59	0.64	1.12	1.09	0.69	0.68	0.31	0.30
26–34	Point Estimates	1.72	1.76	0.52	0.53	1.40	1.33	0.59	0.64
	SE1	0.77	0.79	0.37	0.37	0.64	0.61	0.34	0.38
	SE2	0.76	0.78	0.37	0.38	0.64	0.60	0.35	0.38
35+	Point Estimates	0.86	0.95	0.29	0.29	0.17	0.18	0.33	0.33
	SE1	0.36	0.42	0.15	0.15	0.10	0.11	0.19	0.20
	SE2	0.36	0.36	0.15	0.15	0.10	0.11	0.19	0.19

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table 6.8 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Major Depressive Episode (MDE) in the Past Year and Serious Mental Illness (SMI) in the Past Year among Persons Aged 18 or Older: 2017 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Major Depressive Episode											
Total	Point Estimates	7.12	7.07	6.55	6.48	6.25	6.16	6.23	6.45	6.93	7.13
	SE1	0.16	0.16	0.49	0.48	0.67	0.67	0.69	0.73	0.77	0.79
	SE2	0.16	0.16	0.51	0.49	0.67	0.66	0.69	0.71	0.76	0.74
18–25	Point Estimates	13.11	13.05	15.37	15.22	11.19	11.48	12.38	13.03	11.21	11.55
	SE1	0.38	0.38	1.33	1.32	1.22	1.23	1.71	1.83	1.38	1.48
	SE2	0.38	0.37	1.33	1.30	1.21	1.21	1.70	1.76	1.39	1.48
26–34	Point Estimates	8.63	8.54	9.31	9.07	5.52	5.43	6.68	6.64	10.18	10.31
	SE1	0.41	0.40	1.29	1.24	1.14	1.12	1.56	1.56	1.54	1.57
	SE2	0.41	0.40	1.30	1.29	1.13	1.10	1.56	1.50	1.53	1.52
35+	Point Estimates	5.60	5.56	3.98	3.96	5.60	5.45	4.91	5.11	5.45	5.61
	SE1	0.19	0.19	0.55	0.55	0.86	0.85	0.77	0.83	0.88	0.91
	SE2	0.19	0.19	0.56	0.55	0.86	0.83	0.77	0.82	0.87	0.87
Serious Mental Illness											
Total	Point Estimates	4.53	4.53	4.11	4.07	3.88	3.89	3.79	3.88	4.13	4.16
	SE1	0.13	0.13	0.42	0.42	0.52	0.52	0.48	0.50	0.56	0.56
	SE2	0.13	0.12	0.42	0.42	0.52	0.50	0.48	0.49	0.55	0.53
18–25	Point Estimates	7.45	7.48	8.13	7.95	7.19	7.38	7.37	7.74	7.06	7.16
	SE1	0.29	0.29	1.07	1.07	1.02	1.03	1.39	1.46	1.05	1.03
	SE2	0.29	0.28	1.06	1.04	1.02	1.02	1.39	1.47	1.05	1.02
26–34	Point Estimates	6.25	6.21	5.99	5.96	4.45	4.50	2.63	2.62	7.98	7.82
	SE1	0.34	0.34	1.01	1.02	1.02	1.04	1.05	1.03	1.52	1.49
	SE2	0.35	0.33	1.04	1.04	1.02	1.04	1.04	1.00	1.51	1.44
35+	Point Estimates	3.56	3.56	2.78	2.77	3.23	3.20	3.36	3.41	2.79	2.82
	SE1	0.15	0.15	0.49	0.49	0.65	0.65	0.64	0.67	0.65	0.66
	SE2	0.15	0.15	0.49	0.48	0.65	0.62	0.63	0.65	0.64	0.65

(continued)

Table 6.8 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Major Depressive Episode (MDE) in the Past Year and Serious Mental Illness (SMI) in the Past Year among Persons Aged 18 or Older: 2017 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Major Depressive Episode									
Total	Point Estimates	6.17	6.14	7.90	7.80	6.68	6.66	5.55	5.66
	SE1	0.68	0.68	0.74	0.72	0.65	0.66	0.51	0.52
	SE2	0.66	0.63	0.74	0.69	0.64	0.62	0.50	0.51
18–25	Point Estimates	9.35	9.15	13.39	13.25	13.45	13.50	11.12	11.15
	SE1	1.19	1.20	1.67	1.66	1.34	1.36	1.20	1.20
	SE2	1.19	1.18	1.68	1.63	1.33	1.35	1.20	1.19
26–34	Point Estimates	7.40	7.48	8.42	8.26	8.71	8.56	5.72	5.82
	SE1	1.54	1.54	1.52	1.51	1.92	1.89	1.16	1.18
	SE2	1.52	1.50	1.52	1.54	1.92	1.91	1.17	1.19
35+	Point Estimates	5.24	5.22	6.72	6.65	5.02	4.99	4.29	4.42
	SE1	0.87	0.87	0.91	0.90	0.79	0.79	0.61	0.63
	SE2	0.85	0.83	0.91	0.85	0.78	0.76	0.61	0.64
Serious Mental Illness									
Total	Point Estimates	3.06	3.06	5.11	5.06	4.27	4.31	3.95	4.05
	SE1	0.46	0.47	0.62	0.61	0.50	0.51	0.37	0.39
	SE2	0.45	0.45	0.62	0.59	0.50	0.50	0.37	0.39
18–25	Point Estimates	5.04	5.19	6.88	6.93	6.76	6.91	7.21	7.34
	SE1	0.76	0.82	1.21	1.22	1.10	1.12	0.91	0.93
	SE2	0.76	0.81	1.21	1.21	1.10	1.13	0.92	0.89
26–34	Point Estimates	3.94	3.92	6.64	6.49	6.13	6.21	5.54	5.53
	SE1	1.00	1.01	1.36	1.34	1.34	1.38	1.19	1.19
	SE2	0.99	0.96	1.36	1.36	1.34	1.39	1.20	1.20
35+	Point Estimates	2.44	2.43	4.44	4.41	3.43	3.43	2.79	2.92
	SE1	0.57	0.58	0.66	0.65	0.60	0.60	0.47	0.49
	SE2	0.57	0.57	0.66	0.62	0.60	0.59	0.46	0.49

NOTE: Major Depressive Episode (MDE) is defined as in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV), which specifies a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of specified depression symptoms.

NOTE: Serious Mental Illness (SMI) is defined as having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder, assessed by the Mental Health Surveillance Study (MHSS) *Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition—Research Version—Axis I Disorders* (MHSS-SCID) which is based on the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). SMI includes persons with diagnoses resulting in serious functional impairment.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

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Appendix A: Technical Details about the Generalized Exponential Model

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Appendix A: Technical Details about the Generalized Exponential Model

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^{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

$$\Delta(w,d) = \sum_{k\in s} \frac{d_k}{A_k}\left\{(a_k - \ell_k)\log\frac{a_k-\ell_k}{c_k-\ell_k} + (u_k - a_k)\log\frac{u_k-a_k}{u_k-c_k}\right\}, \tag{A.1.1}$$

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

$$\sum_{k\in s} x_k d_k a_k = T_x. \tag{A.1.2}$$

The solution for the above minimization problem, if it exists, is given by a GEM with model parameters λ; that is,

$$a_k(\lambda) = \frac{\ell_k(u_k - c_k) + u_k(c_k - \ell_k)\exp\{A_k x_k'\lambda\}}{(u_k - c_k) + (c_k - \ell_k)\exp\{A_k x_k'\lambda\}}. \tag{A.1.3}$$

Note that the number of parameters in the 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 A.1.3 that

$$\ell_k < a_k < u_k, k = 1,\ldots,n. \tag{A.1.4}$$

The weight adjustment factor achieved by the usual raking ratio algorithm (Singh & Mohl, 1996) can also be derived as a special case of the GEM, noting that for $\ell_k = 0, u_k = \infty, c_k = 1,$ and $k = 1,\ldots,n$, we have

$$\Delta(w,d) = \sum_{k\in s} d_k a_k \log a_k - \sum_{k\in s} d_k (a_k - 1) \tag{A.1.5}$$

and $a_k(\lambda) = \exp(x_k'\lambda)$.

The logit model of Deville and Särndal (1992) is also a special case of the GEM, by setting $\ell_k = \ell,\ u_k = u,$ and $c_k = 1$ for all *k*. The new method was introduced by Folsom and Singh (2000).

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

By choosing the user-specified parameters ℓ_k, c_k, and u_k appropriately, the unified GEM formula (A.1.3) can be justified for all three types of adjustment: extreme value treatment, nonresponse, and poststratification. For extreme value treatment via winsorization, denote the winsorized weights by $\{b_k\}$, where $b_k = d_k$ if d_k is not an extreme weight, and $b_k = \text{med}\{d_k\} \pm 3 * \text{IQR}$ if d_k is an extreme weight, where IQR denotes the interquartile range, and the median and 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: the nonextreme weight subsample and the extreme weight subsample. For nonextreme weights, the following are set: $\ell_2 = 1,\ c_2 = \rho^{-1},\ u_2 = u > \rho^{-1},$ where ρ is the overall response propensity. For extreme weights with high weights, $\ell_k = \ell_1 m_k,\ c_k = \rho^{-1} m_k,$ and $u_k = u_1 m_k,$ where $m_k = b_k / d_k$ and $1 \le \ell_1 < \rho^{-1} = c_1 < u_1$ are prescribed numbers. Similarly, for extreme weights with low weights, $\ell_k = \ell_3 m_k,\ c_k = \rho^{-1} m_k,\ u_k = u_3 m_k,$ and $1 \le \ell_3 < \rho^{-1} = c_3 < u_3$.

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

Notice that the 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^{th} iteration,

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

where $\phi_k^{(v)} = \left[\left(u_k - a_k^{(v)}\right)\left(a_k^{(v)} - \ell_k\right)\right] \Big/ \left[\left(u_k - c_k\right)\left(c_k - \ell_k\right)\right].$

Then, for the Newton-Raphson iteration v, the value of the p-vector λ is adjusted as

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

where $\lambda^{(0)} = 0$, and $\hat{T}_x$ is calculated by using equation A.1.2, in which a_k is calculated by plugging the current λ into equation A.1.3.

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

A.4 Scaled Constrained Exponential Model

In National Household Surveys on Drug Abuse (NHSDAs)[1] prior to 1999, constrained exponential models (CEMs) were used for poststratification, and scaled CEMs were used for nonresponse adjustments. The CEM refers to the logit model of Deville and Särndal (1992), in which lower and upper bounds do not vary with k; that is, $\ell_k = \ell$, $u_k = u$, and $c_k = c = 1$, such that $\ell < 1 < u$. Thus, the CEM is a special case of the GEM. For the nonresponse adjustment, Folsom and Witt (1994) modified the CEM estimating equations by a scaling factor (ρ^{-1}, the inverse of the overall response propensity), such that $1 < \rho^{-1} a_k < \rho^{-1} u$. This implies that choosing ℓ in the CEM as ρ ensures that the scaled adjustment factor for nonresponse is at least one.

[1] The National Household Survey on Drug Abuse (NHSDA) was renamed the National Survey on Drug Use and Health (NSDUH) in the 2002 survey year.

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Appendix B: Poststratification Control Totals

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Appendix B: Poststratification Control Totals

For poststratification, quarterly state-specific totals for the target population (civilian, noninstitutionalized, aged 12 or older) are required for 120 demographic domains defined by Age, Race, Gender, and Hispanicity (6 × 5 × 2 × 2) (Exhibit B.1). The Population Estimates Branch of the U.S. Census Bureau produced, in response to a special request, the necessary population estimates based on monthly state-level estimates of the target population, which were based on the enumerated population from the census. In general, the controls include adjustments for births, deaths, and net migration, as well as adjustments from the Count Question Resolution Program and any geography updates. However, the controls do not include any adjustments for the undercount or overcount of specific populations as determined from the 2010 Census Coverage Measurement Program. Since the 2011 National Survey on Drug Use and Health (NSDUH), the control totals used for poststratification were based on the 2010 census. For the 2005 through 2013 NSDUHs, the sample and the source of design variables used as the generalized exponential model predictors were based on the 2000 census, but starting with the 2014 NSDUH, they are based on the 2010 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 2017, 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).

Exhibit B.1 Definition of Levels for Variables

Age (years)
1: 12–17, 2: 18–25, 3: 26–34, 4: 35–49, 5: 50–64, 6: 65+

Race
1: White, 2: Black or African American, 3: American Indian or Alaska Native, 4: Asian or Native Hawaiian or Pacific Islander, 5: Two or More Races

Gender
1: Male, 2: Female

Hispanicity
1: Hispanic or Latino, 2: Non-Hispanic or Latino

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Appendix C: Imputation Methodology

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Appendix C: Imputation Methodology

The adjustments of (1) dwelling unit (DU) poststratification, (2) poststratification of the selected sample to all eligible rostered people, and (3) person-level nonresponse required the use of demographic information obtained from the 2017 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; thus, some demographic information (i.e., gender, Hispanic or Latino origin, and race) was missing. Therefore, some form of imputation was required for cases with missing data.[1]

As in 2002–2016, the predictive mean neighborhood (PMN) methodology was used for the 2017 NSDUH weighting process to impute "race" and "Hispanic or Latino origin" for the screener demographic information, as well as the questionnaire data (Singh, Grau, & Folsom, 2002). Because there was not a good set of predictors for PMN modeling, the unweighted sequential hot-deck method was used to impute gender.

C.1 Unweighted Hot Deck

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 2017 NSDUH, two types of sorting procedures were used to sort the files prior to imputation:

   (a) 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

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

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

(b) 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 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)

Unweighted sequential hot deck is simple and quick to implement, but it has a number of disadvantages:

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

To address the deficiencies of the unweighted sequential hot deck, the PMN methodology was developed for NSDUH. It is a combination of two commonly used imputation methods: a nonmodel-based hot deck and Rubin's model-based predictive mean matching method (Rubin, 1986). 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, whereas 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 PMN 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 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 PMN, see the 2017 editing and imputation report in the *NSDUH Methodological Resource Book* (Center for Behavioral Health Statistics and Quality, 2019).

Appendix D: Generalized Exponential Model Summary

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Appendix D: Generalized Exponential Model 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 2017 National Survey on Drug Use and Health (NSDUH) involved taking nine generalized exponential model (GEM) groups through five adjustment steps: (1) dwelling unit (DU)–level nonresponse adjustment, (2) DU-level poststratification, (3) selected person-level poststratification, (4) person-level nonresponse adjustment, and (5) respondent person-level poststratification. The sampling weights after DU-level poststratification and person-level poststratification for this year were reasonably distributed, so the additional treatment of the extreme weight adjustment step was not necessary at the DU level or the person level. See Table D for a summary of the distributions of each of the weight components at the national level.

Model-specific summary statistics are shown in Tables D.1a and 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 GEM; weighted, unweighted, and winsorized weight proportions; the unequal weighting effect (UWE); and weight distributions. The UWE 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 used 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 regarding final covariates that were included in each model. For a list of the proposed initial covariates considered at each stage of modeling, see Exhibit D1.1, 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 the interpretation of the covariates.

Table D Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (United States)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	31	0.32	34	0.15	7	1.01	7	0.11	4	0.43	4	0.07	1
1%	35	1.00	55	0.51	55	1.01	112	0.53	103	1.00	123	0.20	100
5%	84	1.07	110	0.76	114	1.01	238	0.75	231	1.04	285	0.42	255
10%	113	1.12	148	0.87	158	1.01	390	0.82	388	1.10	499	0.80	441
25%	345	1.19	441	0.98	452	1.29	920	0.91	904	1.22	1,151	0.97	1,071
Median	644	1.27	839	1.07	884	2.42	1,786	1.00	1,787	1.38	2,377	1.02	2,360
75%	819	1.40	1,114	1.18	1,231	3.18	3,464	1.10	3,496	1.57	4,915	1.08	4,944
90%	1,032	1.58	1,446	1.33	1,625	7.16	6,740	1.22	6,727	1.81	9,852	1.19	9,776
95%	1,188	1.78	1,635	1.49	1,902	8.25	9,029	1.33	9,075	2.02	13,527	1.38	13,551
99%	1,620	2.59	2,129	2.09	2,631	9.88	12,771	1.66	13,578	2.68	22,065	1.85	23,061
Maximum	6,601	5.00	4,976	5.21	9,287	19.57	40,456	4.85	41,845	9.58	71,205	4.88	71,030
n	184,266	138,061	138,061	138,050	138,050	97,667	97,667	97,667	97,667	68,032	68,032	68,032	68,032
Max/Mean	10.68	-	6.03	-	10.25	-	14.64	-	15.02	-	17.80	-	17.76

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

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 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 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 is as follows: directions to follow, semicolon, reason for the change. Sections D.2 and D.3 explain how to use various exhibits for selected model variables to construct these tables. For greater detail on why variable levels are collapsed or dropped, see Section 4.7.

Exhibit D.1 Definition of Levels for Variables

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

Gender
1: Male, 2: Female[1]

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

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

Percentage of Owner-Occupied Dwelling Units in Segment (% Owner-Occupied)
1: 50–100%,[1] 2: 10–<50%, 3: 0–<10%

Percentage of Segments That Are Black or African American
1: 50–100%, 2: 10–<50%, 3: 0–<10%[1]

Percentage of Segments That Are Hispanic or Latino
1: 50–100%, 2: 10–<50%, 3: 0–<10%[1]

Population Density
1: MSA 1,000,000 or More, 2: MSA Less than 1,000,000, 3: Non-MSA Urban, 4: Non-MSA Rural[1]

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

Race (3 levels)
1: White,[1] 2: Black or African American, 3: Other

Race (5 levels)
1: White,[1] 2: Black or African American, 3: American Indian or Alaska Native, 4: Asian, 5: Two or More Races

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

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

States[4]

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

MSA = metropolitan statistical area.

[1] The reference level for this variable. This is the level against which effects of other factor levels are measured.

[2] The age group 50+ was further broken down into 50–64 and 65+ for Person-Level Poststratification Adjustment and Person-Level Extreme Weight Adjustment, for which 65+ was used as the reference level.

[3] Segment-Combined Median Rent and Housing Value (also known as the Socioeconomic Status indicator) is a composite measure based on rent, housing value, and percent owner occupied.

[4] The states or district assigned to a particular model are based on census divisions.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

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

This glossary provides a list of general terms. Certain other specific terms are sometimes used within a particular section.

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.

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

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 because of either singularities or sample sizes of zero.

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

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

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.

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

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.

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

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.

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 2004 modeling, which demonstrates how to use the information found in Exhibits D1.1 through D9.5.

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

Three-Factor Effects	Comments
State × Age × Race (3 Levels)	Coll. (2,1,2) & (2,1,3); hier. Repeat for all age levels in state (2); hier. Coll. (1,4,2) & (1,4,3); conv. Drop (3,4,2); sing. Drop (3,*,*); conv. Coll. (5,1,2) & (5,1,3); conv. Repeat for all age levels in state (5).

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

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

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

Age (years)

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

Race (3 levels)

1: White,[1] 2: Black or African American, 3: Other

3. Construct the cross-classification table.

For example, Race (5 levels) is defined this way:

Race (5 Levels)	White	Black or African American	Asian	American Indian or Alaska Native	Two or More Races

Shading indicates the reference-level set.

[1] This is the reference level for this variable. This is the level against which effects of other factor levels are measured.

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

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

Shading 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 or African American	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+			
WA × 12–17			
18–25			
26–34			
35–49			
50+			
CA × 12–17			
18–25			
26–34			
35–49			
50+			

Shading 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 an understanding of the final table.

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

Hier. This means the factor effect was collapsed at a lower order. Because this note is present, examine the information on lower-order factor effects that are the components of the interaction term, State × Race (3 levels) × Age; that is, look at the one-factor and two-factor effects for State, Race (5 levels), and Age, and their accompanying information:

One-Factor Effects	**Comments**
State	All levels present.
Race (5 Levels)	All levels present.
Age	All levels present.

Two-Factor Effects	**Comments**
State × Age	All levels present.
State × Race (5 Levels)	Coll. (1,3) & (1,4). Do the same for all other states except (2). Coll. (2,2), (2,3), & (2,4).
Age × Race (3 Levels)	All levels present.

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

State × Race (5 Levels)	White	Black or African American	Asian	American Indian or Alaska Native	Two or More Races
AK					
HI					
OR					
WA					
CA					

Shading indicates the reference-level set.

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

Three-Factor Effects	**Comments**
State × Age × Race (3 Levels)	Coll. (2,1,2) & (2,1,3); hier. Repeat for all age levels in state (2); hier. Coll. (1,4,2) & (1,4,3); conv. Drop (3,4,2); sing. Drop (3,*,*); conv. Coll. (5,1,2) & (5,1,3); conv. Repeat for all age levels in state (5).

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

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

State × Age × Race (3 Levels)	White	Black or African American	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+			
WA × 12–17			
18–25			
26–34			
35–49			
50+			
CA × 12–17			
18–25			
26–34			
35–49			
50+			

Shading indicates the reference-level set.

The unshaded cells represent the factors directly controlled for by the model (i.e., those factors that 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 2017 NSDUH Person Weights (res.sdu.nr)

Variables	Levels	Proposed
One-Factor Effects		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Population Density	4	3
Group Quarter	3	2
% Black or African American	3	2
% Hispanic or Latino	3	2
% Owner-Occupied	3	2
Rent/Housing	5	4
Two-Factor Effects		
% Owner-Occupied × % Black or African American	3 × 3	4
% Owner-Occupied × % Hispanic or Latino	3 × 3	4
% Owner-Occupied × Rent/Housing	3 × 5	8
Rent/Housing × % Black or African American	3 × 5	8
Rent/Housing × % Hispanic or Latino	3 × 5	8
State × Quarter	Model Specific	
State × Population Density	Model Specific	
State × Group Quarter	Model Specific	
State × % Black or African American	Model Specific	
State × % Hispanic or Latino	Model Specific	
State × % Owner-Occupied	Model Specific	
State × Rent/Housing	Model Specific	
Three-Factor Effects		
State × % Owner-Occupied × % Black or African American	Model Specific	
State × % Owner-Occupied × % Hispanic or Latino	Model Specific	
State × % Owner-Occupied × Rent/Housing	Model Specific	
State × Rent/Housing × % Black or African American	Model Specific	
State × Rent/Housing × % Hispanic or Latino	Model Specific	

Exhibit D.3 Covariates for 2017 NSDUH Person Weights (res.sdu.ps)

Variables	Levels	Proposed
One-Factor Effects		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Age	5	4
Race (5 levels)	5	4
Gender	2	1
Hispanicity	2	1
Two-Factor Effects		
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
State × Quarter	Model Specific	
State × Age	Model Specific	
State × Race (5 levels)	Model Specific	
State × Hispanicity	Model Specific	
State × Gender	Model Specific	
Three-Factor Effects		
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 2017 NSDUH Person Weights (sel.per.ps and res.per.nr)

Variables	Levels	Proposed
One-Factor Effects		
Intercept	1	1
State	Model Specific	
Quarter	4	3
Age	5	4
Race (5 levels)	5	4
Gender	2	1
Hispanicity	2	1
Relation to Householder	4	3
Population Density	4	3
Group Quarter	3	2
% Black or African American	3	2
% Hispanic or Latino	3	2
% Owner-Occupied	2	2
Rent/Housing	5	4
Two-Factor Effects		
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 or African American	3 × 3	4
% Owner-Occupied × % Hispanicity	3 × 3	4
% Owner-Occupied × Rent/Housing	3 × 5	8
Rent/Housing × % Black or African American	3 × 5	8
Rent/Housing × % Hispanic or Latino	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 or African American	Model Specific	
State × % Hispanic or Latino	Model Specific	
State × % Owner-Occupied	Model Specific	
State × Rent/Housing	Model Specific	
Three-Factor Effects		
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 2017 NSDUH Person Weights (res.per.ps and res.per.ev)

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

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Appendix D1: Model Group 1: New England

(Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont)

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Table D.1a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 1: New England)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	3.92	5.48	0.22	1.69842	306	(1.32, 1.40)	(1.32, 1.40)
	1.75	2.48	0.14	1.86034	137	(1.00, 4.95)	(1.00, 4.95)
						(1.15, 2.36)	(1.16, 2.36)
res.sdu.ps	1.75	2.48	0.14	1.86034	232	(0.31, 1.10)	(0.31, 1.10)
	1.38	4.23	1.14	1.99228	231	(0.20, 5.00)	(0.20, 5.00)
						(0.90, 2.22)	(0.90, 2.22)
sel.per.ps	3.02	6.74	1.76	3.14302	332	(0.67, 3.00)	(0.69, 2.79)
	1.96	4.69	1.02	3.44998	303	(0.20, 5.00)	(0.26, 4.61)
						(0.50, 3.62)	(0.50, 2.35)
res.per.nr	2.18	5.23	1.37	3.52155	332	(1.00, 2.90)	(1.00, 2.90)
	2.77	8.05	1.74	4.07321	270	(1.00, 5.00)	(1.00, 5.00)
						(1.00, 4.19)	(1.00, 4.16)
res.per.ps	2.69	7.89	1.90	4.07321	267	(0.20, 1.95)	(0.20, 1.94)
	1.21	6.16	0.96	4.35586	232	(0.20, 4.88)	(0.20, 4.88)
						(0.99, 1.09)	(1.09, 1.09)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.1b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 1: New England)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	46	0.97	53	0.20	15	1.01	23	0.26	9	0.53	11	0.08	4
1%	46	1.01	55	0.45	52	1.01	68	0.45	67	1.00	76	0.21	41
5%	51	1.13	63	0.72	64	1.01	139	0.69	134	1.00	153	0.33	127
10%	70	1.16	90	0.85	88	1.01	186	0.79	184	1.03	224	0.76	207
25%	133	1.20	164	0.95	159	1.26	304	0.91	299	1.17	389	0.98	377
Median	173	1.30	216	1.03	232	2.30	710	1.00	699	1.36	931	1.03	920
75%	488	1.40	616	1.11	634	3.47	1,616	1.10	1,615	1.64	2,279	1.09	2,259
90%	762	1.55	1,008	1.24	1,085	8.85	3,283	1.22	3,223	2.09	4,762	1.18	4,836
95%	788	1.67	1,197	1.44	1,264	9.67	5,139	1.36	5,186	2.44	8,317	1.31	8,066
99%	829	2.39	1,448	2.30	1,817	14.29	10,463	1.78	11,336	3.57	18,923	2.33	19,795
Maximum	1,687	4.95	2,695	5.00	6,350	16.75	29,712	4.85	33,049	9.58	71,205	4.88	58,901
n	18,564	13,888	13,888	13,888	13,888	8,862	8,862	8,862	8,862	5,958	5,958	5,958	5,958
Max/Mean	5.59	-	6.68	-	14.86	-	21.06	-	22.97	-	33.28	-	27.53

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Model Group 1 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in all factors except for the percent Owner-Occupied × percent Black or African American, percent Owner-Occupied × Rent/Housing, Rent/Housing × percent Hispanic or Latino, State × Quarter, and State × percent Owner-Occupied interactions. Out of 122 proposed variables, 87 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 160 proposed variables, 26 were included in the model.

In the final model, a total of 137 variables were included; see Exhibit D1.1.

Dwelling Unit Poststratification

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

All 86 proposed two-factor effects were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Race × Hispanicity interaction. Out of 127 proposed variables, 126 were included in the model.

In the final model, a total of 231 variables were included; see Exhibit D1.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, State × Race, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 168 proposed variables, 153 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 127 proposed variables, 113 were included in the model.

In the final model, a total of 303 variables were included; see Exhibit D1.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, State × Race, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 168 proposed variables, 153 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age × Race × Gender, Age × Hispanicity × Gender, Race × Hispanicity × Gender, State × Age × Gender, and State × Race × Gender interactions. Out of 127 proposed variables, 80 were included in the model.

In the final model, a total of 270 variables were included; see Exhibit D1.4.

Respondent Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the State × Race interaction. Out of 95 proposed variables, 94 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age × Race × Gender, Age × Hispanicity × Gender, Race × Hispanicity × Gender, State × Age × Gender, State × Race × Gender, and State × Hispanicity × Gender interactions. Out of 152 proposed variables, 118 were included in the model.

In the final model, a total of 232 variables were included; see Exhibit D1.5.

Exhibit D1.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 1: New England

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**24**	**24**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**87**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Drop (2,1); sing.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	5	Drop (1/3/4, 1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	6 × 4	15	15	All levels present.
State × Population Density	6 × 4	15	4	Keep (1,1), (2,2/3), (3,2), drop all others; sing./zero.
State × Group Quarter	6 × 3	10	4	Keep (3/5,1/2), drop all others; sing./zero/conv.
State × % Black or African American	6 × 3	10	5	Drop (2,1), (3,1/2), (4,1), (5,1); sing./zero.
State × % Hispanic or Latino	6 × 3	10	3	Drop (2,1/2), (3,1), (5,1/2); sing./zero. Coll. (1,1) & (1,2), (4,1) & (4,2); conv.
State × % Owner-Occupied	6 × 3	10	10	All levels present.
State × Rent/Housing	6 × 5	20	18	Coll. (1,1) & (1,2), (4,1) & (4,2); conv.
Three-Factor Effects		**160**	**26**	
State × % Owner-Occupied × % Black or African American	6 × 3 × 3	20	1	Keep (1,2,2), drop all others; hier./sing./zero/conv.
State × % Owner-Occupied × % Hispanic or Latino	6 × 3 × 3	20	1	Keep (3,3,2), drop all others; hier./sing./zero/conv.
State × % Owner-Occupied × Rent/Housing	6 × 3 × 5	40	14	Coll. (1,3,1) & (1,3,2), (1,2,1) & (1,2,2), (4,2,1) & (4,2,2), (5,2,1) & (5,2,2), keep (1,2,3/4), (2,3,2), (2,2,1/2), (3,2,2/3/4), (4,2,3), (5,2,3), drop all others; hier./sing./zero/conv.
State × Rent/Housing × % Black or African American	6 × 3 × 5	40	4	Coll (1,1,2) & (1,2,2), (4,1,2) & (4,2,2), keep (1,3,2), (4,3,2), drop all others; hier./sing./zero/conv.
State × Rent/Housing × % Hispanic or Latino	6 × 3 × 5	40	6	Coll. (1,1,1) & (1,1,2), (1,2,1) & (1,2,2), (1,3,1) & (1,3,2), (1,3,1) & (1,4,2), (4,1,1) & (4,1,2), (4,2,1) & (4,2,2), (4,3,1) & (4,3,2), keep (3,2,2), drop all others; hier./sing./zero/conv.
Total		**306**	**137**	

Exhibit D1.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 1: New England

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**19**	**19**	
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.
Two-Factor Effects		**86**	**86**	
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.
Three-Factor Effects		**127**	**126**	
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)	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	9	Coll. (2,2,1) & (2,3,1); conv.
State × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
State × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Total		**232**	**231**	

Exhibit D1.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 1: New England

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**37**	**37**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**168**	**153**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Drop (2,1); sing.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	5	Drop (1/3/4,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	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	19	Coll. (2,3) & (2,4); conv.
State × Hispanicity	6 × 2	5	5	All levels present.
State × Gender	6 × 2	5	5	All levels present.
State × % Black or African American	6 × 3	10	5	Drop (2,1), (3,1/2), (4,1), (5,1); zero.
State × % Hispanic or Latino	6 × 3	10	5	Drop (2,1/2), (3,1), & (5,1/2); zero.
State × % Owner-Occupied	6 × 3	10	10	All levels present.
State × Rent/Housing	6 × 5	20	20	All levels present.
Three-Factor Effects		**127**	**113**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	4	Coll. (1,2,1) & (1,3,1), repeat for all ages; 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)	6 × 5 × 3	40	38	Drop (2,4,2/3); conv.
State × Age × Hispanicity	6 × 5 × 2	20	19	Drop (2,4,1); conv.
State × Age × Gender	6 × 5 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	6 × 3 × 2	10	3	Coll. (3,2,1) & (3,3,1), repeat for RI and VT, drop others; conv.
State × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
State × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Total		**332**	**303**	

Exhibit D1.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 1: New England

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**37**	**37**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**168**	**153**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Drop (2,1); sing.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	5	Drop (1/3/4, 1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	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	19	Coll. (3,3) & (3,4); conv.
State × Hispanicity	6 × 2	5	5	All levels present.
State × Gender	6 × 2	5	5	All levels present.
State × % Black or African American	6 × 3	10	5	Drop (2,1), (3,1/2), (4,1), (5,1); zero/sing.
State × % Hispanic or Latino	6 × 3	10	5	Drop (2,1/2), (3,1), (5,1/2); zero.
State × % Owner-Occupied	6 × 3	10	10	All levels present.
State × Rent/Housing	6 × 5	20	20	All levels present.
Three-Factor Effects		**127**	**80**	
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)	6 × 5 × 3	40	15	Coll. (1,1,2) & (1,1,3), repeat for all ages and states, drop (*,4,*); conv.
State × Age × Hispanicity	6 × 5 × 2	20	10	Drop (*,3/4,1); sing./conv.
State × Age × Gender	5 × 5 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	10	0	Drop all; zero/sing./conv.
State × Race (3 levels) × Gender	5 × 3 × 2	10	10	All levels present.
State × Hispanicity × Gender	5 × 2 × 2	5	4	Drop (5,1,1); conv.
Total		**332**	**270**	

Exhibit D1.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 1: New England

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**20**	**20**	
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.
Two-Factor Effects		**95**	**94**	
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	6 × 4	15	15	All levels present.
State × Age	6 × 6	25	25	All levels present.
State × Race (5 levels)	6 × 5	20	19	Coll. (2,3) & (2,4); conv.
State × Hispanicity	6 × 2	5	5	All levels present.
State × Gender	6 × 2	5	5	All levels present.
Three-Factor Effects		**152**	**118**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	8	Coll. (5,2,1) & (5,3,1), drop; 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	2	All levels present.
State × Age × Race (3 levels)	6 × 5 × 3	50	29	Drop (*,4/5, *), coll. (2,3,2) & (2,3,3); conv.
State × Age × Hispanicity	6 × 6 × 2	25	17	Drop (1/2/5,4/5,1), (3/4, 5); sing./zero/conv.
State × Age × Gender	6 × 6 × 2	25	25	All levels present.
State × Race (3 levels) × Hispanicity	6 × 3 × 2	10	7	Coll. (1,2,1) & (1,3,1), repeat for ME and VT; conv.
State × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
State × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Total		**267**	**232**	

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Appendix D2: Model Group 2: Middle Atlantic

(New Jersey, New York, and Pennsylvania)

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Table D.2a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 2: Middle Atlantic)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	0.15	0.85	0.55	1.08476	153	(1.00, 1.50)	(1.50, 1.50)
	2.10	3.51	0.39	1.07420	121	(1.05, 3.34)	(1.05, 3.29)
						(N/A, N/A)	(N/A, N/A)
res.sdu.ps	2.10	3.51	0.39	1.07420	127	(0.55, 1.20)	(0.55, 1.20)
	2.01	5.19	1.74	1.17007	127	(0.34, 5.00)	(0.36, 5.00)
						(0.90, 1.40)	(0.90, 1.40)
sel.per.ps	3.45	8.47	2.62	1.86496	197	(0.72, 2.60)	(0.73, 2.60)
	1.90	5.18	1.28	1.90529	194	(0.66, 3.07)	(0.67, 3.04)
						(0.90, 1.43)	(0.90, 1.42)
res.per.nr	2.45	6.44	1.54	1.91867	197	(1.04, 3.00)	(1.05, 3.00)
	2.27	7.78	1.36	2.15447	189	(1.00, 3.80)	(1.00, 3.72)
						(N/A, N/A)	(N/A, N/A)
res.per.ps	2.29	7.96	1.38	2.15447	147	(0.20, 2.60)	(0.20, 2.60)
	1.16	5.44	1.36	2.21308	146	(0.20, 3.44)	(0.20, 3.43)
						(0.97, 5.00)	(0.98, 0.98)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.2b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 2: Middle Atlantic)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	445	0.32	488	0.35	233	1.01	335	0.30	338	0.58	384	0.12	100
1%	446	1.11	579	0.61	508	1.01	593	0.67	541	1.01	668	0.20	241
5%	450	1.17	659	0.78	643	1.01	778	0.79	743	1.06	942	0.35	706
10%	453	1.19	714	0.88	714	1.01	930	0.84	914	1.11	1,153	0.77	1,050
25%	531	1.24	805	0.99	822	1.34	1,297	0.92	1,305	1.26	1,709	0.96	1,713
Median	664	1.35	896	1.06	945	2.36	2,239	1.00	2,240	1.43	3,070	1.03	3,129
75%	694	1.56	1,006	1.13	1,127	3.18	3,594	1.09	3,749	1.64	5,680	1.08	5,723
90%	774	2.02	1,245	1.25	1,422	7.58	7,471	1.21	7,691	1.93	11,258	1.31	11,259
95%	796	2.27	1,456	1.37	1,678	8.67	8,874	1.32	9,257	2.21	14,639	1.68	14,337
99%	928	2.87	2,001	2.49	2,624	9.24	12,818	1.64	14,265	3.01	26,724	1.99	25,664
Maximum	6,601	3.29	2,549	5.00	7,061	17.85	40,456	3.04	41,723	3.72	46,787	3.43	71,030
n	22,938	15,540	15,540	15,539	15,539	10,921	10,921	10,921	10,921	7,303	7,303	7,303	7,303
Max/Mean	10.22	-	2.67	-	6.81	-	12.81	-	12.89	-	9.67	-	14.68

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Model Group 2 Overview

Dwelling Unit Nonresponse

For the one-factor effects, College Dorm had to be collapsed with Group Quarter. Out of 21 proposed variables, 20 were included in the model.

For the two-factor effects, variable collapsing or dropping was present in the Rent/Housing × percent Hispanic or Latino, State × Population Density, and State × Group Quarter interactions. Out of 68 proposed variables, 62 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the State × percent Owner-Occupied × percent Black or African American interaction. Out of 64 proposed variables, 39 were included in the model.

In the final model, a total of 121 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 proposed three-factor effects were included in the model.

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

Selected Person-Level Poststratification

For the one-factor effects, College Dorm was dropped because of zero sample size. Out of 34 proposed variables, 33 were included in the model.

Variable collapsing was present in the Rent/Housing × percent Hispanic or Latino and State × Rent/Housing interactions. Out of 99 proposed variables, 97 were included in the model.

All 64 proposed three-factor effects were included in the model.

In the final model, a total of 194 variables were included; see Exhibit D2.3.

Respondent Person-Level Nonresponse

For the one-factor effects, College Dorm was dropped because of zero sample size. Out of 34 proposed variables, 33 were included in the model.

Variable dropping was present in the Rent/Housing × percent Hispanic or Latino and State × Rent/Housing interactions. Out of 99 proposed variables, 97 were included in the model.

For three-factor effects, variable collapsing and dropping were present in the Age × Race × Hispanicity and Race × Hispanicity × Gender interactions. Out of 64 proposed variables, 59 were included in the model.

In the final model, a total of 189 variables were included; see Exhibit D2.4.

Respondent Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the State × Race interaction. Out of 53 proposed variables, 52 were included in the model.

All 77 proposed three-factor effects were included in the model.

In the final model, a total of 146 variables were included; see Exhibit D2.5.

Exhibit D2.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**21**	**20**	
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, zero.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**68**	**62**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
State × Quarter	3 × 4	6	6	All levels present.
State × Population Density	3 × 4	6	4	Drop (2,2), (2,3); sing.
State × Group Quarter	3 × 3	4	1	Coll. (2,1) & (2,2), (3,1) & (3,2); zero. Drop (3,1/2); conv.
State × % Black or African American	3 × 3	4	4	All levels present.
State × % Hispanic or Latino	3 × 3	4	4	All levels present.
State × % Owner-Occupied	3 × 3	4	4	All levels present.
State × Rent/Housing	3 × 5	8	8	All levels present.
Three-Factor Effects		**64**	**39**	
State × % Owner-Occupied × % Black or African American	3 × 3 × 3	8	8	All levels present.
State × % Owner-Occupied × % Hispanic or Latino	3 × 3 × 3	8	7	Drop (3,3.1); zero.
State × % Owner-Occupied × Rent/Housing	3 × 3 × 5	16	7	Keep (2,2,3), (2,2,4), (2,3,3), (3,2,*); dropped others; zero/sing.
State × Rent/Housing × % Black or African American	3 × 3 × 5	16	9	Keep (2,2,2), (2,3,1), (2,3,2), (2,4,1), (2,4,2), (3,1,1), (3,1,2), (3,2,2), (3,3,2); dropped others; zero/sing.
State × Rent/Housing × % Hispanic or Latino	3 × 3 × 5	16	8	Keep (2,2,1), (2,2,2), (2,3,1), (2,3,2), (2,4,1/2), (3,1,2), (3,2,2), (3,3,2), dropped others; zero/sing.
Total		**153**	**121**	

Exhibit D2.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**16**	**16**	
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.
Two-Factor Effects		**47**	**47**	
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.
Three-Factor Effects		**64**	**64**	
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.
Total		**127**	**127**	

Exhibit D2.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**34**	**33**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (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	Drop (1); zero.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**99**	**97**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
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 or African American	3 × 3	4	4	All levels present.
State × % Hispanic or Latino	3 × 3	4	4	All levels present.
State × % Owner-Occupied	3 × 3	4	4	All levels present.
State × Rent/Housing	3 × 5	8	7	Coll. (2,1) & (2,2); sing.
Three-Factor Effects		**64**	**64**	
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.
Total		**197**	**194**	

Exhibit D2.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**34**	**33**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (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	Drop (1); zero.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**99**	**97**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Drop (4,1); sing.
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 or African American	3 × 3	4	4	All levels present.
State × % Hispanic or Latino	3 × 3	4	4	All levels present.
State × % Owner-Occupied	3 × 3	4	4	All levels present.
State × Rent/Housing	3 × 5	8	7	Drop (2,1); sing.
Three-Factor Effects		**64**	**59**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	5	Coll. (3,2,1) & (3,3,1), (4,2,1) & (4,3,1); conv. 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	0	Coll. (2,1,1) & (3,1,1); conv. Drop (2/3, 1,1); conv.
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.
Total		**197**	**189**	

Exhibit D2.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
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.
Two-Factor Effects		**53**	**52**	
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	3 × 4	6	6	All levels present.
State × Age	3 × 6	10	10	All levels present.
State × Race (5 levels)	3 × 5	8	7	Coll. (3,3) & (3,4); conv.
State × Hispanicity	3 × 2	2	2	All levels present.
State × Gender	3 × 2	2	2	All levels present.
Three-Factor Effects		**77**	**77**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	10	All levels present.
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	2	All levels present.
State × Age × Race (3 levels)	3 × 6 × 3	20	20	All levels present.
State × Age × Hispanicity	3 × 6 × 2	10	10	All levels present.
State × Age × Gender	3 × 6 × 2	10	10	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.
Total		**147**	**146**	

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Appendix D3: Model Group 3: East North Central

(Illinois, Indiana, Michigan, Ohio, and Wisconsin)

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Table D.3a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 3: East North Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	5.91	6.36	0.30	1.03342	255	(1.15, 2.70)	(1.16, 2.70)
	3.26	5.15	1.00	1.08628	169	(1.03, 4.90)	(1.03, 4.89)
						(1.03, 1.55)	(1.03, 1.54)
res.sdu.ps	3.26	5.15	1.00	1.08628	197	(0.72, 1.20)	(0.72, 1.20)
	2.28	4.04	0.87	1.11167	197	(0.26, 5.00)	(0.27, 5.00)
						(0.80, 4.84)	(0.80, 4.84)
sel.per.ps	3.73	7.76	1.88	1.71789	287	(0.50, 2.30)	(0.52, 2.30)
	1.76	3.48	0.51	1.70731	282	(0.36, 3.04)	(0.36, 3.04)
						(0.90, 1.72)	(0.90, 1.72)
res.per.nr	1.68	3.32	0.50	1.73206	287	(1.00, 3.00)	(1.00, 3.00)
	1.62	4.42	0.82	1.84399	271	(1.00, 4.74)	(1.00, 4.69)
						(1.30, 2.24)	(1.30, 2.23)
res.per.ps	1.63	4.59	0.91	1.84399	227	(0.20, 2.40)	(0.20, 2.40)
	1.22	3.80	0.81	1.91506	209	(0.20, 4.49)	(0.20, 4.48)
						(0.95, 1.31)	(0.95, 1.31)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.3b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 3: East North Central)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	184	0.88	408	0.27	208	1.01	246	0.26	137	0.47	160	0.12	47
1%	554	1.07	657	0.55	504	1.01	634	0.55	569	1.00	639	0.20	295
5%	563	1.11	692	0.82	670	1.01	818	0.78	800	1.08	995	0.65	834
10%	611	1.13	719	0.90	722	1.01	932	0.85	930	1.17	1,201	0.84	1,114
25%	631	1.19	784	0.99	814	1.31	1,239	0.93	1,256	1.30	1,700	0.98	1,659
Median	652	1.26	856	1.06	934	2.35	2,088	1.00	2,094	1.43	2,908	1.02	2,942
75%	739	1.35	997	1.13	1,107	3.03	3,406	1.09	3,456	1.60	5,152	1.06	5,214
90%	928	1.51	1,268	1.26	1,369	7.36	6,725	1.21	6,743	1.81	10,274	1.13	10,066
95%	1,016	1.77	1,405	1.42	1,548	7.76	8,086	1.29	8,185	1.95	12,351	1.33	12,516
99%	1,056	2.71	1,930	1.96	2,290	9.11	11,338	1.50	11,563	2.61	18,222	1.69	19,480
Maximum	1,708	4.89	4,086	5.00	5,178	16.91	32,650	3.04	24,066	5.91	56,818	4.48	56,818
n	24,791	18,606	18,606	18,605	18,605	13,389	13,389	13,389	13,389	9,083	9,083	9,083	9,083
Max/Mean	2.43	-	4.36	-	5.15	-	11.15	-	8.18	-	13.11	-	13.11

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Model Group 3 Overview

Dwelling Unit Nonresponse

For the one-factor effects, College Dorm had to be collapsed with Group Quarter because of zero sample size. Out of 23 proposed variables, 22 were included in the model.

For the two-factor effects, variable collapsing or dropping was present in the State × Group Quarter, State × percent Hispanic or Latino, and State × percent Owner-Occupied interactions. Out of 104 proposed variables, 93 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 128 proposed variables, 54 were included in the model.

In the final model, a total of 169 variables were included; see Exhibit D3.1.

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.

All 106 proposed three-factor effects were included in the model.

In the final model, a total of 197 variables were included; see Exhibit D3.2.

Selected Person-Level Poststratification

For the one-factor effects, College Dorm had to be collapsed with Group Quarter because of a convergence problem. Out of 36 proposed variables, 35 were included in the model.

For the two-factor effects, variable collapsing and dropping were present in the State × percent Hispanic or Latino interaction. Out of 145 proposed variables, 143 were included in the model.

For the three-factor effects, variable collapsing was present in the State × Race × Hispanicity interaction. Out of 106 proposed variables, 104 were included in the model.

In the final model, a total of 282 variables were included; see Exhibit D3.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing and dropping were present in the State × percent Hispanic or Latino interaction. Out of 145 proposed variables, 142 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, Race × Hispanicity × Gender, and State × Race × Hispanicity interactions. Out of 106 proposed variables, 93 were included in the model.

In the final model, a total of 271 variables were included; see Exhibit D3.4.

Respondent Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the State × Race interaction. Out of 81 proposed variables, 77 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, Age × Hispanicity × Gender, Race × Hispanicity × Gender, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 127 proposed variables, 113 were included in the model.

In the final model, a total of 209 variables were included; see Exhibit D3.5.

Exhibit D3.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**23**	**22**	
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	2	All levels present.
Group Quarter	3	2	1	Coll. (1) & (2); conv.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**104**	**93**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	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	3	Coll. (1,1) & (1,2), repeat for all states; hier. Drop (1,1/2); conv.
State × % Black or African American	5 × 3	8	8	All levels present.
State × % Hispanic or Latino	5 × 3	8	6	Coll. (3,1) & (3,2); zero. Coll. (4,1) & (4,2); sing.
State × % Owner-Occupied	5 × 3	8	4	Coll. (1,3) & (1,2), repeat for all states; conv.
State × Rent/Housing	5 × 5	16	16	All levels present.
Three-Factor Effects		**128**	**54**	
State × % Owner-Occupied × % Black or African American	5 × 3 × 3	16	7	Coll. (1,3,1) & (1,2,1), (1,3,2) & (1,2,2), repeat for all states; hier. Coll. (4,3/2,1) & (4,3/2,2); sing.
State × % Owner-Occupied × % Hispanic or Latino	5 × 3 × 3	16	5	Coll. (1,3,1) & (1,2,1), (1,3,2) & (1,2,2), repeat for all states; hier. Coll. (3,3/2,1) & (3,3/2,2); zero. Coll. (4,3/2,1) & (4,3/2,2), (5,3/2,1) & (5,3/2,2); sing.
State × % Owner-Occupied × Rent/Housing	5 × 3 × 5	32	14	Coll. (1,3,1) & (1,2,1), (1,3,2) & (1,2,2), (1,3,3) & (1,2,3), (1,3,4) & (1,2,4), repeat for all states; hier. Coll. (4,3/2,1) & (4,3/2,2); zero. Drop (4,3/2,4); sing.
State × Rent/Housing × % Black or African American	5 × 3 × 5	32	15	Coll. (4,1,1) & (4,1,2); zero. Coll. (3,1,1) & (3,1,2), (3,3,1) & (3,3,2), (4,3,1) & (4,3,2); sing. Coll. (1,1,1) & (1,1,2), (1,2,1) & (1,2,2), (1,3,1) & (1,3,2), (3,2,1) & (3,2,2), (5,1,1) & (5,1,2), (5,2,1) & (5,2,2), (5,3,1) & (5,3,2); conv. Drop (4,4,1); zero. Drop (3,4,1), (3,4,2), (4,4,2), (5,4,1), (5,4,2); sing.
State × Rent/Housing × % Hispanic or Latino	5 × 3 × 5	32	13	Coll. (3,1,1) & (3,1,2), (3,2,1) & (3,2,2), (3,3,1) & (3,3,2), (4,4,1) & (4,4,2), (5,1,1) & (5,1,2); zero. Coll. (1,1,1) & (1,1,2), (1,3,1) & (1,3,2), (1,4,1) & (1,4,2), (4,3,1) & (4,3,2), (5,2,1) & (5,2,2); sing. Coll. (4,1,1), (4,1,2), (4,2,1) & (4,2,2); zero, sing. Drop (3,4,1), (5,3,1), (5,4,1) & (5,4,2); zero. Drop (3,4,2), (5,3,2); sing.
Total		**255**	**169**	

Exhibit D3.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
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.
Two-Factor Effects		**73**	**73**	
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.
Three-Factor Effects		**106**	**106**	
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	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.
Total		**197**	**197**	

Exhibit D3.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**35**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (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); conv.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**145**	**143**	
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 or African American	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 or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	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 or African American	5 × 3	8	8	All levels present.
State × % Hispanic or Latino	5 × 3	8	6	Drop (3,1); zero. Coll. (4,1) & (4,2); sing.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	16	All levels present.
Three-Factor Effects		**106**	**104**	
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	6	Coll. (3,2,1) & (3,3,1), (4,2,1) & (4,3,1); 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.
Total		**287**	**282**	

Exhibit D3.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**145**	**142**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	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 or African American	5 × 3	8	8	All levels present.
State × % Hispanic or Latino	5 × 3	8	5	Drop (3,1); zero. Coll. (4,1) & (4,2); sing. Coll. (5,1) & (5,2); conv.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	16	All levels present.
Three-Factor Effects		**106**	**93**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	4	Coll. (1,2,1) & (1,3,1), repeat for all age levels; 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)	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	0	Drop all levels; 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.
Total		**287**	**271**	

Exhibit D3.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**19**	**19**	
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.
Two-Factor Effects		**81**	**77**	
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	5 × 4	12	12	All levels present.
State × Age	5 × 6	20	20	All levels present.
State × Race (5 levels)	5 × 5	16	12	Coll. (1,3) & (1,4), repeat for all states; conv.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
Three-Factor Effects		**127**	**113**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	3	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv. Drop all other levels; zero, sing, conv.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
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)	5 × 6 × 3	40	40	All levels present.
State × Age × Hispanicity	5 × 6 × 2	20	19	Drop (4,5,1); sing.
State × Age × Gender	5 × 6 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	4	Coll. (1,2,1) & (1,3,1), repeat for all states; 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.
Total		**227**	**209**	

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Appendix D4: Model Group 4: West North Central

(Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota)

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Table D.4a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 4: West North Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	5.65	3.11	0.25	1.42160	357	(1.13, 1.70)	(1.14, 1.70)
	4.32	2.76	0.26	1.43699	201	(1.00, 4.01)	(1.00, 4.00)
						(1.20, 5.00)	(1.20, 1.23)
res.sdu.ps	4.32	2.76	0.26	1.43699	267	(0.25, 1.10)	(0.25, 1.10)
	1.91	2.59	0.47	1.50090	265	(0.27, 4.31)	(0.28, 4.30)
						(0.90, 1.36)	(0.90, 1.36)
sel.per.ps	3.32	5.34	1.30	2.42025	377	(0.25, 3.00)	(0.26, 3.00)
	2.10	4.01	0.71	2.50977	358	(0.21, 4.46)	(0.21, 4.45)
						(0.90, 1.77)	(0.90, 1.77)
res.per.nr	2.03	3.93	0.83	2.55520	377	(1.00, 3.00)	(1.00, 3.00)
	1.83	4.53	0.70	2.58502	345	(1.00, 5.00)	(1.00, 5.00)
						(1.00, 1.56)	(1.00, 1.55)
res.per.ps	1.87	4.70	0.72	2.58502	307	(0.20, 1.80)	(0.20, 1.80)
	0.97	3.02	0.61	2.61969	276	(0.20, 4.89)	(0.20, 4.88)
						(N/A, N/A)	(N/A, N/A)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.4b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 4: West North Central)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	97	0.93	105	0.20	39	1.01	44	0.19	39	0.52	51	0.14	18
1%	98	1.00	110	0.54	101	1.01	112	0.49	105	1.00	141	0.27	131
5%	100	1.09	117	0.78	122	1.01	179	0.69	171	1.03	217	0.73	204
10%	105	1.11	124	0.86	137	1.01	261	0.79	254	1.11	318	0.91	298
25%	140	1.16	167	0.97	200	1.24	473	0.90	475	1.24	641	0.97	629
Median	452	1.21	534	1.06	554	2.48	1,089	0.99	1,100	1.37	1,492	1.01	1,476
75%	707	1.27	912	1.18	933	3.06	2,194	1.09	2,201	1.52	3,162	1.05	3,180
90%	926	1.36	1,171	1.31	1,263	7.25	4,208	1.23	4,146	1.75	6,138	1.12	6,000
95%	961	1.45	1,230	1.48	1,417	7.84	6,170	1.37	6,261	1.97	9,170	1.25	9,556
99%	1,090	1.68	1,374	2.04	1,765	8.33	10,852	1.77	11,239	2.65	15,669	1.58	15,825
Maximum	1,208	4.00	1,927	4.30	4,428	15.19	21,408	4.45	24,566	5.00	38,308	4.88	41,127
n	16,816	13,641	13,641	13,641	13,641	9,658	9,658	9,658	9,658	6,839	6,839	6,839	6,839
Max/Mean	2.59	-	3.35	-	7.12	-	11.70	-	13.45	-	14.86	-	15.95

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

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 × percent Black or African American, percent Owner-Occupied × Rent/Housing, State × Quarter, State × percent Owner-Occupied, and State × Rent/Housing interactions. Out of 140 proposed variables, 120 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 192 proposed variables, 56 were included in the model.

In the final model, a total of 201 variables were included; see Exhibit D4.1.

Dwelling Unit Poststratification

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

All 99 proposed two-factor effects were included in the model.

For the three-factor effects, variable collapsing was present in the Age × Race × Hispanicity interaction. Out of 148 proposed variables, 146 were included in the model.

In the final model, a total of 265 variables were included; see Exhibit D4.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 191 proposed variables, 180 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Hispanicity and State × Race × Hispanicity interactions. Out of 148 proposed variables, 140 were included in the model.

In the final model, a total of 358 variables were included; see Exhibit D4.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 191 proposed variables, 178 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age × Race × Gender, Age × Hispanicity × Gender, Race × Hispanicity × Gender, State × Age × Gender, and State × Hispanicity × Gender interactions. Out of 148 proposed variables, 129 were included in the model.

In the final model, a total of 345 variables were included; see Exhibit D4.4.

Respondent Person-Level Poststratification

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

All 109 proposed two-factor effects were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 177 proposed variables, 146 were included in the model.

In the final model, a total of 276 variables were included; see Exhibit D4.5.

Exhibit D4.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**25**	**25**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**140**	**120**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	6	Coll. (3,1) & (3,2); sing. Coll. (4,1) & (4,2); zero.
State × Quarter	7 × 4	18	18	All levels present.
State × Population Density	7 × 4	18	14	Coll. (1,1) & (1,2), do the same for states 5, 6, & 7; zero.
State × Group Quarter	7 × 3	12	7	Coll. (1,1) & (1,2), do the same for states 3 & 6, drop (5,1/2); zero.
State × % Black or African American	7 × 3	12	9	Coll. (1,1) & (1,2), do the same for states 6 & 7; zero.
State × % Hispanic or Latino	7 × 3	12	8	Coll. (1,1) & (1,2), do the same for states 6 & 7; zero. Coll. (5,1) & (5,2); sing.
State × % Owner-Occupied	7 × 3	12	12	All levels present.
State × Rent/Housing	7 × 5	24	24	All levels present.
Three-Factor Effects		**192**	**56**	
State × % Owner-Occupied × % Black or African American	7 × 3 × 3	24	5	Coll. (1,2,1) & (1,3,1) & (1,2,2) & (1,3,2), do the same for states 2 & 5, coll. (3,2,1) & (3,2,2), (3,3,1) & (3,3,2), drop remainder; hier./sing.
State × % Owner-Occupied × % Hispanic or Latino	7 × 3 × 3	24	6	Coll. (3,2,1) & (3,3,1) & (3,2,2) & (3,3,2); conv. Coll. (1,2,1) & (1,2,2), (1,3,1) & (1,3,2), do the same for state 2, coll. (5,2,1) & (5,3,1) & (5,2,2) & (5,3,2), drop remainder; hier./sing.
State × % Owner-Occupied × Rent/Housing	7 × 3 × 5	48	20	Drop (1,2/3, 1/2/3/4), coll. (2,2,1) & (2,3,1), (2,2,2) & (2,3,2), (2,2,3) & (2,3,3), (2,2,4) & (2,3,4), do the same for states 5 & 7, coll. (3,2,1) & (3,2,2) & (3,3,1) & (3,3,2), (3,2,3) & (3,2,4) & (3,3,3) & (3,3,4), (6,2,1) & (6,3,1), (6,2,3) & (6,3,3); hier./sing.
State × Rent/Housing × % Black or African American	7 × 3 × 5	48	12	Coll. (1,1,1) & (1,1,2), (1,2,1) & (1,2,2), (1,3,1) & (1,3,2), (1,4,1) & (1,4,2), (2,1,1) & (2,1,2), (2,2,1) & (2,2,2), (2,3,1) & (2,3,2) & (2,4,1) & (2,4,2), (5,1,1) & (5,1,2) & (5,2,1) & (5,2,2), (5,3,1) & (5,3,2), (5,4,1) & (5,4,2), (6,1,1) & (6,1,2) & (6,2,1) & (6,2,2), (6,3,1) & (6,3,2) & (6,4,1) & (6,4,2), drop remainder; hier./sing.
State × Rent/Housing × % Hispanic or Latino	7 × 3 × 5	48	13	Coll. (1,1,1) & (1,1,2), (1,2,1) & (1,2,2), (2,1,1) & (2,1,2), (2,2,1) & (2,2,2), (2,3,1) & (2,3,2), (2,4,1) & (2,4,2), do the same for state 3, coll. (5,1,1) & (5,1,2), (5,2,1) & (5,2,2), (5,3,1) & (5,3,2), drop remainder; hier./sing.
Total		**357**	**201**	

Exhibit D4.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**20**	**20**	
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.
Two-Factor Effects		**99**	**99**	
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	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.
Three-Factor Effects		**148**	**146**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	6	Coll. (2,2,1) & (2,3,1), (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)	7 × 5 × 3	48	48	All levels present.
State × Age × Hispanicity	7 × 5 × 2	24	24	All levels present.
State × Age × Gender	7 × 5 × 2	24	24	All levels present.
State × Race (3 levels) × Hispanicity	7 × 3 × 2	12	12	All levels present.
State × Race (3 levels) × Gender	7 × 3 × 2	12	12	All levels present.
State × Hispanicity × Gender	7 × 2 × 2	6	6	All levels present.
Total		**267**	**265**	

Exhibit D4.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**38**	**38**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**191**	**180**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	6	Coll. (3,1) & (3,2); sing. Coll. (4,1) & (4,2); 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	24	All levels present.
State × Hispanicity	7 × 2	6	6	All levels present.
State × Gender	7 × 2	6	6	All levels present.
State × % Black or African American	7 × 3	12	9	Coll. (1,1) & (1,2), do the same for states 6 & 7; zero.
State × % Hispanic or Latino	7 × 3	12	8	Coll. (1,1) & (1,2), do the same for states 6 & 7; zero. Coll. (5,1) & (5,2); sing.
State × % Owner-Occupied	7 × 3	12	12	All levels present.
State × Rent/Housing	7 × 5	24	24	All levels present.
Three-Factor Effects		**148**	**140**	
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)	7 × 5 × 3	48	48	All levels present.
State × Age × Hispanicity	7 × 5 × 2	24	23	Drop (6,4,1); sing.
State × Race (3 levels) × Hispanicity	7 × 3 × 2	12	5	Coll. (5,2,1) & (5,3,1), (6,2,1) & (6,3,1); sing. Coll. (7,2,1) & (7,3,1); zero. Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1), drop (1, 2/3,1); conv.
State × Race (3 levels) × Gender	7 × 3 × 2	12	12	All levels present.
State × Age × Gender	7 × 5 × 2	24	24	All levels present.
State × Hispanicity × Gender	7 × 2 × 2	6	6	All levels present.
Total		**377**	**358**	

Exhibit D4.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**38**	**38**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**191**	**178**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	6	Coll. (3,1) & (3,2); sing. Coll. (4,1) & (4,2); 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	24	All levels present.
State × Hispanicity	7 × 2	6	6	All levels present.
State × Gender	7 × 2	6	6	All levels present.
State × % Black or African American	7 × 3	12	9	Coll. (1,1) & (1,2), do the same for states 6 & 7; zero.
State × % Hispanic or Latino	7 × 3	12	6	Coll. (1,1) & (1,2), do the same for states 6 & 7; zero. Coll. (5,1) & (5,2); sing. Coll (2,1) & (2,2), (3,1) & (3,2); conv.
State × % Owner-Occupied	7 × 3	12	12	All levels present.
State × Rent/Housing	7 × 5	24	24	All levels present.
Three-Factor Effects		**148**	**129**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Coll. (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)	7 × 5 × 3	48	40	Coll. (1,1,2) & (1,1,3), do same for all ages. Do the same for state 6; 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	4	Coll. (5,2,1) & (5,3,1); sing. Coll. (7,2,1) & (7,3,1); zero. Coll. (3,2,1) & (3,3,1), (5,2,1) & (5,3,1); drop (1/6, 2/3,1); conv.
State × Race (3 levels) × Gender	7 × 3 × 2	12	11	Coll (1,2,1) & (1,3,1); conv.
State × Hispanicity × Gender	7 × 2 × 2	6	6	All levels present.
Total		**377**	**345**	

Exhibit D4.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**21**	**21**	
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.
Two-Factor Effects		**109**	**109**	
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	24	All levels present.
State × Hispanicity	7 × 2	6	6	All levels present.
State × Gender	7 × 2	6	6	All levels present.
Three-Factor Effects		**177**	**146**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	8	Coll. (4,2,1) & (4,3,1); sing. Coll. (5,2,1) & (5,3,1); zero.
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	2	All levels present.
State × Age × Race (3 levels)	7 × 6 × 3	60	42	Coll. (1,5,2) & (1,5,3), do the same for states 3 & 7; sing. Coll. (5,4,2) & (5,4,3), (2,1,2) & (2,1,3), (2,2,2) & (2,2,3), (2,3,2) & (2,3,3), (2,4,2) & (2,4,3), (6,1,2) & (6,1,3), (6,2,2) & (6,2,3), (6,3,2) & (6,3,3), (6,4,2) & (6,4,3), drop (2/6/5,5,2/3); sing.
State × Age × Hispanicity	7 × 6 × 2	30	24	Drop (6,5,1), (7,4,1); sing. Drop (7,5,1); zero. Drop (2/3/5,5,1); conv.
State × Age × Gender	7 × 6 × 2	30	30	All levels present.
State × Race (3 levels) × Hispanicity	7 × 3 × 2	12	7	Coll. (7,2,1) & (7,3,1); zero. Coll. (3,2,1) & (3,3,1), (6,2,1) & (6,3,1), drop (1,2/3,1); conv.
State × Race (3 levels) × Gender	7 × 3 × 2	12	12	All levels present.
State × Hispanicity × Gender	7 × 2 × 2	6	6	All levels present.
Total		**307**	**276**	

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Appendix D5: Model Group 5: South Atlantic

(Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia)

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Table D.5a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 5: South Atlantic)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	4.37	6.51	1.06	1.33793	459	(1.01, 2.80)	(1.02, 2.80)
	2.71	3.76	0.57	1.35222	287	(1.00, 5.00)	(1.00, 5.00)
						(1.30, 1.54)	(1.30, 1.54)
res.sdu.ps	2.71	3.76	0.57	1.35217	337	(0.57, 1.50)	(0.58, 1.50)
	0.84	1.75	0.38	1.39665	333	(0.20, 5.00)	(0.20, 4.99)
						(0.90, 1.42)	(0.90, 1.42)
sel.per.ps	1.98	4.20	0.93	2.09477	467	(0.24, 2.60)	(0.24, 2.60)
	1.05	2.33	0.59	2.14171	453	(0.20, 4.85)	(0.20, 4.85)
						(0.90, 2.16)	(0.90, 2.16)
res.per.nr	1.23	3.12	0.69	2.15326	467	(1.00, 3.00)	(1.00, 3.00)
	1.18	3.55	0.63	2.34313	421	(1.00, 4.85)	(1.00, 4.82)
						(1.30, 2.47)	(1.30, 2.46)
res.per.ps	1.20	3.53	0.65	2.34313	387	(0.14, 2.00)	(0.14, 1.99)
	0.83	2.55	0.59	2.45638	343	(0.30, 3.95)	(0.30, 3.93)
						(N/A, N/A)	(N/A, N/A)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.5b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 5: South Atlantic)

	sel.sdu.des[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
Statistics	**1–8**[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	31	0.82	34	0.20	7	1.01	7	0.11	4	0.52	4	0.08	1
1%	31	1.01	39	0.46	40	1.01	72	0.57	71	1.00	85	0.30	68
5%	36	1.10	58	0.72	63	1.01	232	0.75	221	1.04	279	0.36	244
10%	50	1.15	91	0.84	99	1.01	393	0.82	396	1.11	554	0.73	481
25%	229	1.22	302	0.99	326	1.33	1,028	0.92	1,000	1.22	1,287	0.96	1,207
Median	695	1.30	927	1.09	1,006	2.53	1,918	1.00	1,919	1.36	2,539	1.03	2,499
75%	834	1.42	1,140	1.21	1,300	3.41	3,682	1.09	3,719	1.52	5,088	1.10	5,207
90%	1,042	1.58	1,346	1.35	1,557	8.16	7,800	1.22	7,713	1.72	10,565	1.17	10,213
95%	1,163	1.85	1,542	1.49	1,760	8.94	10,207	1.32	10,341	1.88	15,550	1.25	15,494
99%	1,267	2.80	1,910	1.97	2,306	9.74	13,477	1.63	14,892	2.38	22,972	1.71	24,442
Maximum	2,066	5.00	4,966	4.99	6,298	19.57	37,409	4.85	34,742	4.82	45,899	3.93	68,015
n	37,738	27,761	27,761	27,756	27,756	17,901	17,901	17,901	17,901	12,751	12,751	12,751	12,751
Max/Mean	3.38	-	5.97	-	6.87	-	12.48	-	11.46	-	10.78	-	15.98

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Model Group 5 Overview

Dwelling Unit Nonresponse

For the one-factor effects, College Dorm had to be collapsed with Group Quarter. Out of 27 proposed variables, 26 were included in the model.

For the two-factor effects, variable dropping was present in the State × Population Density, State × Group Quarter, State × percent Black or African American, State × percent Hispanic or Latino, State × percent Owner-Occupied, and State × Rent/Housing interactions. Out of 176 proposed variables, 146 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Many factors were excluded because of zero sample sizes or exact linear combinations. Out of 256 proposed variables, 115 were included in the model.

In the final model, a total of 287 variables were included; see Exhibit D5.1.

Dwelling Unit Poststratification

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

For the two-factor effects, variable collapsing was present in the State × Race interaction. Out of 125 proposed variables, 124 were included in the model

For the three-factor effects, variable collapsing and dropping were present in the State × Race × Hispanicity interaction. Out of 190 proposed variables, 187 were included in the model.

In the final model, a total of 333 variables were included; see Exhibit D5.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable dropping was present in the State × percent Black or African American, State × percent Hispanic or Latino, State × percent Owner-Occupied, and State × Rent/Housing interactions. Out of 237 proposed variables, 230 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 190 proposed variables, 183 were included in the model.

In the final model, a total of 453 variables were included; see Exhibit D5.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the State × Race, State × percent Black or African American, State × percent Hispanic or Latino, State × percent Owner-Occupied, and State × Rent/Housing interactions. Out of 237 proposed variables, 222 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Race, State × Age × Hispanicity, State × Race × Hispanicity, and State × Race × Gender interactions. Out of 190 proposed variables, 159 were included in the model.

In the final model, a total of 421 variables were included; see Exhibit D5.4.

Respondent Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the Race × Hispanicity and State × Race interactions. Out of 137 proposed variables, 128 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, Race × Hispanicity × Gender, State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 227 proposed variables, 192 were included in the model.

In the final model, a total of 343 variables were included; see Exhibit D5.5.

Exhibit D5.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**27**	**26**	
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	1	Coll. (1) & (2); conv.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**176**	**146**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	9 × 4	24	24	All levels present.
State × Population Density	9 × 4	24	17	Drop (1,1/2/3), (2,1/2/3), (4,3); sing./conv./zero.
State × Group Quarter	9 × 3	16	0	Drop all; hier./sing./conv./zero.
State × % Black or African American	9 × 3	16	15	Drop (8,1); zero.
State × % Hispanic or Latino	9 × 3	16	13	Drop (1,1), (2,1), (8,1); zero.
State × % Owner-Occupied	9 × 3	16	15	Drop (8,3); zero.
State × Rent/Housing	9 × 5	32	30	Drop (8,3/4); zero./sing.
Three-Factor Effects		**256**	**115**	
State × % Owner-Occupied × % Black or African American	9 × 3 × 3	32	19	Coll. (9,3,1) & (9,3,2), repeat for DC, DE, MD, and NC, drop DE; conv. Drop (6,3,1/2), (7,3,1/2), (8,3,1/2), (8,2,1); sing./zero.
State × % Owner-Occupied × % Hispanic or Latino	9 × 3 × 3	32	14	Drop (9,3,2); sing. Drop (1,2/3,1) repeat for DC, MD, NC, and VA; zero, sing. Drop (6,3,1/2), (6,2,1), drop all for WV; zero/sing.
State × % Owner-Occupied × Rent/Housing	9 × 3 × 5	64	33	Drop (2,3,1/3/4), (2,2,1/2/3/4), (1,3,1/3/4), (1,2,1), (4,3,2), (5,3,1/3), (5,2,4), (6,3,1/3/4), (6,2,4), (7,3,1/4), (8,3,1/2/3/4), (8,2,2/3/4); sing./zero/conv. Coll. (4,3,1) & (4,3,3), (9,3,1) & (9,3,2) & (9,3,3); sing.
State × Rent/Housing × % Black or African American	9 × 3 × 5	64	32	Keep (9,1/2/3,1), (9,1/2/3/4,2), (1,2/3,1), (1,2/3/4,2), (4,2/3,1), (4,2/3,2), (5,1/2,1), (5,1/2/3,2), (6,1,1), (6,1/2,2), (7,1/2,1), (7,1/2/3,2), (8,1/2,2); conv./zero/sing. Coll. (4,4,1) & (4,4,2); sing. Drop all others.
State × Rent/Housing × % Hispanic or Latino	9 × 3 × 5	64	17	Keep (9,1/2,2), (9,3,2), (9,4,1/2), (2,3/4,2), (1,2/3,2), (4,4,1/2), (5,1/2,2), (6,1,2), (7,1/2/3,2); zero/sing.
Total		**459**	**287**	

Exhibit D5.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**22**	
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.
Two-Factor Effects		**125**	**124**	
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. (7,3) & (7,4); conv.
State × Hispanicity	9 × 2	8	8	All levels present.
State × Gender	9 × 2	8	8	All levels present.
Three-Factor Effects		**190**	**187**	
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	13	Coll. (6,2,1) & (6,3,1), drop; conv. Coll. (5,2,1) & (5,3,1); conv.
State × Race (3 levels) × Gender	9 × 3 × 2	16	16	All levels present.
State × Hispanicity × Gender	9 × 2 × 2	8	8	All levels present.
Total		**337**	**333**	

Exhibit D5.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**40**	**40**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**237**	**230**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	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	32	All levels present.
State × Hispanicity	9 × 2	8	8	All levels present.
State × Gender	9 × 2	8	8	All levels present.
State × % Black or African American	9 × 3	16	15	Drop (8,1); zero.
State × % Hispanic or Latino	9 × 3	16	13	Drop (2,1), (1,1), (8,1); zero.
State × % Owner-Occupied	9 × 3	16	15	Drop (8,3); zero.
State × Rent/Housing	9 × 5	32	30	Drop (8,4); zero. Drop (8,3); sing.
Three-Factor Effects		**190**	**183**	
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	60	Coll. (8,1,2) & (8,1,3), repeat for all age levels; conv.
State × Age × Hispanicity	9 × 5 × 2	32	31	Drop (8,4,1); conv.
State × Age × Gender	9 × 5 × 2	32	32	All levels present.
State × Race (3 levels) × Hispanicity	9 × 3 × 2	16	14	Coll. (8,2,1) & (8,3,1), (7,2,1) & (7,3,1); conv.
State × Race (3 levels) × Gender	9 × 3 × 2	16	16	All levels present.
State × Hispanicity × Gender	9 × 2 × 2	8	8	All levels present.
Total		**467**	**453**	

Exhibit D5.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**40**	**40**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**237**	**222**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	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	24	Coll. (6,3) & (6,4), repeat for all states; conv.
State × Hispanicity	9 × 2	8	8	All levels present.
State × Gender	9 × 2	8	8	All levels present.
State × % Black or African American	9 × 3	16	15	Drop (8,1); zero.
State × % Hispanic or Latino	9 × 3	16	13	Drop (1,1), (2,1), (8,1); zero.
State × % Owner-Occupied	9 × 3	16	15	Drop (8,3); zero.
State × Rent/Housing	9 × 5	32	30	Drop (8,4); zero. Drop (8,3); sing.
Three-Factor Effects		**190**	**159**	
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	48	Coll. (4,1,2) & (4,1,3), repeat for all age levels & for NC, SC, and WV; conv.
State × Age × Hispanicity	9 × 5 × 2	32	28	Drop all for WV; conv.
State × Age × Gender	9 × 5 × 2	32	32	All levels present.
State × Race (3 levels) × Hispanicity	9 × 3 × 2	16	6	Coll. (6,2,1) & (6,3,1), repeat for all other states, drop for DE and WV; conv.
State × Race (3 levels) × Gender	9 × 3 × 2	16	15	Coll. (6,2,1) & (6,2,1); conv.
State × Hispanicity × Gender	9 × 2 × 2	8	8	All levels present.
Total		**467**	**421**	

Exhibit D5.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**23**	**23**	
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.
Two-Factor Effects		**137**	**128**	
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	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. (9,3) & (9,4), repeat for all states; conv.
State × Hispanicity	9 × 2	8	8	All levels present.
State × Gender	9 × 2	8	8	All levels present.
Three-Factor Effects		**227**	**192**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	5	Coll. (1,2,1) & (1,3,1), repeat for all age levels; hier.
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); hier.
State × Age × Race (3 levels)	9 × 6 × 3	80	70	Coll. (6,5,2) & (6,5,3); sing. Coll. (6,1,2) & (6,1,3), repeat for all age levels, repeat for all age levels for WV; conv.
State × Age × Hispanicity	9 × 6 × 2	40	29	Drop (9/1/2/3/4/7,5,1); conv. Drop (6/8,5,1); sing. Drop (4/5/6,4,1); conv.
State × Age × Gender	9 × 6 × 2	40	40	All levels present.
State × Race (3 levels) × Hispanicity	9 × 3 × 2	16	8	Coll. (1,2,1) & (1,3,1), repeat for all age levels; hier.
State × Race (3 levels) × Gender	9 × 3 × 2	16	16	All levels present.
State × Hispanicity × Gender	9 × 2 × 2	8	8	All levels present.
Total		**387**	**343**	

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Appendix D6: Model Group 6: East South Central

(Alabama, Kentucky, Mississippi, and Tennessee)

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Table D.6a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 6: East South Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	1.58	1.36	0.08	1.04774	204	(N/A, N/A)	(N/A, N/A)
	2.28	3.95	0.66	1.09359	114	(1.00, 5.00)	(1.00, 5.00)
						(1.24, 1.29)	(1.24, 1.29)
res.sdu.ps	2.28	3.95	0.66	1.09359	162	(0.38, 1.20)	(0.38, 1.20)
	1.26	2.12	0.43	1.14095	159	(0.20, 5.00)	(0.20, 5.00)
						(0.90, 1.28)	(0.90, 1.28)
sel.per.ps	2.53	5.42	1.25	1.84840	242	(0.70, 1.90)	(0.72, 1.90)
	1.39	3.66	0.64	1.82226	221	(0.25, 4.32)	(0.25, 4.32)
						(0.80, 2.50)	(0.80, 2.49)
res.per.nr	1.09	3.20	0.45	1.84687	242	(1.00, 2.90)	(1.00, 2.90)
	1.01	2.10	0.37	1.95367	192	(1.00, 5.00)	(1.00, 5.00)
						(N/A, N/A)	(N/A, N/A)
res.per.ps	1.01	2.18	0.40	1.95367	187	(0.20, 2.20)	(0.20, 2.20)
	0.70	1.88	0.55	2.03240	151	(0.20, 4.68)	(0.20, 4.68)
						(N/A, N/A)	(N/A, N/A)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.6b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 6: East South Central)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	360	1.00	360	0.15	115	1.01	170	0.25	78	0.43	90	0.13	24
1%	427	1.00	492	0.47	381	1.01	452	0.49	460	1.00	503	0.20	238
5%	435	1.03	539	0.71	508	1.01	707	0.71	678	1.01	821	0.66	667
10%	556	1.05	628	0.84	580	1.01	870	0.79	850	1.06	1,016	0.86	969
25%	632	1.14	758	0.98	758	1.27	1,209	0.89	1,173	1.20	1,492	0.97	1,504
Median	743	1.21	890	1.07	938	2.33	1,945	1.00	1,952	1.37	2,571	1.01	2,606
75%	887	1.30	1,029	1.19	1,174	3.16	3,629	1.09	3,660	1.56	5,185	1.06	5,188
90%	995	1.41	1,242	1.33	1,445	7.24	6,842	1.20	6,620	1.80	9,635	1.12	9,257
95%	1,020	1.53	1,330	1.45	1,637	7.53	8,649	1.29	8,478	2.02	12,765	1.27	13,260
99%	1,038	2.02	2,024	1.85	2,223	7.93	12,688	1.58	12,060	2.93	19,317	1.87	19,814
Maximum	1,051	5.00	4,976	5.00	6,191	15.02	27,367	4.32	33,205	5.00	30,357	4.68	57,399
n	9,367	7,551	7,551	7,551	7,551	5,450	5,450	5,450	5,450	3,859	3,859	3,859	3,859
Max/Mean	1.42	-	5.42	-	6.23	-	9.20	-	11.42	-	7.39	-	13.98

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Model Group 6 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Hispanic or Latino, percent Owner-Occupied × Rent/Housing, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × percent Hispanic or Latino, State × Group Quarter, State × percent Hispanic or Latino, and State × percent Owner-Occupied interactions. Out of 86 proposed variables, 68 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 114 variables were included; see Exhibit D6.1.

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 the three-factor effects, variable collapsing and dropping were present in the State × Race × Hispanicity interaction. Out of 85 proposed variables, 82 were included in the model.

In the final model, a total of 159 variables were included; see Exhibit D6.2.

Selected Person-Level Poststratification

All 35 proposed one-factor effects were included in the model.

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × percent Hispanic or Latino, and State × percent Owner-Occupied interactions. Out of 122 proposed variables, 111 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, State × Age × Race, and State × Race × Hispanicity interactions. Out of 85 proposed variables, 75 were included in the model.

In the final model, a total of 221 variables were included; see Exhibit D6.3.

Respondent Person-Level Nonresponse

All 35 proposed one-factor effects were included in the model.

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × Race, State × percent Black or African American, State × percent Hispanic or Latino, and State × percent Owner-Occupied interactions. Out of 122 proposed variables, 106 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age × Race × Gender, Age × Hispanicity × Gender, and State × Age × Gender interactions. Out of 85 proposed variables, 51 were included in the model.

In the final model, a total of 192 variables were included; see Exhibit D6.4.

Respondent Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the State × Race interaction. Out of 67 proposed variables, 64 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age × Hispanicity × Gender, State × Age × Gender, and State × Hispanicity × Gender interactions. Out of 102 proposed variables, 69 were included in the model.

In the final model, a total of 151 variables were included; see Exhibit D6.5.

Exhibit D6.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**22**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**86**	**68**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	2	Drop (2,1), (3,1); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	7	Coll. (3,4) & (2,4); conv.
Rent/Housing × % Black or African American	3 × 5	8	7	Drop (4,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	4	Drop (1,1), (3,1), (4,1); zero. Drop (2,1); sing.
State × Quarter	4 × 4	9	9	All levels present.
State × Population Density	4 × 4	9	9	All levels present.
State × Group Quarter	4 × 3	6	1	Coll. (1,1) & (1,2); conv. Drop all others; zero/sing./conv.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	4	Drop (2,1); zero. Drop (3,1); sing.
State × % Owner-Occupied	4 × 3	6	3	Coll. (1,3) & (1,2), (2,3) & (2,2); conv. Drop (3,3); zero.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**96**	**24**	
State × % Owner-Occupied × % Black or African American	4 × 3 × 3	12	4	Coll. (1,3,1) & (1,2,1), (1,3,2) & (1,2,2), (2,3,1) & (2,2,1); hier. Keep (3,2,1). Drop all other levels; hier./zero/sing./conv.
State × % Owner-Occupied × % Hispanic or Latino	4 × 3 × 3	12	0	Drop all levels; hier./zero/conv.
State × % Owner-Occupied × Rent/Housing	4 × 3 × 5	24	7	Coll. (1,3,1) & (1,2,1), (1,3,2) & (1,2,2), (1,3,3) & (1,2,3), (2,3,1) & (2,2,1), (2,3,2) & (2,2,2); hier. Keep (3,2,1), (3,2,2). Drop all other levels; hier./zero/conv.
State × Rent/Housing × % Black or African American	4 × 3 × 5	24	12	Coll. (1,1,1) & (1,1,2), (2,1,1) & (2,1,2), (3,1,1) & (3,1,2), (3,3,1) & (3,3,2); conv. Keep (1,2,1), (1,2,2), (1,3,2), (1,4,2), (2,2,2), (3,2,1), (3,2,2), (3,4,2). Drop all other levels; sing./hier./conv.
State × Rent/Housing × % Hispanic or Latino	4 × 3 × 5	24	1	Keep (1,3,2), Drop all other levels; hier./zero/sing./conv.
Total		**204**	**114**	

Exhibit D6.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
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.
Two-Factor Effects		**60**	**60**	
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.
Three-Factor Effects		**85**	**82**	
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	3	Coll. (2,2,1) & (2,3,1); conv. Drop (3,2,1), (3,3,1); 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.
Total		**162**	**159**	

Exhibit D6.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**111**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	2	Drop (3,1), (2,1); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	4	Drop (1,1), (3,1), (4,1); zero. Coll. (2,1) & (2,2); 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	12	All levels present.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	3	Drop (2,1); zero. Coll. (3,1) & (3,2); sing. Coll. (1,1) & (1,2); conv.
State × % Owner-Occupied	4 × 3	6	5	Drop (3,3); zero.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**85**	**75**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	5	Drop (4,2,1), (4,3,1); sing. 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)	4 × 5 × 3	24	23	Coll. (3,3,2) & (3,3,3); conv.
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	0	Drop all levels; 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.
Total		**242**	**221**	

Exhibit D6.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**106**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	2	Drop (3,1), (2,1); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Drop (4,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	4	Drop (1,1), (3,1), (4,1); zero. Drop (2,1); 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	8	Coll. (1,3) & (1,5), (2,3) & (2,4) & (2,5), (3,3) & (3,4); conv.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
State × % Black or African American	4 × 3	6	5	Coll. (2,1) & (2,2); conv.
State × % Hispanic or Latino	4 × 3	6	4	Drop (2,1); zero. Drop (3,1); sing.
State × % Owner-Occupied	4 × 3	6	4	Drop (3,3); zero. Coll. (2,3) & (2,2); conv.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**85**	**51**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	1	Coll. (1,2,1) & (1,3,1); zero. Drop all others; zero/sing./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)	4 × 5 × 3	24	12	Coll. (1,1,2) & (1,1,3), repeat for all age levels and all states; conv.
State × Age × Hispanicity	4 × 5 × 2	12	7	Drop (1,4,1), (2,3,1), (2,4,1), (3,3,1), (3,4,1); conv.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	0	Drop all levels; zero/sing./conv.
State × Race (3 levels) × Gender	4 × 3 × 2	6	4	Coll. (1,2,1) & (1,3,1), (3,2,1) & (3,3,1), conv.
State × Hispanicity × Gender	4 × 2 × 2	3	2	Drop (3,1,1); conv.
Total		**242**	**192**	

Exhibit D6.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
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.
Two-Factor Effects		**67**	**64**	
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	9	Coll. (1,3) & (1,4) & (1,5), (3,3) & (3,4); conv.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
Three-Factor Effects		**102**	**69**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	6	Drop (5,2,1); zero. Drop (5,3,1); sing. Coll. (4,2,1) & (4,3,1); sing. Coll. (2,2,1) & (2,3,1); conv.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	9	Coll. (5,2,1) & (5,3,1); sing.
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)	4 × 6 × 3	30	14	Coll. (1,5,2) & (1,5,3), repeat for all states; sing., Coll. (1,1,2) & (1,1,3), repeat for all states and remaining age groups; conv. Drop (2,5,2/3); conv.
State × Age × Hispanicity	4 × 6 × 2	15	9	Drop (2,5,1), (3,5,1); sing. Drop (1,4,1), (1,5,1), (2,4,1), (3,4,1); conv.
State × Age × Gender	4 × 6 × 2	15	15	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	2	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1); conv. Drop all other levels; conv.
State × Race (3 levels) × Gender	4 × 3 × 2	6	5	Coll. (1,2,1) & (1,3,1); conv.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**187**	**151**	

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Appendix D7: Model Group 7: West South Central

(Arkansas, Louisiana, Oklahoma, and Texas)

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Table D.7a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 7: West South Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	4.31	6.32	0.29	1.20040	204	(1.00, 1.30)	(1.00, 1.30)
	2.81	3.30	0.35	1.21555	144	(1.00, 3.16)	(1.00, 3.12)
						(1.10, 1.38)	(1.11, 1.37)
res.sdu.ps	2.81	3.30	0.35	1.21556	162	(0.52, 1.30)	(0.52, 1.30)
	1.31	2.78	0.82	1.30151	162	(0.26, 4.79)	(0.27, 4.77)
						(0.90, 2.03)	(0.91, 2.03)
sel.per.ps	2.38	5.35	1.25	1.68362	242	(0.45, 2.54)	(0.47, 2.54)
	1.16	2.63	0.48	1.68937	233	(0.43, 2.55)	(0.45, 2.50)
						(0.91, 1.97)	(0.92, 1.97)
res.per.nr	1.22	2.92	0.60	1.68936	242	(1.00, 2.80)	(1.01, 2.79)
	1.14	2.98	0.60	1.82059	228	(1.00, 5.00)	(1.00, 5.00)
						(N/A, N/A)	(N/A, N/A)
res.per.ps	1.17	3.09	0.67	1.82059	187	(0.20, 1.10)	(0.20, 1.10)
	0.26	0.99	0.29	1.83797	166	(0.20, 2.56)	(0.20, 2.42)
						(0.90, 1.06)	(0.90, 1.06)

[1] For a key to modeling abbreviations, see Chapter 5, Exhibit 5.1.
[2] Unequal weighting effect (UWE) is defined as $1 + [(n - 1)/n]*CV^2$, where CV = coefficient of variation of weights.
[3] Number of proposed covariates (XVAR) on top line and number finalized after modeling.
[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.7b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 7: West South Central)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	388	0.88	397	0.27	125	1.01	142	0.35	162	0.66	162	0.09	82
1%	393	1.00	425	0.49	325	1.01	463	0.67	438	1.00	510	0.23	393
5%	405	1.03	507	0.78	496	1.01	684	0.79	644	1.07	842	0.54	736
10%	474	1.06	551	0.89	576	1.01	877	0.84	870	1.11	1,146	0.83	1,014
25%	543	1.14	713	0.99	721	1.21	1,578	0.91	1,570	1.20	2,017	0.97	1,967
Median	812	1.22	989	1.09	1,197	2.45	2,614	1.00	2,683	1.32	3,508	1.03	3,518
75%	1,378	1.30	1,671	1.19	1,867	2.89	5,184	1.09	5,170	1.50	6,929	1.11	6,958
90%	1,622	1.39	1,871	1.34	2,257	5.66	8,104	1.20	8,133	1.74	11,552	1.16	11,829
95%	1,667	1.44	2,074	1.46	2,525	7.04	10,467	1.27	10,357	1.91	14,786	1.19	15,157
99%	1,704	1.73	2,416	1.98	3,178	7.91	13,639	1.54	14,333	2.41	21,426	1.54	21,721
Maximum	1,800	3.12	4,441	4.77	9,287	11.57	26,615	2.98	25,474	5.00	52,908	2.42	57,673
n	13,582	10,977	10,977	10,976	10,976	8,603	8,603	8,603	8,603	6,229	6,229	6,229	6,229
Max/Mean	1.86	-	3.70	-	6.91	-	7.07	-	6.76	-	10.16	-	11.07

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Model Group 7 Overview

Dwelling Unit Nonresponse

For the one-factor effects, variable collapsing was present in Group Quarter. Out of 22 proposed variables, 21 were included in the model.

For the two-factor effects, variable dropping was present in the State × Group Quarter and State × percent Hispanic or Latino interactions. Out of 86 proposed variables, 79 were included in the model.

Variable dropping was present in all three-factor effects. Out of 96 proposed variables, 44 were included in the model.

In the final model, a total of 144 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.

All 85 proposed three-factor effects were included in the model.

In the final model, a total of 162 variables were included; see Exhibit D7.2.

Selected Person-Level Poststratification

All 35 proposed one-factor effects were included in the model.

For the two-factor effects, variable dropping was present in the State × percent Hispanic or Latino interaction. Out of 122 proposed variables, 121 were included in the model.

For the three-factor effects, variable collapsing was present in the Age × Race × Hispanicity interaction. Out of 85 proposed variables, 77 were included in the model.

In the final model, a total of 233 variables were included; see Exhibit D7.3.

Respondent Person-Level Nonresponse

All 35 proposed one-factor effects were included in the model.

For the two-factor effects, variable dropping was present in the State × percent Hispanic or Latino interaction. Out of 122 proposed variables, 121 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 85 proposed variables, 72 were included in the model.

In the final model, a total of 228 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 two-factor effects were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 102 proposed variables, 81 were included in the model.

In the final model, a total of 166 variables were included; see Exhibit D7.5.

Exhibit D7.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**21**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll. (1) & (2); conv.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**86**	**79**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	4 × 4	9	9	All levels present.
State × Population Density	4 × 4	9	9	All levels present.
State × Group Quarter	4 × 3	6	0	Drop (4,1), (2,1/2), (3,1/2); zero. Drop (4,2); conv.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	5	Drop (2,1); zero.
State × % Owner-Occupied	4 × 3	6	6	All levels present.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**96**	**44**	
State × % Owner-Occupied × % Black or African American	4 × 3 × 3	12	6	Drop (3,*,*), (2,3,1/2); sing./zero/conv.
State × % Owner-Occupied × % Hispanic or Latino	4 × 3 × 3	12	4	Keep (4,3,2), (4,2,1/2), (3,2,2), drop all others; zero/sing./conv.
State × % Owner-Occupied × Rent/Housing	4 × 3 × 5	24	12	Drop (4,3,4), (3,3,*), (3,2,4), (2,3,*), (2,2,3/4), drop all others; zero/sing./conv.
State × Rent/Housing × % Black or African American	4 × 3 × 5	24	15	Drop (4,4,1), (3,1,1), (3,2,1/2), (3,3,1), (3,4,1/2), (2,3/4,2); zero/sing./conv.
State × Rent/Housing × % Hispanic or Latino	4 × 3 × 5	24	7	Keep (4,1,1/2), (4,2,2), (4,3/4,2), (3,1,2), (2,3,2), drop all others; zero/sing./conv.
Total		**204**	**144**	

Exhibit D7.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
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.
Two-Factor Effects		**60**	**60**	
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.
Three-Factor Effects		**85**	**85**	
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	6	All levels present.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**162**	**162**	

Exhibit D7.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**121**	
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 or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	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 or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	5	Drop (2,1); zero.
State × % Owner-Occupied	4 × 3	6	6	All levels present.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**85**	**77**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	0	Coll. (1,2,.1) & (1,3,1), repeat for all age levels, drop; 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	12	All levels present.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	6	All levels present.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**242**	**233**	

Exhibit D7.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**121**	
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 or African American	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 or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	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 or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	5	Drop (2,1); zero.
State × % Owner-Occupied	4 × 3	6	6	All levels present.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**85**	**72**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	6	Drop (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)	4 × 5 × 3	24	24	All levels present.
State × Age × Hispanicity	4 × 5 × 2	12	4	Drop all for LA & OK; conv.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	3	Coll. (2,2,1) & (2,3,1), repeat for all states; 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.
Total		**242**	**228**	

Exhibit D7.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
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.
Two-Factor Effects		**67**	**67**	
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.
Three-Factor Effects		**102**	**81**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	7	Coll. (3,2,1) & (3,3,1), repeat for age levels 4 & 5; 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	2	All levels present.
State × Age × Race (3 levels)	4 × 6 × 3	30	25	Coll. (2,1,2) & (2,1,3), repeat for all age levels; conv.
State × Age × Hispanicity	4 × 6 × 2	15	5	Drop all for OK & LA; conv.
State × Age × Gender	4 × 6 × 2	15	15	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	3	Coll. (4,2,1) & (4,3,1), repeat for all states; 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.
Total		**187**	**166**	

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Appendix D8: Model Group 8: Mountain

(Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming)

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Table D.8a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 8: Mountain)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	1.32	1.33	0.19	1.70392	408	(1.15, 3.00)	(1.16, 3.00)
	1.77	2.04	0.34	1.74795	182	(1.00, 4.99)	(1.00, 4.99)
						(1.20, 2.38)	(1.20, 2.38)
res.sdu.ps	1.77	2.04	0.34	1.74790	302	(0.21, 1.20)	(0.21, 1.20)
	1.32	2.87	0.61	1.79589	296	(0.20, 4.92)	(0.20, 4.90)
						(0.90, 4.11)	(0.90, 4.11)
sel.per.ps	2.90	6.93	1.40	2.67556	422	(0.22, 2.30)	(0.22, 2.30)
	1.83	4.94	0.87	2.89837	384	(0.20, 4.47)	(0.20, 4.47)
						(0.50, 1.41)	(0.50, 1.39)
res.per.nr	2.09	5.81	0.96	2.93569	422	(1.00, 2.70)	(1.00, 2.69)
	1.43	4.82	0.81	3.14809	375	(1.00, 3.45)	(1.00, 3.44)
						(1.30, 5.00)	(1.30, 1.32)
res.per.ps	1.50	5.08	0.91	3.14809	347	(0.21, 1.60)	(0.21, 1.60)
	0.75	2.09	0.32	3.25855	317	(0.20, 4.16)	(0.20, 4.15)
						(N/A, N/A)	(N/A, N/A)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.8b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 8: Mountain)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	72	0.83	73	0.16	21	1.01	21	0.12	7	0.68	7	0.14	3
1%	72	1.00	87	0.46	83	1.01	105	0.43	79	1.00	81	0.24	71
5%	90	1.00	104	0.71	114	1.01	188	0.68	177	1.03	200	0.52	182
10%	96	1.02	114	0.83	136	1.01	268	0.77	264	1.06	314	0.78	289
25%	175	1.11	196	1.02	217	1.22	505	0.88	509	1.14	618	0.97	607
Median	331	1.21	429	1.14	485	2.39	1,103	0.99	1,094	1.27	1,359	1.03	1,348
75%	674	1.32	873	1.26	950	3.06	2,377	1.12	2,379	1.45	3,049	1.10	3,095
90%	1,037	1.50	1,274	1.53	1,445	6.67	4,210	1.29	4,381	1.67	6,038	1.24	5,986
95%	1,112	1.66	1,480	1.73	1,860	7.61	6,701	1.42	6,472	1.85	9,230	1.35	9,070
99%	1,564	2.49	2,058	2.40	2,738	9.93	12,529	1.85	14,162	2.32	19,965	1.68	18,923
Maximum	3,336	4.99	3,924	5.21	6,584	12.31	36,369	4.47	39,725	3.44	66,605	4.15	51,604
n	16,955	13,497	13,497	13,496	13,496	10,189	10,189	10,189	10,189	7,623	7,623	7,623	7,623
Max/Mean	7.10	-	6.65	-	9.71	-	18.91	-	20.27	-	25.43	-	19.70

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Model Group 8 Overview

Dwelling Unit Nonresponse

All 26 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 × percent Hispanic or Latino, percent Owner-Occupied × Rent/Housing, Rent/Housing × percent Hispanic or Latino, State × Quarter, and State × Rent/Housing interactions. Out of 158 proposed variables, 121 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 224 proposed variables, 35 were included in the model.

In the final model, a total of 182 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 the three-factor effects, variable collapsing was present in the Age × Hispanicity × Gender, State × Age × Race, and State × Race × Hispanicity interactions. Out of 169 proposed variables, 163 were included in the model.

In the final model, a total of 296 variables were included; see Exhibit D8.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Black or African American, Rent/Housing × percent Black or African American, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 214 proposed variables, 196 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Gender, State × Age × Race, and State × Race × Hispanicity interactions. Out of 169 proposed variables, 149 were included in the model.

In the final model, a total of 384 variables were included; see Exhibit D8.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable dropping was present in the percent Owner-Occupied × percent Black or African American, Rent/Housing × percent Black or African American, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 214 proposed variables, 196 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, State × Age × Race, and State × Race × Hispanicity interactions. Out of 169 proposed variables, 140 were included in the model.

In the final model, a total of 375 variables were included; see Exhibit D8.4.

Respondent Person-Level Poststratification

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

All 123 proposed two-factor effects were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity, State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 202 proposed variables, 172 were included in the model.

In the final model, a total of 317 variables were included; see Exhibit D8.5.

Exhibit D8.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**26**	**26**	
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	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**158**	**121**	
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (3,1), (2,1); sing./zero.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	3	Drop (1,1), (2,1), (3,1); zero; Coll. (1,2) & (2,2); conv. Drop (4,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	8 × 4	21	21	All levels present.
State × Population Density	8 × 4	21	15	Drop (2,1), (3,1), (4,3), (5,1), (7,1/3); zero/sing.
State × Group Quarter	8 × 3	14	3	Drop (1,1/2), (2,1/2), (3,2), (4,1/2), (5,2), (6,1/2), (7.2); zero/sing.
State × % Black or African American	8 × 3	14	4	Drop (1,1), (2,1/2), (3,1/2), (4,1), (5,1), (6,1), (7,1/2); zero/sing.
State × % Hispanic or Latino	8 × 3	14	12	Drop (3,1/2), zero.
State × % Owner-Occupied	8 × 3	14	13	Coll. (2,2) & (2,3); conv.
State × Rent/Housing	8 × 5	28	28	All levels present.
Three-Factor Effects		**224**	**35**	
State × % Owner-Occupied × % Black or African American	8 × 3 × 3	28	1	Keep (1,2,2), drop all the rest; sing./conv./zero.
State × % Owner-Occupied × % Hispanic or Latino	8 × 3 × 3	28	4	Keep (1,2,1/2), (2,2,2), (7,2,2), drop all the rest; sing./conv./zero.
State × % Owner-Occupied × Rent/Housing	8 × 3 × 5	56	15	Keep (1,2,1/2/3/4), (2,2,1/3), (3,2,1/2/3/4), (3,3,2), (6,2,2/3), (7,2,2/3), drop all the rest; sing./conv./zero.
State × Rent/Housing × % Black or African American	8 × 3 × 5	56	3	Keep (1,1/2/3/4,2), coll. (1,1,2) & (1,2,2), drop all the rest; hier./sing./conv./zero.
State × Rent/Housing × % Hispanic or Latino	8 × 3 × 5	56	12	Keep (1,1,1), (1,1/2/3/4,2), (2,1/2/3/4,2), (6,1/3,2), (7,1,2), drop remainder; sing./conv./zero.
Total		**408**	**182**	

Exhibit D8.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comment
One-Factor Effects		**21**	**21**	
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.
Two-Factor Effects		**112**	**112**	
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.
Three-Factor Effects		**169**	**163**	
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	3	Coll. (4,2,1) & (4.3,1); conv.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	8 × 5 × 3	56	52	Coll. (6,4,2) & (6,4,3); sing. Coll. (6,3,2) & (6,3,3), (6,2,2) & (6,2,3), (6,1,2) & (6,1,3); conv.
State × Age × Hispanicity	8 × 5 × 2	28	28	All levels present.
State × Age × Gender	8 × 5 × 2	28	28	All levels present.
State × Race (3 levels) × Hispanicity	8 × 3 × 2	14	13	Coll. (6,2,1) & (6,3,1); conv.
State × Race (3 levels) × Gender	8 × 3 × 2	14	14	All levels present.
State × Hispanicity × Gender	8 × 2 × 2	7	7	All levels present.
Total		**302**	**296**	

Exhibit D8.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**39**	**39**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**214**	**196**	
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 or African American	3 × 3	4	2	Drop (2,1); zero; Coll. (3,1) & (3,2); 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 or African American	3 × 5	8	4	Drop (1,1), (2,1), (3,1); zero. Coll. (4,1) & (4,2); sing.
Rent/Housing × % Hispanic or Latino	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	28	All levels present.
State × Hispanicity	8 × 2	7	7	All levels present.
State × Gender	8 × 2	7	7	All levels present.
State × % Black or African American	8 × 3	14	4	Coll. (4,1) & (4,2); sing. Keep (1,2), (4,1/2), (5,2), (6,2). Drop others due to zero, sing.
State × % Hispanic or Latino	8 × 3	14	12	Drop (3,1), (3,2); zero.
State × % Owner-Occupied	8 × 3	14	14	All levels present.
State × Rent/Housing	8 × 5	28	28	All levels present.
Three-Factor Effects		**169**	**149**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	7	Coll. (4,2,1) & (4,3,1); sing.
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	43	Coll. (2,1,2) & (2,1,3), repeat for all age levels and for MT & NM, coll. (6,4,2) & (6,4,3); sing./conv.
State × Age × Hispanicity	8 × 5 × 2	28	28	All levels present.
State × Age × Gender	8 × 5 × 2	28	28	All levels present.
State × Race (3 levels) × Hispanicity	8 × 3 × 2	14	8	Coll. (2,2,1) & (2,3,1), repeat for MT, NM, UT, & WY, drop (2,2/3,1); sing./conv.
State × Race (3 levels) × Gender	8 × 3 × 2	14	14	All levels present.
State × Hispanicity × Gender	8 × 2 × 2	7	7	All levels present.
Total		**422**	**384**	

Exhibit D8.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**39**	**39**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**214**	**196**	
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 or African American	3 × 3	4	2	Drop (2,1), (3,1); zero, sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	4	Drop (*,1); zero, sing.
Rent/Housing × % Hispanic or Latino	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	28	All levels present.
State × Hispanicity	8 × 2	7	7	All levels present.
State × Gender	8 × 2	7	7	All levels present.
State × % Black or African American	8 × 3	14	4	Keep (1,2), (4,2), (5,2), (6,2), drop others; zero, sing.
State × % Hispanic or Latino	8 × 3	14	12	Drop (3,1), (3,2); zero.
State × % Owner-Occupied	8 × 3	14	14	All levels present.
State × Rent/Housing	8 × 5	28	28	All levels present.
Three-Factor Effects		**169**	**140**	
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)	8 × 5 × 3	56	36	Coll. (2,1,2) & (2,1,3), repeat for all age groups, repeat for MT, NM, UT, & WY; sing., conv.
State × Age × Hispanicity	8 × 5 × 2	28	28	All levels present.
State × Age × Gender	8 × 5 × 2	28	28	All levels present.
State × Race (3 levels) × Hispanicity	8 × 3 × 2	14	6	Coll. (1,2,1) & (1,3,1), repeat for all states, drop (3,2/3,1); conv.
State × Race (3 levels) × Gender	8 × 3 × 2	14	14	All levels present.
State × Hispanicity × Gender	8 × 2 × 2	7	7	All levels present.
Total		**422**	**375**	

Exhibit D8.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**22**	
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.
Two-Factor Effects		**123**	**123**	
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	28	All levels present.
State × Hispanicity	8 × 2	7	7	All levels present.
State × Gender	8 × 2	7	7	All levels present.
Three-Factor Effects		**202**	**172**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	8	Coll. (5,2,1) & (5,3,1); zero. Drop (5,2/3,1); 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	2	All levels present.
State × Age × Race (3 levels)	8 × 6 × 3	70	49	Coll. (1,5,2) & (1,5,3); sing. Coll. (1,3,2) & (1,3,3), (1,4,2) & (1,4,3), (1,5,2) & (1,5,3), (4,5,2) & (4,5,3), (5,5,2) & (5,5,3), coll. (3,1,2) & (3,1,3), repeat for all age levels, repeat for all age levels for UT & WY; zero/sing./conv.
State × Age × Hispanicity	8 × 6 × 2	35	33	Drop (2,5,1); sing. Drop (3,5,1); conv.
State × Age × Gender	8 × 6 × 2	35	35	All levels present.
State × Race (3 levels) × Hispanicity	8 × 3 × 2	14	9	Coll. (2,2,1) & (2,3,1), repeat for MT, NM, UT, & WY; zero/sing./conv.
State × Race (3 levels) × Gender	8 × 3 × 2	14	14	All levels present.
State × Hispanicity × Gender	8 × 2 × 2	7	7	All levels present.
Total		**347**	**317**	

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Appendix D9: Model Group 9: Pacific

(Alaska, California, Hawaii, Oregon, and Washington)

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Table D.9a 2017 NSDUH Person Weight GEM Modeling Summary (Model Group 9: Pacific)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	2.20	3.87	0.54	1.33216	255	(1.33, 1.50)	(1.33, 1.50)
	1.18	1.51	0.22	1.35972	128	(1.00, 3.73)	(1.00, 3.73)
						(N/A, N/A)	(N/A, N/A)
res.sdu.ps	1.18	1.51	0.22	1.35968	197	(0.67, 1.10)	(0.67, 1.10)
	1.24	3.18	0.98	1.43065	193	(0.34, 5.00)	(0.36, 5.00)
						(0.98, 4.11)	(0.98, 4.11)
sel.per.ps	2.83	6.69	1.85	1.92111	287	(0.52, 2.90)	(0.53, 2.90)
	1.69	4.18	0.91	1.92334	261	(0.42, 2.95)	(0.43, 2.93)
						(0.90, 1.05)	(0.90, 1.04)
res.per.nr	1.91	5.50	1.12	1.96738	287	(1.00, 3.00)	(1.01, 2.99)
	1.43	3.24	0.54	2.15460	270	(1.00, 3.12)	(1.00, 3.10)
						(N/A, N/A)	(N/A, N/A)
res.per.ps	1.54	3.48	0.62	2.15460	227	(0.20, 1.10)	(0.20, 1.10)
	0.47	1.85	0.25	2.27593	214	(0.20, 3.87)	(0.20, 3.86)
						(N/A, N/A)	(N/A, N/A)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (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 nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table D.9b Distribution of Weight Adjustment Factors and Weight Products for the 2017 NSDUH Person Weight (Model Group 9: Pacific)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1–8[2]	**9**[3]	**1–9**[3]	**10**[4]	**1–10**[4]	**12**[5]	**1–12**[5]	**13**[5]	**1–13**[5]	**14**[6]	**1–14**[6]	**15**[6]	**1–15**[6]
Minimum	73	0.36	85	0.36	31	1.01	31	0.26	33	0.49	38	0.07	8
1%	83	1.02	96	0.68	90	1.01	110	0.57	103	1.00	130	0.20	127
5%	85	1.13	108	0.84	119	1.01	203	0.77	199	1.09	246	0.20	237
10%	94	1.18	133	0.90	146	1.01	357	0.84	355	1.16	458	0.56	400
25%	376	1.27	441	1.01	458	1.38	1,111	0.92	1,085	1.28	1,410	0.96	1,067
Median	863	1.39	1,262	1.08	1,311	2.71	2,429	1.00	2,478	1.46	3,321	1.04	3,244
75%	1,019	1.52	1,470	1.18	1,629	3.37	4,683	1.09	4,761	1.68	7,251	1.12	7,401
90%	1,133	1.65	1,623	1.32	1,909	5.95	8,518	1.21	8,372	1.90	12,869	1.41	13,071
95%	1,147	1.77	1,741	1.48	2,168	6.89	10,178	1.30	10,292	2.08	17,214	1.47	17,338
99%	1,381	2.48	2,364	2.07	3,060	10.28	14,045	1.59	14,969	2.47	26,093	1.61	27,660
Maximum	5,061	3.73	3,752	5.00	8,503	17.39	39,263	2.93	41,845	3.10	51,538	3.86	61,235
n	23,515	16,600	16,600	16,598	16,598	12,694	12,694	12,694	12,694	8,387	8,387	8,387	8,387
Max/Mean	7.00	-	3.66	-	7.44	-	11.31	-	11.94	-	9.72	-	11.55

Note 1: Weight component 11 and weight products 1–11 are excluded because weight 11 = 1 for all selected dwelling units.
Note 2: Weight component 16 and weight products 1–16 are excluded because weight 16 = 1 for all respondents.
Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Model Group 9 Overview

Dwelling Unit Nonresponse

For the one-factor effects, College Dorm had to be collapsed with Group Quarter. Out of 23 proposed variables, 22 were included in the model.

For the two-factor effects, variable dropping was present in the percent Owner-Occupied × percent Black or African American, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × Population Density, State × Group Quarter, State × percent Black or African American, State × percent Hispanic or Latino, and State × Rent/Housing interactions. Out of 104 proposed variables, 75 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 128 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 the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity and State × Race × Hispanicity interactions. Out of 106 proposed variables, 102 were included in the model.

In the final model, a total of 193 variables were included; see Exhibit D9.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Black or African American, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 145 proposed variables, 131 were included in the model.

For the three-factor effects, variable collapsing was present in the Age × Race × Hispanicity, State × Age × Race, State × Race × Hispanicity, and State × Race × Gender interactions. Out of 106 proposed variables, 94 were included in the model.

In the final model, a total of 261 variables were included; see Exhibit D9.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable dropping was present in the percent Owner-Occupied × percent Black or African American, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 145 proposed variables, 131 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age × Race × Hispanicity and State × Race × Hispanicity interactions. Out of 106 proposed variables, 103 were included in the model.

In the final model, a total of 270 variables were included; see Exhibit D9.4.

Respondent Person-Level Poststratification

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

All 81 proposed two-factor effects were included in the model.

For the three-factor effects, variable collapsing or dropping were present in the Age × Race × Hispanicity, State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 127 proposed variables, 114 were included in the model.

In the final model, a total of 214 variables were included; see Exhibit D9.5.

Exhibit D9.1 Covariates for 2017 NSDUH Person Weights (res.sdu.nr), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**23**	**22**	
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	1	Coll. (1) & (2); conv.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**104**	**75**	
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (3,1); zero. Drop (2,1); sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	4	Drop (1,1), (3,1), (4,1); zero. Drop (2,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Drop (4,1); sing.
State × Quarter	5 × 4	12	12	All levels present.
State × Population Density	5 × 4	12	6	Drop (1,1), (2,1), (2,3), (5,3); zero. Drop (2,2), (3,3); sing.
State × Group Quarter	5 × 3	8	0	Drop all levels; hier., conv.
State × % Black or African American	5 × 3	8	4	Drop (1,1), (2,1), (3,1); zero. Drop (5,1); sing.
State × % Hispanic or Latino	5 × 3	8	5	Drop (1,1), (2,1), (3,1); zero.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	15	Drop (1,4); conv.
Three-Factor Effects		**128**	**31**	
State × % Owner-Occupied × % Black or African American	5 × 3 × 3	16	3	Coll. (1,3,2) & (1,2,2); sing. Keep (5,3,2), (5,2,2). Drop all others; hier./zero/sing.
State × % Owner-Occupied × % Hispanic	5 × 3 × 3	16	5	Coll. (1,3,2) & (1,2,2), (2,3,2) & (2,2,2); conv. Coll. (3,3,2) & (3,2,2); sing. Keep (5,2,1), (5,2,2). Drop all others; hier./zero/sing.
State × % Owner-Occupied × Rent/Housing	5 × 3 × 5	32	14	Keep (1,2,1), (2,3,1), (2,2,4), (5,3,1), (5,3,2), (5,3,3), (5,2,1), (5,2,2), (5,2,3), (5,2,4). Coll. (2,3,2) & (2,2,2); conv. Coll. (2,3,3) & (2,2,3), (3,3,1) & (3,2,1), (3,3,2) & (3,2,2); sing. Drop all others; zero/sing.
State × Rent/Housing × % Black or African American	5 × 3 × 5	32	2	Keep (5,1,2), (5,2,2). Drop all others; hier./zero/sing./conv.
State × Rent/Housing × % Hispanic or Latino	5 × 3 × 5	32	7	Keep (1,2,2), (2,2,2), (3,1,2), (3,2,2), (5,1,2), (5,2,2), (5,3,2). Drop all others; hier./zero/sing.
Total		**255**	**128**	

Exhibit D9.2 Covariates for 2017 NSDUH Person Weights (res.sdu.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
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.
Two-Factor Effects		**73**	**73**	
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.
Three-Factor Effects		**106**	**102**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	6	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)	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	6	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); 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.
Total		**197**	**193**	

Exhibit D9.3 Covariates for 2017 NSDUH Person Weights (sel.per.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**145**	**131**	
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 or African American	3 × 3	4	2	Drop (3,1); zero. Coll. (2,1) & (2,2); sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	4	Drop (1,1), (3,1), (4,1); zero. Coll. (2,1) & (2,2); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
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 or African American	5 × 3	8	4	Drop (1,1), (2,1), (3,1); zero. Coll. (5,1) & (5,2); sing.
State × % Hispanic or Latino	5 × 3	8	5	Drop (1,1), (2,1), (3,1); zero.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	16	All levels present.
Three-Factor Effects		**106**	**94**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	5	Coll. (4,2,1) & (4,3,1); sing. Coll. (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	28	Coll. (1,4,2) & (1,4,3), repeat for all states; 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. (3,2,1) & (3,3,1); sing. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (5,2,1) & (5,3,1); conv.
State × Race (3 levels) × Gender	5 × 3 × 2	8	7	Coll. (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**287**	**261**	

Exhibit D9.4 Covariates for 2017 NSDUH Person Weights (res.per.nr), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
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 or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**145**	**131**	
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 or African American	3 × 3	4	2	Drop (3,1); zero. Drop (2,1); sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	4	Drop (1,1), (3,1), (4,1); zero. Drop (2,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Drop (4,1); sing.
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 or African American	5 × 3	8	4	Drop (1,1), (2,1), (3,1); zero. Drop (5,1); sing.
State × % Hispanic or Latino	5 × 3	8	5	Drop (1,1), (2,1), (3,1); zero.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	16	All levels present.
Three-Factor Effects		**106**	**103**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Drop (4,2,1); 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)	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	6	Drop (3,2,1); zero. Coll. (1,2,1) & (1,3,1); 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.
Total		**287**	**270**	

Exhibit D9.5 Covariates for 2017 NSDUH Person Weights (res.per.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**19**	**19**	
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.
Two-Factor Effects		**81**	**81**	
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	5 × 4	12	12	All levels present.
State × Age	5 × 6	20	20	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.
Three-Factor Effects		**127**	**114**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	7	Coll. (4,2,1) & (4,3,1); sing. Coll. (5,2,1) & (5,3,1); zero. Coll. (3,2,1) & (3,3,1); 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	2	All levels present.
State × Age × Race (3 levels)	5 × 6 × 3	40	36	Coll. (3,5,2) & (3,5,3); sing. Coll. (2,4,2) & (2,4,3), (2,5,2) & (2,5,3), (3,1,2) & (3,1,3); conv.
State × Age × Hispanicity	5 × 6 × 2	20	16	Drop (1,5,1), (3,5,1); sing. Drop (2,5,1), (5,5,1); conv.
State × Age × Gender	5 × 6 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	6	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); 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.
Total		**227**	**214**	

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Appendix E: Evaluation of Calibration Weights: Response Rates

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Table E.1 2017 NSDUH Weighted Response Rates: United States, District of Columbia, and the 50 States

	Dwelling Unit (DU)					Person Level		Interview Response Rate	
Domain	**Selected DUs**	**Eligible DUs**	**Completed DUs**	**Eligibility Rate**	**Screening Rate**	**Selected Persons**	**Respondents**	**WT1–12[1]**	**WT1–13[2]**
United States	217,756	184,266	138,061	84.49%	75.08%	97,667	68,032	67.12%	67.09%
Alabama	3,168	2,545	2,071	79.94%	81.43%	1,357	964	67.18%	67.42%
Alaska	3,433	2,665	2,015	73.27%	75.19%	1,429	978	67.16%	66.66%
Arizona	2,719	1,990	1,609	71.87%	80.35%	1,121	860	73.17%	73.39%
Arkansas	2,850	2,392	1,974	84.00%	82.44%	1,366	990	68.24%	68.67%
California	13,486	12,260	8,250	88.67%	67.30%	6,962	4,478	61.22%	61.22%
Colorado	2,707	2,310	1,837	84.91%	80.02%	1,441	1,003	68.04%	67.93%
Connecticut	3,209	2,775	2,021	86.87%	72.86%	1,483	987	66.95%	68.23%
Delaware	3,610	2,918	2,125	78.18%	72.25%	1,415	950	66.35%	66.13%
District of Columbia	7,118	6,086	3,727	86.68%	58.58%	1,304	975	73.42%	73.28%
Florida	11,910	9,835	7,339	81.32%	74.76%	4,810	3,399	67.65%	67.72%
Georgia	4,231	3,648	2,722	85.50%	74.48%	2,053	1,487	70.11%	70.62%
Hawaii	3,702	3,108	2,107	83.62%	67.43%	1,408	971	63.70%	63.96%
Idaho	2,372	1,958	1,615	76.94%	82.08%	1,291	980	74.77%	75.26%
Illinois	7,748	6,775	4,516	87.42%	66.77%	3,769	2,332	59.76%	59.47%
Indiana	3,004	2,533	1,933	84.22%	76.23%	1,378	942	67.56%	67.42%
Iowa	2,977	2,500	2,084	84.03%	83.33%	1,431	971	67.20%	66.61%
Kansas	2,471	2,190	1,762	88.68%	80.55%	1,365	992	70.97%	70.98%
Kentucky	2,748	2,290	1,810	83.29%	78.94%	1,431	976	65.55%	65.30%
Louisiana	2,870	2,366	1,948	82.12%	82.45%	1,371	966	69.04%	69.10%
Maine	3,630	2,804	2,332	75.87%	83.44%	1,395	985	68.91%	68.78%
Maryland	3,119	2,778	1,964	88.61%	70.69%	1,340	987	71.96%	72.72%
Massachusetts	3,844	3,424	2,340	87.22%	67.90%	1,668	986	57.34%	57.96%
Michigan	7,383	6,231	4,956	83.80%	79.55%	3,396	2,402	67.99%	67.77%
Minnesota	2,780	2,401	1,862	85.48%	77.68%	1,358	968	71.41%	71.79%
Mississippi	2,490	2,124	1,737	84.98%	81.66%	1,321	936	67.39%	66.71%

(continued)

Table E.1 2017 NSDUH Weighted Response Rates: United States, District of Columbia, and the 50 States (continued)

Domain	Dwelling Unit (DU)					Person Level		Interview Response Rate	
	Selected DUs	Eligible DUs	Completed DUs	Eligibility Rate	Screening Rate	Selected Persons	Respondents	WT1–12[1]	WT1–13[2]
Missouri	2,934	2,539	2,075	86.45%	82.03%	1,419	989	69.20%	69.69%
Montana	3,227	2,626	2,161	81.64%	82.64%	1,324	971	74.16%	74.03%
Nebraska	2,760	2,422	1,850	87.75%	76.49%	1,349	961	69.52%	69.84%
Nevada	2,562	2,343	1,559	91.59%	64.42%	1,394	958	65.28%	64.72%
New Hampshire	3,579	3,008	2,280	83.23%	74.74%	1,430	1,003	71.63%	70.88%
New Jersey	4,665	4,114	2,928	80.31%	70.08%	2,364	1,559	64.12%	63.72%
New Mexico	2,910	2,056	1,673	69.72%	81.46%	1,147	927	79.34%	78.80%
New York	14,111	12,155	7,364	85.89%	60.31%	5,216	3,352	62.07%	61.47%
North Carolina	4,388	3,769	2,968	85.99%	78.70%	2,075	1,491	70.14%	69.71%
North Dakota	3,289	2,585	2,210	78.53%	85.38%	1,397	981	70.11%	70.05%
Ohio	7,392	6,544	4,974	88.45%	76.04%	3,441	2,418	68.81%	68.87%
Oklahoma	2,897	2,469	1,899	85.07%	76.80%	1,392	938	66.95%	66.18%
Oregon	3,438	3,008	2,340	86.67%	77.80%	1,450	987	67.53%	67.98%
Pennsylvania	7,838	6,669	5,248	84.33%	78.66%	3,341	2,392	69.17%	69.02%
Rhode Island	3,564	3,087	2,202	86.47%	71.18%	1,457	995	67.51%	67.94%
South Carolina	2,736	2,221	1,747	80.62%	78.77%	1,311	977	70.48%	70.92%
South Dakota	2,609	2,179	1,798	82.44%	82.64%	1,339	977	71.94%	72.30%
Tennessee	2,915	2,408	1,933	82.53%	80.13%	1,341	983	71.44%	71.12%
Texas	7,590	6,355	5,156	83.64%	81.34%	4,474	3,335	72.14%	71.83%
Utah	1,586	1,392	1,167	87.63%	83.58%	1,251	946	74.30%	74.76%
Vermont	4,443	3,466	2,713	77.09%	77.81%	1,429	1,002	69.35%	68.95%
Virginia	4,377	3,738	2,967	85.28%	79.40%	2,149	1,521	66.95%	67.15%
Washington	2,856	2,474	1,888	86.22%	76.63%	1,445	973	64.98%	65.75%
West Virginia	3,417	2,745	2,202	80.18%	80.11%	1,444	964	65.31%	65.74%
Wisconsin	3,258	2,708	2,227	81.66%	82.42%	1,405	989	69.26%	69.07%
Wyoming	2,836	2,280	1,876	79.88%	82.44%	1,220	978	78.32%	77.98%

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

[2] Includes a selected person poststratification weight.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Appendix F: Evaluation of Calibration Weights: Dwelling Unit–Level Percentages of Extreme Weights and Outwinsors

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Table F.1 2017 NSDUH Dwelling Unit–Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States

Domain	*n*	Before nr[1] (WT1*...*WT8)			After nr[1] & Before ps[2] (WT1*...*WT9)			After ps[2] (WT1*...*WT10)		
		% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]
United States	138,061	3.47%	4.41%	0.57%	2.49%	3.31%	0.51%	1.49%	3.15%	0.86%
Alabama	2,071	5.75%	5.08%	0.30%	1.88%	3.10%	0.37%	1.98%	2.91%	0.83%
Alaska	2,015	2.48%	7.03%	3.69%	3.82%	7.19%	1.82%	1.19%	2.56%	0.50%
Arizona	1,609	2.49%	1.64%	0.29%	0.75%	1.06%	0.33%	1.18%	3.11%	0.73%
Arkansas	1,974	0.00%	0.00%	0.00%	4.31%	6.35%	1.34%	1.87%	2.15%	0.49%
California	8,250	0.53%	1.03%	0.24%	0.56%	1.00%	0.13%	1.32%	3.08%	0.97%
Colorado	1,837	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.82%	1.74%	0.30%
Connecticut	2,021	7.08%	6.83%	0.67%	2.08%	2.12%	0.24%	1.39%	3.63%	1.16%
Delaware	2,125	8.38%	11.26%	1.02%	5.08%	8.51%	0.53%	1.32%	3.01%	0.55%
District of Columbia	3,727	1.53%	4.45%	1.77%	5.12%	9.92%	2.78%	0.91%	2.44%	0.40%
Florida	7,339	1.91%	3.97%	1.12%	1.05%	1.37%	0.06%	0.63%	1.32%	0.23%
Georgia	2,722	0.00%	0.00%	0.00%	2.57%	5.28%	1.50%	0.77%	1.84%	0.36%
Hawaii	2,107	0.00%	0.00%	0.00%	0.28%	0.37%	0.04%	1.19%	3.18%	0.73%
Idaho	1,615	0.56%	1.87%	1.09%	3.03%	5.42%	1.03%	1.24%	3.02%	0.71%
Illinois	4,516	5.91%	6.43%	0.32%	4.81%	8.94%	2.17%	1.20%	2.38%	0.53%
Indiana	1,933	0.00%	0.00%	0.00%	3.78%	4.71%	0.57%	2.95%	6.58%	1.96%
Iowa	2,084	0.00%	0.00%	0.00%	0.34%	0.50%	0.03%	2.06%	3.12%	0.55%
Kansas	1,762	0.00%	0.00%	0.00%	1.70%	1.88%	0.03%	1.31%	1.95%	0.49%
Kentucky	1,810	0.00%	0.00%	0.00%	3.81%	6.59%	1.54%	1.22%	1.56%	0.23%
Louisiana	1,948	1.18%	0.97%	0.08%	3.70%	3.64%	0.06%	0.72%	1.64%	0.24%
Maine	2,332	0.00%	0.00%	0.00%	0.04%	0.08%	0.01%	1.33%	3.11%	0.58%
Maryland	1,964	19.70%	29.94%	4.89%	12.07%	18.71%	2.64%	0.25%	0.65%	0.09%
Massachusetts	2,340	7.52%	7.41%	0.59%	1.92%	2.88%	0.53%	2.09%	5.24%	1.38%
Michigan	4,956	7.51%	8.06%	0.66%	2.89%	4.04%	0.97%	3.07%	4.53%	1.02%
Minnesota	1,862	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.54%	1.18%	0.19%
Mississippi	1,737	0.00%	0.00%	0.00%	1.73%	2.22%	0.07%	0.75%	1.75%	0.33%

(continued)

Table F.1 2017 NSDUH Dwelling Unit–Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before nr[1] (WT1*...*WT8)			After nr[1] & Before ps[2] (WT1*...*WT9)			After ps[2] (WT1*...*WT10)		
		% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]
Missouri	2,075	3.86%	4.58%	0.09%	1.40%	1.89%	0.09%	0.87%	1.83%	0.31%
Montana	2,161	0.00%	0.00%	0.00%	1.16%	2.89%	0.49%	0.88%	1.67%	0.26%
Nebraska	1,850	0.00%	0.00%	0.00%	7.41%	9.74%	0.98%	2.86%	6.65%	1.60%
Nevada	1,559	1.54%	5.40%	1.39%	1.03%	3.11%	0.43%	0.96%	2.93%	0.63%
New Hampshire	2,280	0.00%	0.00%	0.00%	0.39%	0.93%	0.21%	0.66%	1.50%	0.27%
New Jersey	2,928	0.68%	3.68%	2.44%	4.58%	7.75%	1.26%	1.23%	4.04%	1.43%
New Mexico	1,673	0.42%	0.83%	0.29%	4.78%	7.02%	0.93%	1.79%	4.08%	0.81%
New York	7,364	0.00%	0.00%	0.00%	1.93%	2.92%	0.15%	1.91%	6.35%	2.63%
North Carolina	2,968	0.00%	0.00%	0.00%	1.28%	2.01%	0.15%	1.11%	2.18%	0.66%
North Dakota	2,210	14.25%	17.14%	0.96%	5.29%	6.40%	0.40%	1.40%	2.66%	0.33%
Ohio	4,974	4.89%	5.47%	0.06%	3.36%	4.57%	0.54%	1.65%	2.76%	0.59%
Oklahoma	1,899	0.00%	0.00%	0.00%	1.69%	1.95%	0.09%	1.63%	3.82%	1.07%
Oregon	2,340	0.00%	0.00%	0.00%	1.20%	2.62%	0.65%	0.73%	1.97%	0.61%
Pennsylvania	5,248	0.06%	0.11%	0.04%	0.97%	1.54%	0.15%	2.61%	4.23%	0.70%
Rhode Island	2,202	10.22%	8.86%	0.73%	4.68%	6.88%	0.73%	2.23%	6.06%	2.06%
South Carolina	1,747	0.23%	0.05%	0.02%	0.23%	0.10%	0.01%	1.72%	4.06%	1.12%
South Dakota	1,798	20.91%	26.43%	4.61%	14.96%	19.32%	3.13%	4.56%	8.04%	1.53%
Tennessee	1,933	0.00%	0.00%	0.00%	1.76%	3.59%	0.53%	0.98%	2.07%	0.55%
Texas	5,156	8.73%	9.10%	0.80%	2.31%	3.09%	0.35%	1.22%	2.90%	0.96%
Utah	1,167	0.00%	0.00%	0.00%	0.43%	1.16%	0.41%	2.14%	4.19%	1.03%
Vermont	2,713	0.00%	0.00%	0.00%	1.58%	1.09%	0.33%	0.74%	2.11%	0.30%
Virginia	2,967	15.03%	17.66%	1.89%	0.88%	0.94%	0.01%	0.94%	1.53%	0.38%
Washington	1,888	14.41%	18.28%	1.91%	2.07%	2.94%	0.29%	1.69%	4.43%	1.34%
West Virginia	2,202	0.00%	0.00%	0.00%	0.05%	0.19%	0.12%	0.59%	1.01%	0.10%
Wisconsin	2,227	9.74%	11.86%	1.29%	0.27%	1.00%	0.51%	3.64%	6.36%	1.10%
Wyoming	1,876	5.22%	4.35%	0.25%	2.77%	3.92%	0.76%	1.92%	2.53%	0.60%

[1] nr = nonresponse adjustment.

[2] ps = poststratification adjustment.

[3] Weighted extreme value percentage = $100*\sum_k w_{ek}/\sum_k w_k$, where w_{ek} denotes the weight for extreme weights and w_k denotes the weight for both extreme weights and nonextreme weights.

[4] 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.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

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

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Table G.1 2017 NSDUH Selected Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States

Domain	*n*	Before sel.per.ps[1] (WT1*...*WT12)			After sel.per.ps[1] (WT1*...*WT13)		
		% Unweighted	% Weighted[2]	% Outwinsor[3]	% Unweighted	% Weighted[2]	% Outwinsor[3]
United States	97,667	2.81%	6.40%	1.63%	1.74%	4.17%	0.86%
Alabama	1,357	3.17%	6.06%	1.41%	1.18%	2.18%	0.31%
Alaska	1,429	2.24%	4.64%	1.02%	2.03%	3.75%	0.53%
Arizona	1,121	3.66%	8.43%	1.85%	2.14%	4.59%	0.64%
Arkansas	1,366	1.02%	2.47%	0.39%	1.02%	2.51%	0.46%
California	6,962	2.63%	6.96%	1.89%	1.90%	5.20%	1.06%
Colorado	1,441	4.44%	10.20%	2.34%	4.30%	12.09%	2.36%
Connecticut	1,483	2.76%	6.33%	1.83%	2.70%	6.06%	1.76%
Delaware	1,415	1.48%	4.17%	1.15%	0.99%	3.05%	0.17%
District of Columbia	1,304	1.38%	4.01%	0.81%	1.07%	3.01%	0.40%
Florida	4,810	2.10%	3.85%	0.71%	1.27%	3.07%	0.65%
Georgia	2,053	2.34%	5.25%	1.12%	1.41%	4.97%	1.19%
Hawaii	1,408	3.20%	8.58%	2.45%	2.06%	4.11%	0.45%
Idaho	1,291	2.40%	4.49%	0.97%	1.24%	2.59%	0.26%
Illinois	3,769	3.56%	8.52%	2.09%	2.23%	4.85%	0.60%
Indiana	1,378	4.43%	8.69%	2.35%	3.05%	5.31%	1.14%
Iowa	1,431	3.56%	6.04%	1.42%	2.24%	3.81%	0.85%
Kansas	1,365	2.12%	3.84%	1.05%	1.10%	2.61%	0.60%
Kentucky	1,431	2.87%	5.93%	0.80%	1.26%	4.31%	0.74%
Louisiana	1,371	2.26%	5.69%	1.42%	1.17%	2.96%	0.38%
Maine	1,395	4.23%	6.67%	1.59%	3.37%	3.78%	1.01%
Maryland	1,340	0.75%	2.54%	0.67%	0.97%	2.45%	0.47%
Massachusetts	1,668	3.30%	7.43%	2.05%	1.56%	4.92%	0.97%
Michigan	3,396	3.47%	7.35%	1.68%	1.41%	3.42%	0.58%
Minnesota	1,358	1.84%	3.07%	0.52%	2.80%	6.11%	1.13%
Mississippi	1,321	2.27%	5.88%	1.52%	1.14%	2.85%	0.80%

(continued)

Table G.1 2017 NSDUH Selected Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before sel.per.ps[1] (WT1*...*WT12)			After sel.per.ps[1] (WT1*...*WT13)		
		% Unweighted	% Weighted[2]	% Outwinsor[3]	% Unweighted	% Weighted[2]	% Outwinsor[3]
Missouri	1,419	2.75%	5.40%	1.35%	1.69%	2.98%	0.44%
Montana	1,324	3.02%	5.09%	0.89%	2.11%	5.38%	0.65%
Nebraska	1,349	4.67%	10.77%	3.55%	2.30%	5.26%	1.34%
Nevada	1,394	4.02%	9.81%	1.88%	2.58%	8.22%	1.67%
New Hampshire	1,430	2.24%	3.99%	0.95%	0.77%	0.99%	0.16%
New Jersey	2,364	2.07%	5.56%	1.70%	1.18%	3.78%	1.17%
New Mexico	1,147	3.40%	6.54%	1.23%	1.57%	4.07%	0.60%
New York	5,216	3.03%	9.25%	3.09%	1.63%	5.39%	1.60%
North Carolina	2,075	2.31%	4.72%	1.46%	0.77%	1.41%	0.38%
North Dakota	1,397	1.93%	3.53%	0.57%	1.50%	2.45%	0.60%
Ohio	3,441	3.34%	6.69%	1.55%	1.71%	2.75%	0.41%
Oklahoma	1,392	3.59%	10.49%	2.74%	0.93%	3.03%	0.50%
Oregon	1,450	2.14%	4.51%	1.05%	1.03%	1.94%	0.43%
Pennsylvania	3,341	4.28%	8.58%	2.39%	2.66%	5.78%	1.01%
Rhode Island	1,457	2.88%	6.54%	2.24%	3.43%	9.26%	2.74%
South Carolina	1,311	3.59%	7.74%	2.39%	1.91%	4.06%	1.05%
South Dakota	1,339	5.53%	12.30%	3.37%	2.76%	5.65%	1.38%
Tennessee	1,341	2.01%	5.47%	1.46%	1.79%	4.81%	0.81%
Texas	4,474	2.57%	5.40%	1.13%	1.63%	3.29%	0.67%
Utah	1,251	2.08%	6.87%	1.48%	1.92%	5.73%	1.52%
Vermont	1,429	1.89%	4.10%	0.89%	1.40%	2.43%	0.25%
Virginia	2,149	1.40%	2.86%	0.59%	0.74%	1.51%	0.26%
Washington	1,445	4.08%	8.48%	2.29%	1.80%	4.32%	1.06%
West Virginia	1,444	1.18%	2.17%	0.34%	1.52%	2.85%	0.39%
Wisconsin	1,405	2.70%	5.22%	1.23%	1.07%	2.07%	0.27%
Wyoming	1,220	2.13%	4.09%	0.79%	1.72%	4.94%	0.86%

[1] Before sel.per.ps (WT1*...*WT12) and after sel.per.ps (WT1*...*WT13) used demographic variables from screener data for all selected persons; ps = poststratification adjustment.

[2] Weighted extreme value percentage = $100*\sum_k w_{ek}/\sum_k w_k$, where w_{ek} denotes the weight for extreme weights and w_k denotes the weight for both extreme weights and nonextreme weights.

[3] 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.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table G.2 2017 NSDUH Respondent Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States

Domain	*n*	Before res.per.nr[1] (WT1*…*WT13)			After res.per.nr[1] (WT1*…*WT14)			Before res.per.ps[2] (WT1*…*WT14)			After res.per.ps[2] (WT1*…*WT15)		
		% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]
United States	68,032	1.78%	4.39%	0.91%	1.61%	4.53%	0.81%	1.65%	4.68%	0.88%	0.92%	3.13%	0.67%
Alabama	964	0.93%	2.19%	0.24%	0.31%	0.44%	0.20%	0.41%	0.77%	0.24%	1.14%	3.18%	0.96%
Alaska	978	2.15%	4.45%	0.67%	2.56%	6.72%	0.95%	2.45%	6.46%	0.90%	0.92%	2.79%	0.62%
Arizona	860	2.67%	6.08%	0.76%	2.21%	5.16%	0.92%	2.44%	5.92%	1.16%	0.23%	0.40%	0.02%
Arkansas	990	0.81%	1.89%	0.24%	1.21%	2.65%	0.50%	1.31%	3.24%	0.77%	0.20%	1.03%	0.29%
California	4,478	2.08%	5.68%	1.18%	1.38%	3.19%	0.55%	1.61%	3.53%	0.63%	0.51%	2.18%	0.30%
Colorado	1,003	3.99%	11.74%	2.15%	3.29%	12.00%	1.86%	3.29%	12.00%	1.96%	1.99%	6.98%	1.19%
Connecticut	987	2.94%	7.49%	2.36%	2.43%	7.22%	1.70%	2.33%	7.09%	1.84%	1.52%	6.54%	1.39%
Delaware	950	1.26%	5.19%	0.22%	1.26%	2.68%	0.40%	1.26%	2.68%	0.42%	1.26%	2.16%	0.33%
District of Columbia	975	1.13%	2.68%	0.28%	0.62%	2.55%	0.69%	0.72%	2.67%	0.74%	1.74%	7.47%	1.57%
Florida	3,399	1.38%	3.57%	0.80%	1.06%	2.49%	0.36%	1.03%	2.27%	0.35%	0.18%	0.24%	0.02%
Georgia	1,487	1.41%	4.79%	1.12%	1.14%	3.84%	0.69%	1.34%	4.32%	0.79%	1.41%	4.93%	1.36%
Hawaii	971	1.24%	2.25%	0.28%	1.75%	5.53%	0.71%	1.65%	5.36%	0.71%	0.41%	0.75%	0.17%
Idaho	980	1.53%	3.28%	0.35%	1.43%	4.15%	0.39%	1.22%	3.38%	0.36%	0.41%	2.06%	0.09%
Illinois	2,332	1.93%	4.10%	0.44%	1.93%	5.76%	1.17%	2.02%	6.20%	1.32%	1.29%	5.40%	1.38%
Indiana	942	3.18%	5.06%	1.23%	2.55%	5.52%	0.91%	2.55%	5.52%	0.93%	1.91%	4.16%	0.73%
Iowa	971	2.16%	3.61%	0.79%	2.99%	5.95%	0.95%	2.99%	5.95%	0.96%	1.03%	2.26%	0.49%
Kansas	992	0.81%	2.43%	0.65%	1.31%	4.73%	0.75%	1.61%	5.59%	0.87%	0.50%	2.40%	0.54%
Kentucky	976	1.13%	4.23%	0.70%	1.33%	3.12%	0.63%	1.33%	3.12%	0.59%	0.31%	0.67%	0.12%
Louisiana	966	1.35%	3.23%	0.46%	1.04%	1.46%	0.23%	0.93%	1.31%	0.22%	0.52%	1.35%	0.33%
Maine	985	3.15%	3.87%	0.81%	3.25%	9.67%	1.54%	3.05%	8.85%	1.30%	0.51%	1.20%	0.06%
Maryland	987	1.11%	3.02%	0.60%	1.32%	5.04%	0.72%	1.42%	5.40%	0.83%	1.01%	4.86%	1.13%
Massachusetts	986	1.93%	4.83%	1.15%	3.14%	8.62%	2.00%	3.04%	8.53%	2.28%	2.23%	7.66%	0.89%
Michigan	2,402	1.21%	2.93%	0.39%	1.08%	3.07%	0.42%	1.17%	3.24%	0.46%	0.75%	2.17%	0.50%
Minnesota	968	2.07%	4.90%	1.07%	2.07%	5.72%	0.98%	2.27%	6.05%	1.01%	1.24%	3.90%	0.98%
Mississippi	936	0.96%	2.44%	0.46%	1.71%	3.99%	0.44%	1.60%	3.88%	0.49%	1.07%	3.49%	0.80%

(continued)

Table G.2 2017 NSDUH Respondent Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before res.per.nr[1] (WT1*…*WT13)			After res.per.nr[1] (WT1*…*WT14)			Before res.per.ps[2] (WT1*…*WT14)			After res.per.ps[2] (WT1*…*WT15)		
		% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]
Missouri	989	1.52%	2.87%	0.45%	0.91%	2.57%	0.22%	0.91%	2.57%	0.26%	1.01%	2.84%	0.35%
Montana	971	2.68%	6.49%	0.85%	1.03%	2.07%	0.26%	1.13%	2.27%	0.31%	0.21%	1.43%	0.31%
Nebraska	961	2.81%	6.41%	1.75%	2.19%	5.10%	0.80%	1.98%	4.77%	0.68%	1.35%	3.84%	0.90%
Nevada	958	2.61%	7.91%	1.59%	1.98%	5.30%	0.84%	2.09%	5.44%	0.87%	0.73%	2.26%	0.21%
New Hampshire	1,003	1.00%	1.16%	0.19%	1.20%	3.51%	0.55%	1.10%	3.41%	0.49%	0.50%	2.34%	0.54%
New Jersey	1,559	1.54%	5.69%	1.71%	1.15%	4.86%	0.62%	1.35%	5.73%	0.61%	0.96%	5.29%	1.19%
New Mexico	927	1.73%	5.09%	0.74%	0.97%	2.66%	0.41%	0.97%	2.66%	0.39%	0.43%	3.21%	0.77%
New York	3,352	2.06%	6.76%	1.81%	2.71%	11.07%	2.06%	2.71%	11.22%	2.18%	1.55%	7.46%	2.07%
North Carolina	1,491	0.87%	1.76%	0.49%	0.87%	2.15%	0.43%	0.80%	1.97%	0.41%	0.67%	2.23%	0.36%
North Dakota	981	1.53%	1.89%	0.66%	0.82%	2.21%	0.43%	0.82%	2.21%	0.44%	0.71%	1.12%	0.24%
Ohio	2,418	1.61%	2.72%	0.43%	1.74%	4.04%	0.68%	1.74%	4.09%	0.80%	1.53%	4.06%	0.70%
Oklahoma	938	0.64%	1.89%	0.43%	1.17%	3.24%	0.28%	1.17%	3.24%	0.28%	0.21%	2.05%	0.90%
Oregon	987	1.42%	3.07%	0.62%	0.61%	1.11%	0.14%	0.71%	1.25%	0.16%	0.71%	1.15%	0.19%
Pennsylvania	2,392	2.76%	5.81%	0.94%	1.59%	4.26%	0.60%	1.63%	4.37%	0.66%	1.05%	3.22%	0.66%
Rhode Island	995	3.52%	10.08%	3.14%	3.02%	8.54%	1.63%	3.02%	8.54%	1.63%	1.81%	7.27%	2.32%
South Carolina	977	1.54%	3.64%	0.87%	2.35%	8.10%	1.75%	2.46%	8.26%	1.78%	0.82%	3.09%	1.13%
South Dakota	977	3.17%	7.49%	1.72%	1.94%	4.73%	0.84%	1.94%	4.73%	0.83%	1.43%	3.63%	0.92%
Tennessee	983	1.32%	3.57%	0.42%	0.71%	1.79%	0.29%	0.71%	1.83%	0.34%	0.31%	1.04%	0.41%
Texas	3,335	1.65%	3.50%	0.79%	1.50%	4.00%	0.90%	1.59%	4.13%	0.98%	0.66%	1.58%	0.38%
Utah	946	1.80%	5.94%	1.39%	1.59%	4.67%	1.11%	1.80%	5.09%	1.10%	1.06%	2.94%	0.45%
Vermont	1,002	1.70%	2.75%	0.31%	3.39%	6.65%	1.53%	3.39%	6.65%	1.46%	0.60%	1.31%	0.28%
Virginia	1,521	0.72%	1.57%	0.30%	1.51%	4.42%	1.00%	1.45%	4.34%	0.97%	1.25%	4.58%	0.65%
Washington	973	2.47%	6.06%	1.37%	1.44%	3.97%	0.57%	1.54%	4.36%	0.69%	0.72%	1.40%	0.05%
West Virginia	964	1.66%	3.69%	0.37%	0.93%	2.21%	0.41%	0.93%	2.21%	0.44%	0.83%	2.31%	0.89%
Wisconsin	989	0.91%	1.99%	0.32%	0.61%	2.93%	0.83%	0.61%	2.93%	0.83%	0.40%	1.51%	0.38%
Wyoming	978	1.64%	4.46%	0.84%	0.92%	4.56%	1.17%	1.02%	4.76%	1.27%	1.74%	5.64%	0.78%

[1] Before res.per.nr (WT1*...*WT13) and after res.per.nr (WT1*...*WT14) used demographic variables from screener data for all respondents; nr = nonresponse adjustment.

[2] Before res.per.ps (WT1*...*WT14) and after res.per.ps (WT1*...*WT15) used demographic variables from questionnaire data for all respondents; ps = poststratification adjustment.

[3] 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 nonoutliers.

[4] 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.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Appendix H: Evaluation of Calibration Weights: Slippage Rates

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Table H.1 2017 NSDUH Slippage Rates: UNITED STATES

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		68,032	272,103,335	272,103,335	272,103,335	0.00	-0.00
Quarter	**Quarter 1**	15,633	67,801,496	67,801,496	67,801,496	0.00	0.00
	Quarter 2	17,683	67,940,642	67,940,642	67,940,642	0.00	0.00
	Quarter 3	17,185	68,101,475	68,101,475	68,101,475	0.00	-0.00
	Quarter 4	17,531	68,259,723	68,259,723	68,259,723	0.00	0.00
Age Group	**12–17**	17,026	25,021,060	24,942,794	24,942,794	0.31	0.00
	18–25	16,469	34,135,661	34,306,312	34,306,312	-0.50	0.00
	26–34	10,416	39,588,433	39,559,271	39,559,271	0.07	0.00
	35–49	13,639	60,699,887	60,751,008	60,751,008	-0.08	0.00
	50–64	6,024	66,147,765	62,918,402	62,918,402	5.13	-0.00
	65+	4,458	46,510,529	49,625,549	49,625,549	-6.28	-0.00
Race	**White**	49,208	199,961,994	211,259,969	211,259,970	-5.35	-0.00
	Black or African American	9,000	35,810,207	34,783,981	34,783,981	2.95	-0.00
	American Indian/Alaska Native	2,871	9,709,345	3,256,277	3,256,277	198.17	0.00
	Asian	3,790	18,609,251	16,945,275	16,945,275	9.82	0.00
	Two or More Races	3,163	8,012,539	5,857,833	5,857,833	36.78	0.00
Hispanicity	**Hispanic or Latino**	12,077	46,573,947	45,725,969	45,725,969	1.85	-0.00
	Non-Hispanic or Latino	55,955	225,529,388	226,377,366	226,377,366	-0.37	0.00
Gender	**Male**	32,554	131,982,872	131,991,917	131,991,917	-0.01	-0.00
	Female	35,478	140,120,463	140,111,418	140,111,418	0.01	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.2 2017 NSDUH Slippage Rates: ALABAMA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		964	4,076,562	4,076,562	4,076,562	-0.00	0.00
Quarter	**Quarter 1**	227	1,017,630	1,017,630	1,017,630	-0.00	0.00
	Quarter 2	231	1,018,453	1,018,453	1,018,453	0.00	0.00
	Quarter 3	259	1,019,650	1,019,650	1,019,650	0.00	0.00
	Quarter 4	247	1,020,829	1,020,829	1,020,829	0.00	0.00
Age Group	**12–17**	243	373,613	374,631	374,631	-0.27	0.00
	18–25	241	514,275	513,209	513,209	0.21	0.00
	26–34	157	548,428	554,119	554,119	-1.03	0.00
	35–49	177	904,575	885,437	885,437	2.16	0.00
	50–64	92	1,072,951	964,988	964,988	11.19	0.00
	65+	54	662,719	784,178	784,178	-15.49	-0.00
Race	**White**	639	2,809,207	2,868,172	2,868,172	-2.06	0.00
	Black or African American	266	1,046,700	1,062,248	1,062,248	-1.46	-0.00
	American Indian/Alaska Native	15	50,600	15,168	29,110	73.82	-47.89
	Asian	15	72,264	56,276	64,262	12.45	-12.43
	Two or More Races	29	97,791	74,697	52,769	85.32	41.55
Hispanicity	**Hispanic or Latino**	53	142,843	147,837	147,837	-3.38	0.00
	Non-Hispanic or Latino	911	3,933,718	3,928,725	3,928,725	0.13	0.00
Gender	**Male**	442	1,938,601	1,938,602	1,938,602	-0.00	0.00
	Female	522	2,137,960	2,137,960	2,137,960	0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.3 2017 NSDUH Slippage Rates: ALASKA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		978	585,516	585,516	585,516	0.00	0.00
Quarter	**Quarter 1**	251	146,438	146,438	146,438	0.00	-0.00
	Quarter 2	261	146,401	146,401	146,401	0.00	-0.00
	Quarter 3	210	146,354	146,354	146,354	0.00	-0.00
	Quarter 4	256	146,323	146,324	146,324	-0.00	0.00
Age Group	**12–17**	290	57,622	58,282	58,282	-1.13	-0.00
	18–25	212	72,878	74,239	74,239	-1.83	0.00
	26–34	161	100,448	98,216	98,216	2.27	-0.00
	35–49	171	128,738	131,975	131,975	-2.45	0.00
	50–64	96	149,440	141,154	141,154	5.87	-0.00
	65+	48	76,390	81,650	81,650	-6.44	0.00
Race	**White**	612	395,091	397,117	397,117	-0.51	0.00
	Black or African American	39	20,556	19,678	19,678	4.46	0.00
	American Indian/Alaska Native	187	85,536	85,182	85,182	0.42	0.00
	Asian	58	45,875	47,810	47,810	-4.05	-0.00
	Two or More Races	82	38,459	35,729	35,729	7.64	0.00
Hispanicity	**Hispanic or Latino**	64	33,951	36,765	36,765	-7.65	0.00
	Non-Hispanic or Latino	914	551,565	548,751	548,751	0.51	0.00
Gender	**Male**	451	298,701	298,644	298,644	0.02	-0.00
	Female	527	286,815	286,872	286,872	-0.02	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.4 2017 NSDUH Slippage Rates: ARIZONA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		860	5,833,518	5,833,518	5,833,518	-0.00	-0.00
Quarter	**Quarter 1**	325	1,448,145	1,448,145	1,448,145	0.00	-0.00
	Quarter 2	185	1,454,616	1,454,616	1,454,616	-0.00	-0.00
	Quarter 3	165	1,461,774	1,461,774	1,461,774	0.00	-0.00
	Quarter 4	185	1,468,983	1,468,983	1,468,983	0.00	-0.00
Age Group	**12–17**	245	552,803	552,984	552,984	-0.03	0.00
	18–25	209	764,105	747,345	747,345	2.24	0.00
	26–34	128	836,568	825,945	825,945	1.29	-0.00
	35–49	165	1,253,411	1,259,458	1,259,458	-0.48	0.00
	50–64	68	1,411,111	1,257,173	1,257,174	12.24	-0.00
	65+	45	1,015,521	1,190,612	1,190,612	-14.71	-0.00
Race	**White**	626	4,634,558	4,915,911	4,915,911	-5.72	-0.00
	Black or African American	43	310,007	273,055	273,055	13.53	-0.00
	American Indian/Alaska Native	122	503,617	285,026	285,026	76.69	0.00
	Asian	45	275,278	226,434	226,434	21.57	0.00
	Two or More Races	24	110,058	133,093	133,093	-17.31	0.00
Hispanicity	**Hispanic or Latino**	343	1,724,718	1,687,339	1,687,339	2.22	0.00
	Non-Hispanic or Latino	517	4,108,801	4,146,179	4,146,179	-0.90	-0.00
Gender	**Male**	404	2,868,919	2,852,193	2,852,193	0.59	-0.00
	Female	456	2,964,599	2,981,326	2,981,326	-0.56	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.5 2017 NSDUH Slippage Rates: ARKANSAS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		990	2,482,628	2,482,628	2,482,628	0.00	0.00
Quarter	**Quarter 1**	224	619,127	619,127	619,127	-0.00	0.00
	Quarter 2	282	620,019	620,019	620,019	0.00	-0.00
	Quarter 3	270	621,173	621,173	621,173	-0.00	0.00
	Quarter 4	214	622,309	622,309	622,309	0.00	0.00
Age Group	**12–17**	265	236,608	236,608	236,608	0.00	0.00
	18–25	241	315,803	315,393	315,393	0.13	0.00
	26–34	145	345,019	342,480	342,480	0.74	0.00
	35–49	185	544,862	538,611	538,611	1.16	0.00
	50–64	97	650,752	566,162	566,162	14.94	0.00
	65+	57	389,585	483,375	483,375	-19.40	-0.00
Race	**White**	711	1,942,506	2,000,668	2,000,668	-2.91	0.00
	Black or African American	192	372,930	368,614	368,614	1.17	0.00
	American Indian/Alaska Native	28	64,626	24,428	24,428	164.56	0.00
	Asian	16	52,686	48,116	48,116	9.50	0.00
	Two or More Races	43	49,880	40,802	40,802	22.25	-0.00
Hispanicity	**Hispanic or Latino**	86	173,062	165,862	165,862	4.34	-0.00
	Non-Hispanic or Latino	904	2,309,567	2,316,767	2,316,767	-0.31	0.00
Gender	**Male**	471	1,213,003	1,199,030	1,199,030	1.17	-0.00
	Female	519	1,269,625	1,283,598	1,283,598	-1.09	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.6 2017 NSDUH Slippage Rates: CALIFORNIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		4,478	33,008,642	33,008,642	33,008,642	0.00	0.00
Quarter	**Quarter 1**	1,062	8,227,480	8,227,480	8,227,480	0.00	0.00
	Quarter 2	1,116	8,242,775	8,242,775	8,242,775	0.00	0.00
	Quarter 3	1,044	8,260,390	8,260,390	8,260,390	0.00	0.00
	Quarter 4	1,256	8,277,997	8,277,997	8,277,997	0.00	0.00
Age Group	**12–17**	1,141	3,088,359	3,033,709	3,033,709	1.80	0.00
	18–25	1,016	4,240,901	4,288,284	4,288,284	-1.10	0.00
	26–34	664	5,296,445	5,287,843	5,287,843	0.16	0.00
	35–49	932	7,665,681	7,712,951	7,712,951	-0.61	0.00
	50–64	438	7,756,828	7,267,359	7,267,359	6.74	0.00
	65+	287	4,960,428	5,418,497	5,418,497	-8.45	0.00
Race	**White**	2,816	21,090,336	23,921,246	23,921,246	-11.83	-0.00
	Black or African American	297	2,146,333	2,073,915	2,073,915	3.49	-0.00
	American Indian/Alaska Native	454	2,726,376	536,934	536,934	407.77	0.00
	Asian	614	5,649,423	5,400,547	5,400,547	4.61	-0.00
	Two or More Races	297	1,396,175	1,076,001	1,076,001	29.76	0.00
Hispanicity	**Hispanic or Latino**	2,062	12,246,728	12,173,930	12,173,930	0.60	0.00
	Non-Hispanic or Latino	2,416	20,761,915	20,834,713	20,834,713	-0.35	0.00
Gender	**Male**	2,174	16,114,055	16,174,972	16,174,972	-0.38	0.00
	Female	2,304	16,894,588	16,833,671	16,833,671	0.36	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.7 2017 NSDUH Slippage Rates: COLORADO

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,003	4,681,963	4,681,963	4,681,963	0.00	0.00
Quarter	**Quarter 1**	246	1,163,244	1,163,244	1,163,244	-0.00	0.00
	Quarter 2	248	1,167,861	1,167,861	1,167,861	0.00	0.00
	Quarter 3	225	1,172,903	1,172,903	1,172,903	0.00	0.00
	Quarter 4	284	1,177,955	1,177,955	1,177,955	0.00	0.00
Age Group	**12–17**	245	424,827	428,263	428,263	-0.80	0.00
	18–25	227	586,875	584,837	584,837	0.35	0.00
	26–34	153	762,497	758,421	758,421	0.54	-0.00
	35–49	215	1,090,672	1,103,759	1,103,759	-1.19	0.00
	50–64	84	996,169	1,048,379	1,048,379	-4.98	-0.00
	65+	79	820,922	758,304	758,304	8.26	0.00
Race	**White**	819	3,992,251	4,128,666	4,128,666	-3.30	0.00
	Black or African American	44	177,548	196,021	196,021	-9.42	0.00
	American Indian/Alaska Native	35	149,982	70,577	70,577	112.51	-0.00
	Asian	37	197,468	168,382	168,382	17.27	-0.00
	Two or More Races	68	164,715	118,317	118,317	39.21	-0.00
Hispanicity	**Hispanic or Latino**	219	979,181	925,757	925,757	5.77	0.00
	Non-Hispanic or Latino	784	3,702,782	3,756,206	3,756,206	-1.42	0.00
Gender	**Male**	499	2,328,560	2,324,646	2,324,646	0.17	0.00
	Female	504	2,353,403	2,357,317	2,357,317	-0.17	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.8 2017 NSDUH Slippage Rates: CONNECTICUT

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		987	3,069,866	3,069,866	3,069,867	-0.00	-0.00
Quarter	**Quarter 1**	228	766,946	766,946	766,946	-0.00	0.00
	Quarter 2	256	767,184	767,184	767,184	-0.00	0.00
	Quarter 3	243	767,669	767,669	767,669	-0.00	-0.00
	Quarter 4	260	768,068	768,068	768,068	0.00	0.00
Age Group	**12–17**	231	272,987	274,244	274,244	-0.46	-0.00
	18–25	262	401,396	389,556	389,556	3.04	0.00
	26–34	151	401,023	390,829	390,829	2.61	0.00
	35–49	205	642,349	658,215	658,215	-2.41	0.00
	50–64	70	709,237	774,092	774,092	-8.38	-0.00
	65+	68	642,874	582,930	582,930	10.28	-0.00
Race	**White**	723	2,396,475	2,498,757	2,498,757	-4.09	0.00
	Black or African American	132	361,576	348,011	348,011	3.90	-0.00
	American Indian/Alaska Native	30	78,944	15,626	15,626	405.22	0.00
	Asian	66	182,522	150,527	150,527	21.26	0.00
	Two or More Races	36	50,349	56,945	56,945	-11.58	0.00
Hispanicity	**Hispanic or Latino**	211	460,625	451,755	451,755	1.96	0.00
	Non-Hispanic or Latino	776	2,609,242	2,618,111	2,618,112	-0.34	-0.00
Gender	**Male**	492	1,480,368	1,481,984	1,481,984	-0.11	0.00
	Female	495	1,589,498	1,587,883	1,587,883	0.10	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.9 2017 NSDUH Slippage Rates: DELAWARE

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		950	812,528	812,528	812,528	0.00	0.00
Quarter	**Quarter 1**	206	202,236	202,236	202,236	0.00	0.00
	Quarter 2	229	202,793	202,793	202,793	0.00	0.00
	Quarter 3	292	203,429	203,429	203,429	0.00	0.00
	Quarter 4	223	204,070	204,070	204,070	0.00	0.00
Age Group	**12–17**	234	69,530	69,530	69,530	0.00	0.00
	18–25	208	94,868	95,131	95,131	-0.28	0.00
	26–34	159	111,779	112,762	112,762	-0.87	0.00
	35–49	180	166,205	167,079	167,079	-0.52	0.00
	50–64	87	192,025	197,551	197,551	-2.80	0.00
	65+	82	178,121	170,477	170,477	4.48	0.00
Race	**White**	571	548,500	578,836	578,836	-5.24	0.00
	Black or African American	205	174,314	177,684	177,684	-1.90	0.00
	American Indian/Alaska Native	35	17,750	5,204	5,132	245.85	1.39
	Asian	93	43,501	34,398	34,470	26.20	-0.21
	Two or More Races	46	28,463	16,406	16,406	73.49	0.00
Hispanicity	**Hispanic or Latino**	108	70,053	66,979	66,979	4.59	0.00
	Non-Hispanic or Latino	842	742,475	745,549	745,549	-0.41	0.00
Gender	**Male**	440	384,946	386,764	386,764	-0.47	0.00
	Female	510	427,582	425,765	425,765	0.43	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.10 2017 NSDUH Slippage Rates: DISTRICT OF COLUMBIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		975	590,677	590,677	590,677	0.00	0.00
Quarter	**Quarter 1**	214	147,031	147,031	147,031	0.00	0.00
	Quarter 2	237	147,428	147,428	147,428	-0.00	0.00
	Quarter 3	259	147,879	147,879	147,879	0.00	0.00
	Quarter 4	265	148,340	148,340	148,340	0.00	0.00
Age Group	**12–17**	279	31,958	31,388	31,388	1.82	0.00
	18–25	214	86,834	87,973	87,973	-1.29	0.00
	26–34	145	146,244	145,144	145,144	0.76	0.00
	35–49	193	138,473	138,364	138,364	0.08	0.00
	50–64	92	114,743	106,442	106,442	7.80	0.00
	65+	52	72,426	81,367	81,367	-10.99	0.00
Race	**White**	431	262,333	275,366	275,366	-4.73	0.00
	Black or African American	425	265,226	270,714	270,714	-2.03	-0.00
	American Indian/Alaska Native	32	12,072	3,660	3,282	267.82	11.52
	Asian	39	29,656	27,241	27,619	7.37	-1.37
	Two or More Races	48	21,390	13,696	13,696	56.18	0.00
Hispanicity	**Hispanic or Latino**	105	53,910	59,796	59,796	-9.84	0.00
	Non-Hispanic or Latino	870	536,767	530,882	530,882	1.11	0.00
Gender	**Male**	456	275,931	275,040	275,040	0.32	0.00
	Female	519	314,746	315,638	315,638	-0.28	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.11 2017 NSDUH Slippage Rates: FLORIDA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,399	17,900,610	17,900,610	17,900,610	-0.00	0.00
Quarter	**Quarter 1**	822	4,446,363	4,446,363	4,446,363	-0.00	0.00
	Quarter 2	839	4,464,466	4,464,466	4,464,466	-0.00	0.00
	Quarter 3	684	4,484,676	4,484,677	4,484,677	-0.00	0.00
	Quarter 4	1,054	4,505,104	4,505,104	4,505,104	0.00	0.00
Age Group	**12–17**	893	1,431,970	1,426,526	1,426,526	0.38	0.00
	18–25	733	1,941,870	1,958,321	1,958,321	-0.84	0.00
	26–34	558	2,389,685	2,388,586	2,388,586	0.05	0.00
	35–49	707	3,759,441	3,788,644	3,788,644	-0.77	0.00
	50–64	289	4,572,224	4,184,682	4,184,682	9.26	0.00
	65+	219	3,805,420	4,153,851	4,153,851	-8.39	0.00
Race	**White**	2,300	13,113,669	14,135,854	14,135,854	-7.23	-0.00
	Black or African American	697	3,048,592	2,823,050	2,823,050	7.99	0.00
	American Indian/Alaska Native	121	536,686	145,318	88,204	508.46	64.75
	Asian	137	687,635	495,929	553,043	24.34	-10.33
	Two or More Races	144	514,028	300,459	300,459	71.08	0.00
Hispanicity	**Hispanic or Latino**	1,109	4,604,775	4,457,209	4,457,209	3.31	0.00
	Non-Hispanic or Latino	2,290	13,295,835	13,443,401	13,443,401	-1.10	0.00
Gender	**Male**	1,606	8,621,837	8,605,041	8,605,041	0.20	0.00
	Female	1,793	9,278,773	9,295,570	9,295,570	-0.18	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.12 2017 NSDUH Slippage Rates: GEORGIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,487	8,585,215	8,585,215	8,585,215	0.00	0.00
Quarter	**Quarter 1**	340	2,135,425	2,135,425	2,135,425	0.00	0.00
	Quarter 2	411	2,142,507	2,142,507	2,142,507	0.00	0.00
	Quarter 3	308	2,149,903	2,149,903	2,149,903	0.00	0.00
	Quarter 4	428	2,157,380	2,157,380	2,157,380	0.00	0.00
Age Group	**12–17**	329	863,815	865,968	865,968	-0.25	0.00
	18–25	389	1,113,237	1,104,404	1,104,404	0.80	0.00
	26–34	220	1,250,982	1,249,887	1,249,887	0.09	0.00
	35–49	332	2,041,144	2,036,220	2,036,220	0.24	0.00
	50–64	129	2,030,849	1,947,982	1,947,982	4.25	0.00
	65+	88	1,285,190	1,380,754	1,380,754	-6.92	-0.00
Race	**White**	821	5,014,860	5,323,425	5,323,425	-5.80	-0.00
	Black or African American	511	2,717,038	2,698,478	2,698,478	0.69	0.00
	American Indian/Alaska Native	44	215,653	61,289	42,604	406.18	43.86
	Asian	67	465,133	361,275	379,960	22.42	-4.92
	Two or More Races	44	172,531	140,749	140,749	22.58	0.00
Hispanicity	**Hispanic or Latino**	155	736,805	734,333	734,333	0.34	0.00
	Non-Hispanic or Latino	1,332	7,848,410	7,850,882	7,850,882	-0.03	0.00
Gender	**Male**	696	4,076,446	4,080,025	4,080,025	-0.09	0.00
	Female	791	4,508,769	4,505,190	4,505,190	0.08	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.13 2017 NSDUH Slippage Rates: HAWAII

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		971	1,159,804	1,159,804	1,159,804	0.00	-0.00
Quarter	**Quarter 1**	206	289,947	289,947	289,947	0.00	0.00
	Quarter 2	231	289,952	289,952	289,952	0.00	0.00
	Quarter 3	318	289,936	289,936	289,936	0.00	-0.00
	Quarter 4	216	289,969	289,969	289,969	0.00	0.00
Age Group	**12–17**	248	97,947	95,563	95,563	2.49	-0.00
	18–25	226	125,158	125,577	125,577	-0.33	-0.00
	26–34	155	161,238	166,864	166,864	-3.37	0.00
	35–49	203	252,663	253,115	253,115	-0.18	0.00
	50–64	63	219,583	268,884	268,884	-18.34	0.00
	65+	76	303,214	249,803	249,803	21.38	0.00
Race	**White**	264	270,881	291,299	291,299	-7.01	0.00
	Black or African American	31	24,716	17,603	17,603	40.41	0.00
	American Indian/Alaska Native	18	13,028	4,175	4,175	212.07	0.00
	Asian	404	610,784	597,058	597,058	2.30	0.00
	Two or More Races	254	240,396	249,670	249,670	-3.71	0.00
Hispanicity	**Hispanic or Latino**	151	107,265	100,639	100,639	6.58	0.00
	Non-Hispanic or Latino	820	1,052,540	1,059,165	1,059,165	-0.63	-0.00
Gender	**Male**	431	563,239	562,372	562,372	0.15	0.00
	Female	540	596,565	597,432	597,432	-0.15	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.14 2017 NSDUH Slippage Rates: IDAHO

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		980	1,404,781	1,404,781	1,404,781	0.00	0.00
Quarter	**Quarter 1**	280	347,980	347,980	347,980	0.00	0.00
	Quarter 2	186	350,048	350,048	350,048	0.00	0.00
	Quarter 3	309	352,269	352,269	352,269	0.00	0.00
	Quarter 4	205	354,484	354,484	354,484	0.00	0.00
Age Group	**12–17**	241	150,997	151,439	151,439	-0.29	0.00
	18–25	231	177,547	178,468	178,468	-0.52	0.00
	26–34	155	196,467	197,108	197,108	-0.33	0.00
	35–49	218	307,505	307,872	307,872	-0.12	0.00
	50–64	67	292,558	308,829	308,829	-5.27	-0.00
	65+	68	279,707	261,064	261,064	7.14	0.00
Race	**White**	887	1,293,051	1,317,256	1,317,256	-1.84	-0.00
	Black or African American	23	15,032	10,909	10,909	37.79	0.00
	American Indian/Alaska Native	21	27,554	22,735	22,735	21.20	-0.00
	Asian	20	25,183	25,312	25,312	-0.51	-0.00
	Two or More Races	29	43,961	28,568	28,568	53.88	-0.00
Hispanicity	**Hispanic or Latino**	140	164,366	158,105	158,105	3.96	0.00
	Non-Hispanic or Latino	840	1,240,415	1,246,676	1,246,676	-0.50	0.00
Gender	**Male**	452	698,056	696,482	696,482	0.23	0.00
	Female	528	706,725	708,299	708,299	-0.22	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.15 2017 NSDUH Slippage Rates: ILLINOIS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		2,332	10,721,867	10,721,867	10,721,867	-0.00	0.00
Quarter	**Quarter 1**	530	2,681,277	2,681,277	2,681,277	0.00	0.00
	Quarter 2	561	2,680,447	2,680,447	2,680,447	0.00	0.00
	Quarter 3	597	2,680,276	2,680,276	2,680,276	0.00	0.00
	Quarter 4	644	2,679,867	2,679,867	2,679,867	-0.00	0.00
Age Group	**12–17**	588	1,006,041	1,001,216	1,001,216	0.48	0.00
	18–25	522	1,326,285	1,342,655	1,342,655	-1.22	0.00
	26–34	341	1,577,620	1,562,846	1,562,846	0.95	0.00
	35–49	466	2,457,025	2,437,258	2,437,258	0.81	0.00
	50–64	249	2,672,218	2,493,239	2,493,239	7.18	0.00
	65+	166	1,682,678	1,884,653	1,884,653	-10.72	-0.00
Race	**White**	1,648	7,654,899	8,357,646	8,357,647	-8.41	-0.00
	Black or African American	356	1,573,391	1,503,392	1,503,392	4.66	0.00
	American Indian/Alaska Native	133	544,384	120,108	63,312	759.84	89.71
	Asian	111	690,029	575,493	632,289	9.13	-8.98
	Two or More Races	84	259,164	165,228	165,228	56.85	0.00
Hispanicity	**Hispanic or Latino**	440	1,702,176	1,719,296	1,719,296	-1.00	0.00
	Non-Hispanic or Latino	1,892	9,019,691	9,002,571	9,002,571	0.19	0.00
Gender	**Male**	1,116	5,206,238	5,204,143	5,204,144	0.04	-0.00
	Female	1,216	5,515,629	5,517,724	5,517,724	-0.04	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.16 2017 NSDUH Slippage Rates: INDIANA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		942	5,537,990	5,537,990	5,537,990	0.00	0.00
Quarter	**Quarter 1**	224	1,381,251	1,381,251	1,381,251	0.00	0.00
	Quarter 2	235	1,383,187	1,383,187	1,383,187	0.00	0.00
	Quarter 3	259	1,385,630	1,385,630	1,385,630	-0.00	0.00
	Quarter 4	224	1,387,923	1,387,923	1,387,923	0.00	0.00
Age Group	**12–17**	224	535,368	538,160	538,160	-0.52	0.00
	18–25	211	738,060	740,720	740,720	-0.36	0.00
	26–34	147	755,289	756,762	756,762	-0.19	0.00
	35–49	180	1,225,568	1,218,642	1,218,642	0.57	0.00
	50–64	110	1,412,405	1,293,932	1,293,932	9.16	0.00
	65+	70	871,301	989,774	989,774	-11.97	0.00
Race	**White**	816	4,707,131	4,787,854	4,787,854	-1.69	0.00
	Black or African American	63	494,341	506,004	506,004	-2.30	0.00
	American Indian/Alaska Native	17	98,659	27,851	22,481	338.85	23.89
	Asian	18	143,974	130,367	135,737	6.07	-3.96
	Two or More Races	28	93,885	85,914	85,914	9.28	0.00
Hispanicity	**Hispanic or Latino**	77	358,282	344,715	344,715	3.94	0.00
	Non-Hispanic or Latino	865	5,179,708	5,193,275	5,193,275	-0.26	0.00
Gender	**Male**	462	2,702,826	2,697,925	2,697,925	0.18	0.00
	Female	480	2,835,164	2,840,065	2,840,065	-0.17	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.17 2017 NSDUH Slippage Rates: IOWA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		971	2,617,650	2,617,650	2,617,650	-0.00	-0.00
Quarter	**Quarter 1**	204	652,973	652,973	652,973	0.00	-0.00
	Quarter 2	249	653,817	653,817	653,817	0.00	-0.00
	Quarter 3	288	654,916	654,916	654,916	-0.00	-0.00
	Quarter 4	230	655,943	655,943	655,943	0.00	0.00
Age Group	**12–17**	227	241,018	244,636	244,636	-1.48	0.00
	18–25	264	358,806	359,287	359,287	-0.13	0.00
	26–34	137	348,435	348,435	348,435	-0.00	0.00
	35–49	176	556,596	552,497	552,497	0.74	-0.00
	50–64	81	534,853	609,374	609,374	-12.23	-0.00
	65+	86	577,942	503,421	503,421	14.80	0.00
Race	**White**	860	2,381,250	2,410,068	2,410,068	-1.20	-0.00
	Black or African American	48	88,051	88,487	88,487	-0.49	0.00
	American Indian/Alaska Native	11	29,657	11,910	11,910	149.01	-0.00
	Asian	20	71,617	71,506	71,506	0.16	0.00
	Two or More Races	32	47,074	35,679	35,679	31.94	0.00
Hispanicity	**Hispanic or Latino**	60	144,208	137,381	137,382	4.97	-0.00
	Non-Hispanic or Latino	911	2,473,442	2,480,268	2,480,268	-0.28	0.00
Gender	**Male**	461	1,294,632	1,293,859	1,293,859	0.06	-0.00
	Female	510	1,323,018	1,323,791	1,323,791	-0.06	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.18 2017 NSDUH Slippage Rates: KANSAS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		992	2,377,160	2,377,160	2,377,160	0.00	0.00
Quarter	**Quarter 1**	227	593,536	593,536	593,536	0.00	0.00
	Quarter 2	253	593,921	593,921	593,921	0.00	0.00
	Quarter 3	265	594,542	594,542	594,542	0.00	0.00
	Quarter 4	247	595,161	595,161	595,161	0.00	0.00
Age Group	**12–17**	249	238,644	237,376	237,376	0.53	0.00
	18–25	251	322,730	323,999	323,999	-0.39	0.00
	26–34	145	327,265	329,655	329,655	-0.73	0.00
	35–49	204	526,569	508,441	508,441	3.57	0.00
	50–64	79	525,263	546,043	546,043	-3.81	0.00
	65+	64	436,688	431,646	431,646	1.17	0.00
Race	**White**	787	2,036,495	2,080,217	2,080,217	-2.10	0.00
	Black or African American	78	141,187	135,264	135,264	4.38	0.00
	American Indian/Alaska Native	24	43,177	27,895	27,895	54.79	0.00
	Asian	54	82,317	77,720	77,720	5.92	-0.00
	Two or More Races	49	73,984	56,065	56,065	31.96	-0.00
Hispanicity	**Hispanic or Latino**	179	255,159	252,070	252,070	1.23	0.00
	Non-Hispanic or Latino	813	2,122,001	2,125,090	2,125,090	-0.15	0.00
Gender	**Male**	485	1,166,948	1,166,948	1,166,948	0.00	-0.00
	Female	507	1,210,212	1,210,212	1,210,212	0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.19 2017 NSDUH Slippage Rates: KENTUCKY

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		976	3,701,461	3,701,461	3,701,461	-0.00	0.00
Quarter	**Quarter 1**	249	923,567	923,567	923,567	-0.00	0.00
	Quarter 2	246	924,662	924,662	924,662	0.00	0.00
	Quarter 3	249	926,000	926,000	926,000	0.00	0.00
	Quarter 4	232	927,233	927,233	927,233	0.00	0.00
Age Group	**12–17**	247	344,362	340,219	340,219	1.22	0.00
	18–25	237	457,513	466,997	466,997	-2.03	0.00
	26–34	146	494,699	498,779	498,779	-0.82	0.00
	35–49	193	829,541	820,122	820,122	1.15	0.00
	50–64	95	1,007,471	886,164	886,164	13.69	-0.00
	65+	58	567,874	689,181	689,181	-17.60	0.00
Race	**White**	803	3,234,556	3,287,433	3,287,433	-1.61	0.00
	Black or African American	99	295,070	290,616	290,616	1.53	0.00
	American Indian/Alaska Native	9	13,047	10,810	10,810	20.69	0.00
	Asian	24	76,350	59,633	59,633	28.03	0.00
	Two or More Races	41	82,438	52,970	52,970	55.63	0.00
Hispanicity	**Hispanic or Latino**	55	126,345	114,862	114,862	10.00	0.00
	Non-Hispanic or Latino	921	3,575,116	3,586,599	3,586,599	-0.32	0.00
Gender	**Male**	441	1,793,999	1,793,999	1,793,999	-0.00	0.00
	Female	535	1,907,462	1,907,462	1,907,462	0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.20 2017 NSDUH Slippage Rates: LOUISIANA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		966	3,836,082	3,836,082	3,836,082	0.00	0.00
Quarter	**Quarter 1**	212	958,810	958,810	958,810	0.00	0.00
	Quarter 2	294	958,785	958,785	958,785	0.00	0.00
	Quarter 3	215	959,100	959,100	959,100	0.00	0.00
	Quarter 4	245	959,387	959,387	959,387	0.00	0.00
Age Group	**12–17**	234	362,370	363,668	363,668	-0.36	0.00
	18–25	230	489,935	485,824	485,824	0.85	0.00
	26–34	139	572,073	583,351	583,351	-1.93	0.00
	35–49	208	836,949	833,059	833,059	0.47	0.00
	50–64	88	923,459	892,546	892,546	3.46	0.00
	65+	67	651,297	677,635	677,635	-3.89	0.00
Race	**White**	543	2,367,603	2,483,120	2,483,120	-4.65	-0.00
	Black or African American	351	1,201,937	1,198,505	1,198,505	0.29	0.00
	American Indian/Alaska Native	20	81,630	29,811	29,811	173.82	0.00
	Asian	20	106,058	75,895	75,895	39.74	0.00
	Two or More Races	32	78,854	48,751	48,751	61.75	0.00
Hispanicity	**Hispanic or Latino**	43	183,663	183,977	183,977	-0.17	0.00
	Non-Hispanic or Latino	923	3,652,419	3,652,105	3,652,106	0.01	-0.00
Gender	**Male**	412	1,828,601	1,828,601	1,828,601	0.00	0.00
	Female	554	2,007,481	2,007,481	2,007,481	0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.21 2017 NSDUH Slippage Rates: MAINE

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		985	1,159,844	1,159,844	1,159,844	-0.00	0.00
Quarter	**Quarter 1**	238	289,313	289,313	289,313	0.00	0.00
	Quarter 2	284	289,706	289,706	289,706	-0.00	0.00
	Quarter 3	237	290,190	290,190	290,190	-0.00	0.00
	Quarter 4	226	290,634	290,634	290,634	0.00	0.00
Age Group	**12–17**	280	90,045	90,045	90,045	0.00	0.00
	18–25	235	124,577	123,946	123,946	0.51	0.00
	26–34	142	138,392	140,862	140,862	-1.75	0.00
	35–49	193	238,398	237,385	237,385	0.43	0.00
	50–64	70	291,016	308,367	308,367	-5.63	0.00
	65+	65	277,415	259,239	259,239	7.01	0.00
Race	**White**	905	1,097,206	1,105,221	1,105,221	-0.73	-0.00
	Black or African American	30	15,661	15,647	15,647	0.09	0.00
	American Indian/Alaska Native	3	1,438	1,148	7,808	-81.59	-85.29
	Asian	20	23,095	21,590	14,931	54.68	44.60
	Two or More Races	27	22,444	16,237	16,237	38.23	0.00
Hispanicity	**Hispanic or Latino**	29	20,021	17,188	17,188	16.48	0.00
	Non-Hispanic or Latino	956	1,139,823	1,142,656	1,142,656	-0.25	0.00
Gender	**Male**	458	563,903	563,619	563,619	0.05	0.00
	Female	527	595,941	596,225	596,225	-0.05	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.22 2017 NSDUH Slippage Rates: MARYLAND

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		987	5,064,109	5,064,109	5,064,109	0.00	0.00
Quarter	**Quarter 1**	188	1,263,371	1,263,371	1,263,371	-0.00	0.00
	Quarter 2	289	1,264,940	1,264,940	1,264,940	0.00	0.00
	Quarter 3	239	1,266,934	1,266,934	1,266,934	0.00	0.00
	Quarter 4	271	1,268,863	1,268,863	1,268,863	0.00	0.00
Age Group	**12–17**	229	456,631	454,007	454,007	0.58	0.00
	18–25	272	594,601	605,178	605,178	-1.75	0.00
	26–34	153	734,401	734,418	734,418	-0.00	0.00
	35–49	202	1,174,356	1,154,601	1,154,601	1.71	0.00
	50–64	86	1,403,419	1,233,311	1,233,311	13.79	0.00
	65+	45	700,701	882,593	882,593	-20.61	0.00
Race	**White**	537	2,800,391	3,037,955	3,037,955	-7.82	0.00
	Black or African American	297	1,565,825	1,532,838	1,532,838	2.15	0.00
	American Indian/Alaska Native	26	122,902	29,718	28,133	336.86	5.63
	Asian	96	455,447	350,852	352,437	29.23	-0.45
	Two or More Races	31	119,543	112,746	112,746	6.03	0.00
Hispanicity	**Hispanic or Latino**	117	505,433	460,767	460,767	9.69	0.00
	Non-Hispanic or Latino	870	4,558,676	4,603,342	4,603,342	-0.97	0.00
Gender	**Male**	498	2,410,503	2,410,503	2,410,503	0.00	0.00
	Female	489	2,653,606	2,653,606	2,653,606	0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.23 2017 NSDUH Slippage Rates: MASSACHUSETTS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		986	5,902,164	5,902,164	5,902,164	-0.00	0.00
Quarter	**Quarter 1**	200	1,471,798	1,471,798	1,471,798	-0.00	-0.00
	Quarter 2	297	1,474,084	1,474,084	1,474,084	-0.00	0.00
	Quarter 3	247	1,476,850	1,476,851	1,476,851	-0.00	0.00
	Quarter 4	242	1,479,432	1,479,432	1,479,432	0.00	0.00
Age Group	**12–17**	271	479,761	483,097	483,097	-0.69	0.00
	18–25	263	781,937	791,355	791,355	-1.19	0.00
	26–34	157	891,920	866,024	866,024	2.99	0.00
	35–49	161	1,281,184	1,275,264	1,275,264	0.46	0.00
	50–64	86	1,509,077	1,413,213	1,413,213	6.78	-0.00
	65+	48	958,286	1,073,211	1,073,211	-10.71	0.00
Race	**White**	762	4,538,641	4,855,300	4,855,300	-6.52	0.00
	Black or African American	97	596,163	490,781	490,781	21.47	0.00
	American Indian/Alaska Native	24	159,476	34,420	27,760	474.48	23.99
	Asian	61	447,828	406,727	413,386	8.33	-1.61
	Two or More Races	42	160,056	114,937	114,937	39.26	0.00
Hispanicity	**Hispanic or Latino**	153	627,709	633,339	633,339	-0.89	0.00
	Non-Hispanic or Latino	833	5,274,455	5,268,825	5,268,825	0.11	0.00
Gender	**Male**	484	2,828,804	2,838,207	2,838,207	-0.33	0.00
	Female	502	3,073,360	3,063,957	3,063,957	0.31	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.24 2017 NSDUH Slippage Rates: MICHIGAN

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		2,402	8,447,704	8,447,704	8,447,704	0.00	-0.00
Quarter	**Quarter 1**	525	2,108,542	2,108,542	2,108,542	0.00	0.00
	Quarter 2	694	2,110,466	2,110,466	2,110,466	0.00	-0.00
	Quarter 3	591	2,113,135	2,113,135	2,113,135	0.00	0.00
	Quarter 4	592	2,115,562	2,115,562	2,115,562	0.00	0.00
Age Group	**12–17**	592	763,179	766,463	766,463	-0.43	0.00
	18–25	601	1,103,608	1,097,289	1,097,289	0.58	0.00
	26–34	379	1,088,023	1,109,787	1,109,787	-1.96	0.00
	35–49	486	1,778,978	1,775,132	1,775,132	0.22	0.00
	50–64	196	2,077,109	2,067,923	2,067,923	0.44	-0.00
	65+	148	1,636,806	1,631,111	1,631,111	0.35	0.00
Race	**White**	1,867	6,685,223	6,817,634	6,817,634	-1.94	-0.00
	Black or African American	318	1,153,434	1,130,697	1,130,697	2.01	-0.00
	American Indian/Alaska Native	30	104,148	29,220	60,129	73.21	-51.40
	Asian	85	309,538	307,652	276,743	11.85	11.17
	Two or More Races	102	195,361	162,501	162,501	20.22	0.00
Hispanicity	**Hispanic or Latino**	153	379,451	380,926	380,926	-0.39	-0.00
	Non-Hispanic or Latino	2,249	8,068,253	8,066,779	8,066,779	0.02	0.00
Gender	**Male**	1,197	4,114,316	4,109,554	4,109,554	0.12	-0.00
	Female	1,205	4,333,388	4,338,150	4,338,150	-0.11	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.25 2017 NSDUH Slippage Rates: MINNESOTA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		968	4,656,860	4,656,860	4,656,860	-0.00	0.00
Quarter	**Quarter 1**	236	1,159,616	1,159,616	1,159,616	0.00	0.00
	Quarter 2	247	1,162,495	1,162,495	1,162,495	0.00	-0.00
	Quarter 3	273	1,165,795	1,165,795	1,165,795	-0.00	-0.00
	Quarter 4	212	1,168,953	1,168,953	1,168,953	0.00	0.00
Age Group	**12–17**	237	437,400	433,584	433,584	0.88	-0.00
	18–25	262	571,179	574,994	574,995	-0.66	-0.00
	26–34	138	673,205	674,707	674,707	-0.22	-0.00
	35–49	171	1,013,084	1,029,990	1,029,990	-1.64	-0.00
	50–64	90	1,127,202	1,112,437	1,112,437	1.33	0.00
	65+	70	834,791	831,148	831,148	0.44	0.00
Race	**White**	787	3,992,659	4,011,926	4,011,926	-0.48	0.00
	Black or African American	80	263,434	269,779	269,779	-2.35	-0.00
	American Indian/Alaska Native	18	64,736	54,442	54,442	18.91	0.00
	Asian	52	238,992	232,549	232,549	2.77	-0.00
	Two or More Races	31	97,038	88,164	88,164	10.07	0.00
Hispanicity	**Hispanic or Latino**	62	222,634	219,661	219,661	1.35	0.00
	Non-Hispanic or Latino	906	4,434,226	4,437,199	4,437,199	-0.07	-0.00
Gender	**Male**	481	2,304,813	2,304,813	2,304,813	0.00	0.00
	Female	487	2,352,047	2,352,047	2,352,047	-0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.26 2017 NSDUH Slippage Rates: MISSISSIPPI

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		936	2,449,136	2,449,136	2,449,136	0.00	0.00
Quarter	**Quarter 1**	225	611,803	611,803	611,803	0.00	-0.00
	Quarter 2	250	612,029	612,029	612,029	-0.00	0.00
	Quarter 3	279	612,447	612,447	612,447	0.00	0.00
	Quarter 4	182	612,857	612,857	612,857	0.00	0.00
Age Group	**12–17**	237	241,684	242,287	242,287	-0.25	0.00
	18–25	195	332,188	323,808	323,808	2.59	-0.00
	26–34	171	334,916	334,003	334,003	0.27	0.00
	35–49	193	524,993	533,684	533,684	-1.63	-0.00
	50–64	86	636,010	567,281	567,281	12.12	-0.00
	65+	54	379,345	448,075	448,075	-15.34	0.00
Race	**White**	488	1,483,763	1,485,542	1,485,543	-0.12	-0.00
	Black or African American	422	884,795	897,915	897,915	-1.46	0.00
	American Indian/Alaska Native	1	2,848	570	13,943	-79.57	-95.91
	Asian	8	34,828	41,802	28,429	22.51	47.04
	Two or More Races	17	42,902	23,307	23,307	84.08	0.00
Hispanicity	**Hispanic or Latino**	21	64,898	65,103	65,103	-0.31	0.00
	Non-Hispanic or Latino	915	2,384,238	2,384,033	2,384,033	0.01	0.00
Gender	**Male**	405	1,157,553	1,157,553	1,157,553	0.00	0.00
	Female	531	1,291,583	1,291,583	1,291,583	0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.27 2017 NSDUH Slippage Rates: MISSOURI

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		989	5,091,167	5,091,167	5,091,167	0.00	0.00
Quarter	**Quarter 1**	239	1,270,355	1,270,355	1,270,355	0.00	0.00
	Quarter 2	217	1,271,790	1,271,789	1,271,790	0.00	-0.00
	Quarter 3	257	1,273,610	1,273,610	1,273,610	-0.00	0.00
	Quarter 4	276	1,275,413	1,275,413	1,275,413	0.00	-0.00
Age Group	**12–17**	234	465,268	466,944	466,944	-0.36	0.00
	18–25	223	638,565	640,581	640,581	-0.31	0.00
	26–34	163	725,310	714,222	714,222	1.55	0.00
	35–49	217	1,077,140	1,088,634	1,088,634	-1.06	0.00
	50–64	85	1,232,142	1,210,076	1,210,076	1.82	-0.00
	65+	67	952,741	970,709	970,709	-1.85	-0.00
Race	**White**	814	4,234,176	4,289,648	4,289,648	-1.29	0.00
	Black or African American	100	569,852	568,243	568,243	0.28	-0.00
	American Indian/Alaska Native	13	34,986	28,324	28,324	23.52	-0.00
	Asian	23	132,460	114,261	114,261	15.93	0.00
	Two or More Races	39	119,693	90,692	90,692	31.98	-0.00
Hispanicity	**Hispanic or Latino**	57	191,860	190,703	190,703	0.61	-0.00
	Non-Hispanic or Latino	932	4,899,307	4,900,463	4,900,463	-0.02	0.00
Gender	**Male**	490	2,459,948	2,464,600	2,464,600	-0.19	0.00
	Female	499	2,631,218	2,626,567	2,626,567	0.18	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.28 2017 NSDUH Slippage Rates: MONTANA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		971	882,133	882,133	882,133	0.00	-0.00
Quarter	**Quarter 1**	254	219,478	219,478	219,478	0.00	-0.00
	Quarter 2	227	220,136	220,136	220,136	0.00	-0.00
	Quarter 3	225	220,886	220,886	220,886	0.00	-0.00
	Quarter 4	265	221,633	221,633	221,633	0.00	0.00
Age Group	**12–17**	201	76,368	74,949	74,949	1.89	-0.00
	18–25	242	108,841	110,136	110,136	-1.18	0.00
	26–34	174	119,457	117,495	117,495	1.67	0.00
	35–49	192	176,107	178,998	178,998	-1.62	-0.00
	50–64	76	189,324	214,445	214,445	-11.71	-0.00
	65+	86	212,036	186,111	186,111	13.93	0.00
Race	**White**	841	791,004	798,514	798,514	-0.94	0.00
	Black or African American	9	4,552	4,355	4,355	4.52	-0.00
	American Indian/Alaska Native	62	57,676	50,730	50,730	13.69	-0.00
	Asian	14	9,065	8,459	8,459	7.17	-0.00
	Two or More Races	45	19,836	20,075	20,075	-1.19	-0.00
Hispanicity	**Hispanic or Latino**	54	31,653	29,145	29,145	8.60	0.00
	Non-Hispanic or Latino	917	850,480	852,988	852,988	-0.29	-0.00
Gender	**Male**	494	440,692	440,203	440,203	0.11	0.00
	Female	477	441,441	441,930	441,930	-0.11	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.29 2017 NSDUH Slippage Rates: NEBRASKA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		961	1,570,654	1,570,654	1,570,654	-0.00	-0.00
Quarter	**Quarter 1**	218	391,444	391,444	391,444	0.00	0.00
	Quarter 2	271	392,196	392,196	392,196	0.00	-0.00
	Quarter 3	203	393,078	393,078	393,078	-0.00	0.00
	Quarter 4	269	393,936	393,936	393,936	0.00	0.00
Age Group	**12–17**	250	153,517	155,372	155,372	-1.19	-0.00
	18–25	247	213,070	213,260	213,260	-0.09	0.00
	26–34	137	226,299	222,978	222,978	1.49	0.00
	35–49	170	337,715	339,686	339,686	-0.58	0.00
	50–64	83	359,265	355,244	355,244	1.13	-0.00
	65+	74	280,788	284,115	284,115	-1.17	0.00
Race	**White**	831	1,391,148	1,410,707	1,410,707	-1.39	-0.00
	Black or African American	39	72,474	72,575	72,575	-0.14	0.00
	American Indian/Alaska Native	30	33,664	19,183	19,183	75.49	-0.00
	Asian	26	48,544	42,446	42,446	14.37	0.00
	Two or More Races	35	24,824	25,743	25,743	-3.57	-0.00
Hispanicity	**Hispanic or Latino**	130	165,806	150,323	150,323	10.30	-0.00
	Non-Hispanic or Latino	831	1,404,847	1,420,331	1,420,331	-1.09	0.00
Gender	**Male**	476	775,794	775,519	775,519	0.04	0.00
	Female	485	794,860	795,135	795,135	-0.03	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.30 2017 NSDUH Slippage Rates: NEVADA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		958	2,503,328	2,503,328	2,503,328	0.00	0.00
Quarter	**Quarter 1**	176	620,717	620,717	620,717	0.00	0.00
	Quarter 2	264	623,985	623,985	623,985	0.00	0.00
	Quarter 3	351	627,529	627,530	627,530	-0.00	0.00
	Quarter 4	167	631,097	631,097	631,097	0.00	-0.00
Age Group	**12–17**	236	228,207	228,207	228,207	0.00	0.00
	18–25	253	277,911	284,196	284,196	-2.21	0.00
	26–34	132	399,747	385,142	385,142	3.79	-0.00
	35–49	199	577,046	588,298	588,298	-1.91	0.00
	50–64	88	653,563	562,250	562,250	16.24	0.00
	65+	50	366,854	455,235	455,235	-19.41	0.00
Race	**White**	646	1,702,578	1,888,697	1,888,697	-9.85	0.00
	Black or African American	104	251,078	232,413	232,413	8.03	0.00
	American Indian/Alaska Native	62	151,304	40,121	40,121	277.12	-0.00
	Asian	85	283,982	254,714	254,714	11.49	-0.00
	Two or More Races	61	114,385	87,382	87,382	30.90	-0.00
Hispanicity	**Hispanic or Latino**	368	686,517	669,834	669,834	2.49	0.00
	Non-Hispanic or Latino	590	1,816,810	1,833,494	1,833,494	-0.91	0.00
Gender	**Male**	476	1,239,925	1,239,423	1,239,423	0.04	0.00
	Female	482	1,263,403	1,263,904	1,263,904	-0.04	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.31 2017 NSDUH Slippage Rates: NEW HAMPSHIRE

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,003	1,162,921	1,162,921	1,162,921	0.00	0.00
Quarter	**Quarter 1**	184	289,886	289,886	289,886	0.00	0.00
	Quarter 2	303	290,405	290,405	290,405	0.00	-0.00
	Quarter 3	226	291,021	291,021	291,021	0.00	0.00
	Quarter 4	290	291,609	291,609	291,609	0.00	-0.00
Age Group	**12–17**	263	94,713	95,120	95,120	-0.43	-0.00
	18–25	234	142,357	142,221	142,221	0.10	0.00
	26–34	142	141,941	144,114	144,114	-1.51	0.00
	35–49	184	244,469	242,024	242,024	1.01	0.00
	50–64	98	296,039	311,528	311,528	-4.97	0.00
	65+	82	243,402	227,914	227,914	6.80	-0.00
Race	**White**	899	1,083,686	1,094,588	1,094,588	-1.00	0.00
	Black or African American	24	18,600	16,672	16,672	11.56	0.00
	American Indian/Alaska Native	11	6,236	3,383	3,383	84.32	0.00
	Asian	42	36,346	32,297	32,297	12.53	0.00
	Two or More Races	27	18,053	15,980	15,980	12.97	0.00
Hispanicity	**Hispanic or Latino**	71	39,461	38,005	38,005	3.83	0.00
	Non-Hispanic or Latino	932	1,123,459	1,124,916	1,124,916	-0.13	-0.00
Gender	**Male**	479	570,860	572,141	572,141	-0.22	0.00
	Female	524	592,061	590,780	590,780	0.22	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.32 2017 NSDUH Slippage Rates: NEW JERSEY

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,559	7,616,050	7,616,050	7,616,050	0.00	-0.00
Quarter	**Quarter 1**	267	1,900,733	1,900,733	1,900,733	-0.00	0.00
	Quarter 2	509	1,902,616	1,902,616	1,902,616	-0.00	-0.00
	Quarter 3	349	1,905,152	1,905,152	1,905,152	0.00	-0.00
	Quarter 4	434	1,907,549	1,907,549	1,907,549	0.00	0.00
Age Group	**12–17**	364	691,739	690,173	690,173	0.23	0.00
	18–25	391	878,306	891,735	891,735	-1.51	0.00
	26–34	257	1,027,418	1,036,217	1,036,217	-0.85	0.00
	35–49	321	1,794,562	1,757,216	1,757,216	2.13	0.00
	50–64	139	1,979,492	1,860,918	1,860,918	6.37	0.00
	65+	87	1,244,533	1,379,792	1,379,792	-9.80	-0.00
Race	**White**	865	5,117,813	5,559,677	5,559,677	-7.95	0.00
	Black or African American	285	1,173,273	1,094,860	1,094,860	7.16	-0.00
	American Indian/Alaska Native	100	250,547	55,975	45,364	452.30	23.39
	Asian	238	847,973	770,639	781,250	8.54	-1.36
	Two or More Races	71	226,443	134,899	134,899	67.86	-0.00
Hispanicity	**Hispanic or Latino**	424	1,459,243	1,460,181	1,460,181	-0.06	0.00
	Non-Hispanic or Latino	1,135	6,156,807	6,155,869	6,155,869	0.02	-0.00
Gender	**Male**	764	3,672,914	3,672,928	3,672,928	-0.00	-0.00
	Female	795	3,943,137	3,943,122	3,943,122	0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.33 2017 NSDUH Slippage Rates: NEW MEXICO

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		927	1,730,409	1,730,409	1,730,409	-0.00	0.00
Quarter	**Quarter 1**	223	431,953	431,952	431,953	0.00	-0.00
	Quarter 2	239	432,297	432,297	432,297	0.00	0.00
	Quarter 3	246	432,813	432,813	432,813	0.00	0.00
	Quarter 4	219	433,346	433,346	433,346	-0.00	-0.00
Age Group	**12–17**	216	168,628	166,008	166,008	1.58	0.00
	18–25	231	215,129	220,296	220,296	-2.35	-0.00
	26–34	143	242,767	241,114	241,114	0.69	0.00
	35–49	201	357,884	356,991	356,991	0.25	-0.00
	50–64	79	434,157	398,150	398,150	9.04	-0.00
	65+	57	311,843	347,851	347,851	-10.35	0.00
Race	**White**	709	1,366,416	1,441,014	1,441,014	-5.18	0.00
	Black or African American	25	49,188	40,862	40,862	20.37	-0.00
	American Indian/Alaska Native	154	245,416	177,565	177,565	38.21	-0.00
	Asian	21	42,538	33,853	33,854	25.65	-0.00
	Two or More Races	18	26,850	37,114	37,114	-27.65	-0.00
Hispanicity	**Hispanic or Latino**	484	842,759	812,179	812,179	3.77	-0.00
	Non-Hispanic or Latino	443	887,649	918,229	918,229	-3.33	-0.00
Gender	**Male**	428	845,390	841,470	841,470	0.47	-0.00
	Female	499	885,019	888,939	888,939	-0.44	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.34 2017 NSDUH Slippage Rates: NEW YORK

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,352	16,859,209	16,859,209	16,859,209	0.00	0.00
Quarter	**Quarter 1**	685	4,212,308	4,212,308	4,212,308	-0.00	0.00
	Quarter 2	905	4,213,293	4,213,293	4,213,293	-0.00	0.00
	Quarter 3	936	4,215,734	4,215,734	4,215,734	0.00	-0.00
	Quarter 4	826	4,217,874	4,217,874	4,217,874	0.00	0.00
Age Group	**12–17**	833	1,404,539	1,394,803	1,394,803	0.70	0.00
	18–25	848	2,124,091	2,135,231	2,135,231	-0.52	0.00
	26–34	491	2,608,910	2,602,208	2,602,208	0.26	0.00
	35–49	645	3,661,413	3,714,499	3,714,499	-1.43	0.00
	50–64	305	4,078,489	3,940,995	3,940,995	3.49	0.00
	65+	230	2,981,768	3,071,473	3,071,473	-2.92	0.00
Race	**White**	2,180	10,770,779	11,862,052	11,862,052	-9.20	0.00
	Black or African American	609	3,143,985	2,892,415	2,892,415	8.70	0.00
	American Indian/Alaska Native	164	743,781	161,988	161,988	359.16	0.00
	Asian	255	1,769,779	1,589,160	1,589,160	11.37	0.00
	Two or More Races	144	430,885	353,594	353,594	21.86	0.00
Hispanicity	**Hispanic or Latino**	733	3,189,926	3,067,111	3,067,111	4.00	0.00
	Non-Hispanic or Latino	2,619	13,669,283	13,792,098	13,792,098	-0.89	-0.00
Gender	**Male**	1,540	8,063,488	8,077,509	8,077,509	-0.17	-0.00
	Female	1,812	8,795,721	8,781,700	8,781,700	0.16	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.35 2017 NSDUH Slippage Rates: NORTH CAROLINA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,491	8,557,556	8,557,556	8,557,556	-0.00	0.00
Quarter	**Quarter 1**	372	2,128,035	2,128,035	2,128,035	-0.00	0.00
	Quarter 2	361	2,135,435	2,135,435	2,135,435	0.00	0.00
	Quarter 3	420	2,143,207	2,143,207	2,143,207	0.00	0.00
	Quarter 4	338	2,150,879	2,150,879	2,150,879	-0.00	0.00
Age Group	**12–17**	413	792,343	791,136	791,136	0.15	0.00
	18–25	355	1,035,777	1,053,588	1,053,588	-1.69	0.00
	26–34	215	1,166,425	1,176,537	1,176,537	-0.86	0.00
	35–49	295	1,949,223	1,948,016	1,948,016	0.06	0.00
	50–64	126	2,198,922	1,995,329	1,995,329	10.20	0.00
	65+	87	1,414,866	1,592,951	1,592,951	-11.18	0.00
Race	**White**	949	5,906,290	6,170,076	6,170,076	-4.28	0.00
	Black or African American	339	1,841,453	1,848,865	1,848,865	-0.40	0.00
	American Indian/Alaska Native	72	232,674	66,635	127,494	82.50	-47.73
	Asian	73	310,488	325,596	264,738	17.28	22.99
	Two or More Races	58	266,652	146,384	146,384	82.16	0.00
Hispanicity	**Hispanic or Latino**	211	699,745	693,038	693,038	0.97	0.00
	Non-Hispanic or Latino	1,280	7,857,811	7,864,518	7,864,518	-0.09	0.00
Gender	**Male**	688	4,075,105	4,072,420	4,072,420	0.07	0.00
	Female	803	4,482,451	4,485,137	4,485,137	-0.06	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.36 2017 NSDUH Slippage Rates: NORTH DAKOTA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		981	615,426	615,426	615,426	0.00	-0.00
Quarter	**Quarter 1**	214	153,890	153,890	153,890	0.00	0.00
	Quarter 2	257	153,841	153,841	153,841	0.00	-0.00
	Quarter 3	231	153,844	153,843	153,844	0.00	-0.00
	Quarter 4	279	153,852	153,852	153,852	0.00	-0.00
Age Group	**12–17**	252	52,433	52,695	52,695	-0.50	0.00
	18–25	230	94,566	95,075	95,076	-0.54	-0.00
	26–34	144	98,100	97,827	97,827	0.28	-0.00
	35–49	195	126,549	125,371	125,371	0.94	-0.00
	50–64	82	126,736	137,346	137,346	-7.72	0.00
	65+	78	117,042	107,112	107,112	9.27	-0.00
Race	**White**	825	544,085	548,609	548,609	-0.82	-0.00
	Black or African American	32	18,739	17,029	17,029	10.04	0.00
	American Indian/Alaska Native	84	32,477	29,534	29,534	9.97	0.00
	Asian	19	9,873	10,395	10,395	-5.02	0.00
	Two or More Races	21	10,251	9,859	9,859	3.98	-0.00
Hispanicity	**Hispanic or Latino**	36	20,616	19,354	19,354	6.52	0.00
	Non-Hispanic or Latino	945	594,810	596,072	596,072	-0.21	-0.00
Gender	**Male**	491	314,096	313,750	313,750	0.11	-0.00
	Female	490	301,330	301,676	301,676	-0.11	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.37 2017 NSDUH Slippage Rates: OHIO

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		2,418	9,782,520	9,782,521	9,782,521	-0.00	0.00
Quarter	**Quarter 1**	563	2,441,912	2,441,912	2,441,912	0.00	0.00
	Quarter 2	621	2,444,062	2,444,062	2,444,062	-0.00	0.00
	Quarter 3	633	2,446,998	2,446,998	2,446,998	0.00	0.00
	Quarter 4	601	2,449,549	2,449,549	2,449,549	-0.00	0.00
Age Group	**12–17**	607	899,925	899,095	899,095	0.09	0.00
	18–25	594	1,225,991	1,213,704	1,213,704	1.01	0.00
	26–34	354	1,326,026	1,334,495	1,334,495	-0.63	0.00
	35–49	487	2,071,254	2,093,828	2,093,828	-1.08	0.00
	50–64	217	2,471,146	2,365,189	2,365,189	4.48	0.00
	65+	159	1,788,178	1,876,210	1,876,210	-4.69	0.00
Race	**White**	1,943	7,991,495	8,169,699	8,169,699	-2.18	0.00
	Black or African American	294	1,162,954	1,182,760	1,182,760	-1.67	-0.00
	American Indian/Alaska Native	20	82,939	18,055	27,222	204.68	-33.68
	Asian	64	279,844	243,612	234,445	19.36	3.91
	Two or More Races	97	265,288	168,395	168,395	57.54	0.00
Hispanicity	**Hispanic or Latino**	128	340,012	325,495	325,495	4.46	0.00
	Non-Hispanic or Latino	2,290	9,442,509	9,457,026	9,457,026	-0.15	0.00
Gender	**Male**	1,150	4,730,370	4,735,738	4,735,738	-0.11	0.00
	Female	1,268	5,052,151	5,046,783	5,046,783	0.11	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.38 2017 NSDUH Slippage Rates: OKLAHOMA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		938	3,209,148	3,209,148	3,209,148	0.00	0.00
Quarter	**Quarter 1**	214	801,132	801,132	801,132	0.00	0.00
	Quarter 2	253	801,795	801,795	801,795	-0.00	0.00
	Quarter 3	252	802,673	802,673	802,673	0.00	-0.00
	Quarter 4	219	803,548	803,548	803,548	0.00	0.00
Age Group	**12–17**	220	314,088	316,734	316,734	-0.84	0.00
	18–25	225	420,975	421,590	421,590	-0.15	0.00
	26–34	169	472,951	468,664	468,664	0.91	0.00
	35–49	162	686,694	696,954	696,954	-1.47	-0.00
	50–64	94	768,507	719,901	719,902	6.75	-0.00
	65+	68	545,932	585,304	585,304	-6.73	0.00
Race	**White**	638	2,360,762	2,440,375	2,440,376	-3.26	-0.00
	Black or African American	68	237,195	235,186	235,186	0.85	-0.00
	American Indian/Alaska Native	93	269,479	284,553	284,553	-5.30	0.00
	Asian	23	93,746	82,106	82,106	14.18	0.00
	Two or More Races	116	247,965	166,928	166,928	48.55	0.00
Hispanicity	**Hispanic or Latino**	132	306,815	297,624	297,624	3.09	0.00
	Non-Hispanic or Latino	806	2,902,333	2,911,524	2,911,524	-0.32	-0.00
Gender	**Male**	438	1,559,074	1,561,474	1,561,474	-0.15	-0.00
	Female	500	1,650,074	1,647,674	1,647,674	0.15	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.39 2017 NSDUH Slippage Rates: OREGON

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		987	3,525,360	3,525,360	3,525,360	0.00	0.00
Quarter	**Quarter 1**	224	876,213	876,213	876,213	0.00	0.00
	Quarter 2	234	879,449	879,449	879,449	0.00	0.00
	Quarter 3	229	883,066	883,066	883,066	0.00	-0.00
	Quarter 4	300	886,632	886,632	886,632	0.00	0.00
Age Group	**12–17**	243	293,722	293,722	293,722	0.00	0.00
	18–25	280	408,985	415,641	415,641	-1.60	-0.00
	26–34	133	528,189	520,529	520,529	1.47	0.00
	35–49	179	799,776	800,780	800,780	-0.13	0.00
	50–64	80	782,263	795,186	795,186	-1.63	-0.00
	65+	72	712,425	699,503	699,503	1.85	-0.00
Race	**White**	799	3,016,415	3,097,634	3,097,634	-2.62	-0.00
	Black or African American	21	62,909	70,883	70,883	-11.25	-0.00
	American Indian/Alaska Native	39	109,842	59,471	59,471	84.70	0.00
	Asian	66	198,811	183,310	183,310	8.46	0.00
	Two or More Races	62	137,383	114,062	114,062	20.45	-0.00
Hispanicity	**Hispanic or Latino**	167	431,489	406,870	406,870	6.05	0.00
	Non-Hispanic or Latino	820	3,093,871	3,118,490	3,118,490	-0.79	-0.00
Gender	**Male**	496	1,734,427	1,728,643	1,728,643	0.33	-0.00
	Female	491	1,790,933	1,796,717	1,796,717	-0.32	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.40 2017 NSDUH Slippage Rates: PENNSYLVANIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		2,392	10,866,811	10,866,811	10,866,811	0.00	0.00
Quarter	**Quarter 1**	607	2,714,261	2,714,261	2,714,261	0.00	-0.00
	Quarter 2	575	2,715,398	2,715,398	2,715,398	-0.00	0.00
	Quarter 3	614	2,717,610	2,717,610	2,717,610	0.00	0.00
	Quarter 4	596	2,719,542	2,719,542	2,719,542	0.00	0.00
Age Group	**12–17**	562	924,520	919,394	919,394	0.56	0.00
	18–25	579	1,317,680	1,322,903	1,322,903	-0.39	0.00
	26–34	378	1,455,883	1,484,634	1,484,634	-1.94	0.00
	35–49	514	2,289,352	2,265,560	2,265,560	1.05	0.00
	50–64	203	2,806,171	2,671,432	2,671,432	5.04	0.00
	65+	156	2,073,205	2,202,888	2,202,888	-5.89	-0.00
Race	**White**	1,872	8,847,142	9,074,779	9,074,779	-2.51	0.00
	Black or African American	316	1,205,116	1,189,888	1,189,888	1.28	0.00
	American Indian/Alaska Native	41	132,247	26,923	37,534	252.34	-28.27
	Asian	98	467,908	409,521	398,911	17.30	2.66
	Two or More Races	65	214,398	165,699	165,699	29.39	0.00
Hispanicity	**Hispanic or Latino**	220	737,290	702,606	702,606	4.94	0.00
	Non-Hispanic or Latino	2,172	10,129,521	10,164,205	10,164,205	-0.34	-0.00
Gender	**Male**	1,138	5,253,255	5,254,001	5,254,001	-0.01	0.00
	Female	1,254	5,613,556	5,612,809	5,612,810	0.01	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.41 2017 NSDUH Slippage Rates: RHODE ISLAND

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		995	910,587	910,587	910,587	-0.00	-0.00
Quarter	**Quarter 1**	227	227,320	227,320	227,320	-0.00	0.00
	Quarter 2	234	227,517	227,517	227,517	-0.00	-0.00
	Quarter 3	241	227,763	227,763	227,763	-0.00	-0.00
	Quarter 4	293	227,986	227,986	227,986	0.00	-0.00
Age Group	**12–17**	235	73,284	73,443	73,443	-0.22	0.00
	18–25	232	126,832	126,842	126,842	-0.01	0.00
	26–34	177	127,455	127,966	127,966	-0.40	0.00
	35–49	202	185,914	189,001	189,001	-1.63	0.00
	50–64	76	204,432	222,415	222,416	-8.09	-0.00
	65+	73	192,669	170,920	170,920	12.72	0.00
Race	**White**	738	722,239	777,516	777,516	-7.11	0.00
	Black or African American	85	76,594	69,881	69,882	9.61	-0.00
	American Indian/Alaska Native	44	32,983	8,141	8,141	305.17	0.00
	Asian	61	41,687	34,781	34,781	19.86	0.00
	Two or More Races	67	37,083	20,268	20,268	82.96	0.00
Hispanicity	**Hispanic or Latino**	194	131,046	126,935	126,935	3.24	-0.00
	Non-Hispanic or Latino	801	779,540	783,652	783,652	-0.52	-0.00
Gender	**Male**	472	439,754	437,836	437,836	0.44	0.00
	Female	523	470,833	472,750	472,750	-0.41	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.42 2017 NSDUH Slippage Rates: SOUTH CAROLINA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		977	4,197,504	4,197,504	4,197,504	0.00	-0.00
Quarter	**Quarter 1**	233	1,043,333	1,043,333	1,043,333	0.00	-0.00
	Quarter 2	266	1,047,314	1,047,314	1,047,314	0.00	0.00
	Quarter 3	204	1,051,326	1,051,326	1,051,326	0.00	0.00
	Quarter 4	274	1,055,531	1,055,531	1,055,531	0.00	0.00
Age Group	**12–17**	241	370,836	372,484	372,484	-0.44	0.00
	18–25	287	515,693	509,421	509,421	1.23	0.00
	26–34	134	557,491	571,658	571,658	-2.48	-0.00
	35–49	168	906,771	903,489	903,489	0.36	-0.00
	50–64	91	1,120,329	991,454	991,454	13.00	0.00
	65+	56	726,384	848,998	848,998	-14.44	0.00
Race	**White**	646	2,803,177	2,934,422	2,934,423	-4.47	-0.00
	Black or African American	278	1,111,793	1,107,759	1,107,759	0.36	0.00
	American Indian/Alaska Native	13	91,878	14,180	21,969	318.22	-35.45
	Asian	9	72,353	83,217	75,428	-4.08	10.33
	Two or More Races	31	118,302	57,926	57,926	104.23	0.00
Hispanicity	**Hispanic or Latino**	67	226,446	206,257	206,257	9.79	0.00
	Non-Hispanic or Latino	910	3,971,058	3,991,247	3,991,247	-0.51	-0.00
Gender	**Male**	466	1,989,868	1,992,196	1,992,196	-0.12	-0.00
	Female	511	2,207,636	2,205,308	2,205,308	0.11	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.43 2017 NSDUH Slippage Rates: SOUTH DAKOTA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		977	705,267	705,267	705,267	0.00	0.00
Quarter	**Quarter 1**	276	175,603	175,603	175,603	0.00	0.00
	Quarter 2	231	176,047	176,047	176,047	0.00	-0.00
	Quarter 3	192	176,556	176,556	176,556	0.00	0.00
	Quarter 4	278	177,061	177,061	177,061	0.00	0.00
Age Group	**12–17**	248	67,482	67,482	67,482	0.00	0.00
	18–25	246	91,421	91,812	91,812	-0.43	0.00
	26–34	151	97,788	98,302	98,302	-0.52	0.00
	35–49	192	146,212	145,308	145,308	0.62	-0.00
	50–64	79	165,376	166,965	166,965	-0.95	0.00
	65+	61	136,987	135,399	135,399	1.17	-0.00
Race	**White**	830	612,104	614,838	614,838	-0.44	-0.00
	Black or African American	23	12,969	12,816	12,816	1.19	0.00
	American Indian/Alaska Native	82	56,113	54,073	54,073	3.77	0.00
	Asian	16	11,671	11,146	11,146	4.71	0.00
	Two or More Races	26	12,410	12,394	12,394	0.13	0.00
Hispanicity	**Hispanic or Latino**	30	24,978	21,858	21,858	14.28	0.00
	Non-Hispanic or Latino	947	680,289	683,409	683,409	-0.46	-0.00
Gender	**Male**	472	352,358	352,181	352,181	0.05	-0.00
	Female	505	352,909	353,087	353,087	-0.05	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.44 2017 NSDUH Slippage Rates: TENNESSEE

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		983	5,617,904	5,617,904	5,617,904	0.00	0.00
Quarter	**Quarter 1**	249	1,398,459	1,398,459	1,398,459	0.00	0.00
	Quarter 2	233	1,402,244	1,402,244	1,402,244	0.00	0.00
	Quarter 3	239	1,406,508	1,406,508	1,406,508	0.00	0.00
	Quarter 4	262	1,410,693	1,410,693	1,410,693	0.00	0.00
Age Group	**12–17**	260	506,818	511,129	511,129	-0.84	0.00
	18–25	214	689,631	691,269	691,269	-0.24	0.00
	26–34	143	821,105	794,882	794,882	3.30	0.00
	35–49	200	1,224,658	1,255,017	1,255,017	-2.42	-0.00
	50–64	99	1,425,117	1,316,798	1,316,798	8.23	0.00
	65+	67	950,574	1,048,809	1,048,809	-9.37	-0.00
Race	**White**	700	4,411,120	4,484,403	4,484,403	-1.63	-0.00
	Black or African American	215	918,493	917,426	917,426	0.12	0.00
	American Indian/Alaska Native	19	77,064	52,101	24,786	210.92	110.21
	Asian	11	86,770	103,852	109,240	-20.57	-4.93
	Two or More Races	38	124,457	60,121	82,049	51.69	-26.73
Hispanicity	**Hispanic or Latino**	89	233,659	258,779	258,779	-9.71	0.00
	Non-Hispanic or Latino	894	5,384,246	5,359,125	5,359,125	0.47	0.00
Gender	**Male**	479	2,697,574	2,697,081	2,697,081	0.02	0.00
	Female	504	2,920,330	2,920,824	2,920,824	-0.02	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.45 2017 NSDUH Slippage Rates: TEXAS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,335	22,910,762	22,910,762	22,910,762	-0.00	0.00
Quarter	**Quarter 1**	732	5,692,570	5,692,570	5,692,570	-0.00	0.00
	Quarter 2	869	5,715,090	5,715,090	5,715,090	-0.00	0.00
	Quarter 3	847	5,739,394	5,739,395	5,739,395	-0.00	0.00
	Quarter 4	887	5,763,708	5,763,708	5,763,708	-0.00	-0.00
Age Group	**12–17**	811	2,460,252	2,452,451	2,452,451	0.32	0.00
	18–25	839	3,061,453	3,087,771	3,087,771	-0.85	-0.00
	26–34	470	3,619,121	3,620,489	3,620,489	-0.04	0.00
	35–49	677	5,550,702	5,507,989	5,507,989	0.78	0.00
	50–64	337	5,251,455	4,856,692	4,856,692	8.13	0.00
	65+	201	2,967,779	3,385,370	3,385,370	-12.34	0.00
Race	**White**	2,448	17,172,194	18,251,620	18,251,620	-5.91	0.00
	Black or African American	472	2,855,839	2,835,829	2,835,829	0.71	0.00
	American Indian/Alaska Native	134	819,767	236,707	236,707	246.32	0.00
	Asian	153	1,411,458	1,220,737	1,220,737	15.62	0.00
	Two or More Races	128	651,505	365,870	365,870	78.07	0.00
Hispanicity	**Hispanic or Latino**	1,522	8,657,337	8,583,267	8,583,267	0.86	0.00
	Non-Hispanic or Latino	1,813	14,253,425	14,327,495	14,327,495	-0.52	0.00
Gender	**Male**	1,620	11,210,109	11,189,454	11,189,454	0.18	0.00
	Female	1,715	11,700,653	11,721,309	11,721,309	-0.18	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.46 2017 NSDUH Slippage Rates: UTAH

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		946	2,454,802	2,454,802	2,454,802	0.00	0.00
Quarter	**Quarter 1**	216	608,379	608,379	608,379	0.00	-0.00
	Quarter 2	278	611,862	611,862	611,862	0.00	-0.00
	Quarter 3	236	615,510	615,510	615,510	0.00	0.00
	Quarter 4	216	619,051	619,051	619,051	-0.00	0.00
Age Group	**12–17**	218	303,235	303,235	303,235	0.00	-0.00
	18–25	239	391,308	393,415	393,415	-0.54	-0.00
	26–34	133	388,696	399,013	399,013	-2.59	-0.00
	35–49	203	596,142	583,718	583,718	2.13	-0.00
	50–64	85	445,483	443,854	443,854	0.37	0.00
	65+	68	329,940	331,569	331,569	-0.49	0.00
Race	**White**	857	2,218,341	2,245,299	2,245,299	-1.20	0.00
	Black or African American	10	32,175	31,815	31,816	1.13	-0.00
	American Indian/Alaska Native	13	53,805	34,940	34,941	53.99	-0.00
	Asian	29	90,497	92,767	92,767	-2.45	-0.00
	Two or More Races	37	59,985	49,981	49,981	20.02	-0.00
Hispanicity	**Hispanic or Latino**	166	342,175	317,807	317,807	7.67	0.00
	Non-Hispanic or Latino	780	2,112,628	2,136,996	2,136,996	-1.14	0.00
Gender	**Male**	473	1,223,166	1,223,166	1,223,166	0.00	-0.00
	Female	473	1,231,637	1,231,637	1,231,637	0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.47 2017 NSDUH Slippage Rates: VERMONT

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,002	542,874	542,874	542,874	0.00	-0.00
Quarter	**Quarter 1**	160	135,623	135,623	135,623	0.00	-0.00
	Quarter 2	331	135,664	135,664	135,664	0.00	0.00
	Quarter 3	288	135,752	135,752	135,752	0.00	0.00
	Quarter 4	223	135,834	135,834	135,834	0.00	-0.00
Age Group	**12–17**	266	41,710	41,710	41,710	0.00	0.00
	18–25	222	73,038	73,961	73,961	-1.25	-0.00
	26–34	160	65,608	64,724	64,724	1.36	0.00
	35–49	215	107,046	108,409	108,409	-1.26	0.00
	50–64	77	138,120	140,449	140,449	-1.66	-0.00
	65+	62	117,352	113,621	113,621	3.28	-0.00
Race	**White**	923	512,997	515,369	515,369	-0.46	-0.00
	Black or African American	20	6,722	6,721	6,721	0.01	0.00
	American Indian/Alaska Native	6	2,717	2,104	2,104	29.16	0.00
	Asian	21	9,854	10,097	10,097	-2.41	0.00
	Two or More Races	32	10,584	8,583	8,583	23.30	0.00
Hispanicity	**Hispanic or Latino**	26	12,415	9,746	9,746	27.38	0.00
	Non-Hispanic or Latino	976	530,459	533,127	533,128	-0.50	-0.00
Gender	**Male**	474	266,273	266,585	266,585	-0.12	-0.00
	Female	528	276,600	276,289	276,289	0.11	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.48 2017 NSDUH Slippage Rates: VIRGINIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,521	7,025,154	7,025,154	7,025,154	-0.00	0.00
Quarter	**Quarter 1**	282	1,750,777	1,750,777	1,750,777	0.00	0.00
	Quarter 2	429	1,754,322	1,754,322	1,754,322	0.00	0.00
	Quarter 3	432	1,758,142	1,758,142	1,758,142	-0.00	0.00
	Quarter 4	378	1,761,913	1,761,913	1,761,913	0.00	0.00
Age Group	**12–17**	346	625,481	628,884	628,884	-0.54	0.00
	18–25	410	869,492	874,910	874,910	-0.62	0.00
	26–34	252	1,009,765	1,006,466	1,006,466	0.33	0.00
	35–49	283	1,594,419	1,603,297	1,603,297	-0.55	0.00
	50–64	128	1,622,112	1,665,700	1,665,700	-2.62	0.00
	65+	102	1,303,886	1,245,897	1,245,897	4.65	-0.00
Race	**White**	948	4,689,813	4,982,190	4,982,190	-5.87	-0.00
	Black or African American	320	1,368,674	1,349,436	1,349,436	1.43	0.00
	American Indian/Alaska Native	44	101,040	30,322	36,831	174.33	-17.67
	Asian	111	534,907	500,441	493,932	8.30	1.32
	Two or More Races	98	330,721	162,766	162,766	103.19	0.00
Hispanicity	**Hispanic or Latino**	151	605,239	597,854	597,854	1.24	0.00
	Non-Hispanic or Latino	1,370	6,419,915	6,427,300	6,427,300	-0.11	0.00
Gender	**Male**	752	3,378,106	3,378,106	3,378,106	0.00	0.00
	Female	769	3,647,049	3,647,049	3,647,049	-0.00	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.49 2017 NSDUH Slippage Rates: WASHINGTON

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		973	6,190,537	6,190,537	6,190,537	0.00	0.00
Quarter	**Quarter 1**	210	1,536,956	1,536,956	1,536,956	0.00	-0.00
	Quarter 2	253	1,543,866	1,543,866	1,543,866	0.00	-0.00
	Quarter 3	231	1,551,215	1,551,215	1,551,215	0.00	0.00
	Quarter 4	279	1,558,499	1,558,499	1,558,499	0.00	0.00
Age Group	**12–17**	247	545,480	538,697	538,697	1.26	0.00
	18–25	231	716,922	735,718	735,718	-2.55	0.00
	26–34	159	984,946	974,434	974,434	1.08	0.00
	35–49	200	1,431,473	1,426,727	1,426,727	0.33	0.00
	50–64	81	1,484,946	1,417,163	1,417,163	4.78	-0.00
	65+	55	1,026,770	1,097,799	1,097,799	-6.47	0.00
Race	**White**	764	4,815,976	4,991,605	4,991,605	-3.52	0.00
	Black or African American	36	305,601	240,248	240,248	27.20	0.00
	American Indian/Alaska Native	44	225,529	106,922	106,922	110.93	-0.00
	Asian	80	626,872	614,513	614,514	2.01	-0.00
	Two or More Races	49	216,558	237,249	237,249	-8.72	-0.00
Hispanicity	**Hispanic or Latino**	197	737,160	687,096	687,096	7.29	0.00
	Non-Hispanic or Latino	776	5,453,377	5,503,441	5,503,441	-0.91	0.00
Gender	**Male**	489	3,053,712	3,054,623	3,054,623	-0.03	0.00
	Female	484	3,136,825	3,135,913	3,135,913	0.03	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.50 2017 NSDUH Slippage Rates: WEST VIRGINIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		964	1,545,522	1,545,522	1,545,522	0.00	0.00
Quarter	**Quarter 1**	192	387,246	387,246	387,246	0.00	0.00
	Quarter 2	286	386,605	386,605	386,605	0.00	0.00
	Quarter 3	278	386,105	386,105	386,105	0.00	0.00
	Quarter 4	208	385,566	385,566	385,566	0.00	0.00
Age Group	**12–17**	236	128,316	126,421	126,421	1.50	0.00
	18–25	219	177,994	179,213	179,213	-0.68	0.00
	26–34	145	184,063	186,867	186,867	-1.50	0.00
	35–49	207	328,937	330,018	330,018	-0.33	-0.00
	50–64	86	393,106	380,003	380,004	3.45	-0.00
	65+	71	333,106	342,999	342,999	-2.88	0.00
Race	**White**	864	1,442,779	1,457,058	1,457,058	-0.98	0.00
	Black or African American	37	51,035	50,804	50,804	0.45	0.00
	American Indian/Alaska Native	3	3,672	1,106	3,783	-2.94	-70.77
	Asian	5	10,199	16,235	13,557	-24.77	19.75
	Two or More Races	55	37,837	20,319	20,319	86.21	0.00
Hispanicity	**Hispanic or Latino**	18	23,946	21,650	21,650	10.60	0.00
	Non-Hispanic or Latino	946	1,521,576	1,523,872	1,523,872	-0.15	0.00
Gender	**Male**	431	755,110	756,233	756,233	-0.15	0.00
	Female	533	790,412	789,289	789,289	0.14	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.51 2017 NSDUH Slippage Rates: WISCONSIN

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		989	4,887,789	4,887,789	4,887,789	-0.00	0.00
Quarter	**Quarter 1**	248	1,219,369	1,219,369	1,219,369	-0.00	0.00
	Quarter 2	219	1,220,891	1,220,891	1,220,891	0.00	0.00
	Quarter 3	297	1,222,856	1,222,856	1,222,856	-0.00	0.00
	Quarter 4	225	1,224,672	1,224,672	1,224,672	0.00	0.00
Age Group	**12–17**	259	444,400	444,400	444,400	0.00	0.00
	18–25	218	623,301	624,805	624,805	-0.24	0.00
	26–34	181	641,190	641,094	641,094	0.01	0.00
	35–49	201	1,038,442	1,040,904	1,040,904	-0.24	0.00
	50–64	69	1,125,586	1,207,374	1,207,374	-6.77	0.00
	65+	61	1,014,870	929,212	929,213	9.22	-0.00
Race	**White**	791	4,252,117	4,340,006	4,340,006	-2.03	0.00
	Black or African American	81	300,296	288,898	288,898	3.95	0.00
	American Indian/Alaska Native	32	97,566	28,390	50,479	93.28	-43.76
	Asian	55	158,277	160,575	138,486	14.29	15.95
	Two or More Races	30	79,533	69,920	69,920	13.75	0.00
Hispanicity	**Hispanic or Latino**	93	299,977	293,368	293,368	2.25	0.00
	Non-Hispanic or Latino	896	4,587,812	4,594,421	4,594,421	-0.14	0.00
Gender	**Male**	486	2,404,484	2,407,759	2,407,759	-0.14	0.00
	Female	503	2,483,305	2,480,030	2,480,030	0.13	0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table H.52 2017 NSDUH Slippage Rates: WYOMING

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		978	477,603	477,603	477,603	0.00	-0.00
Quarter	**Quarter 1**	279	119,694	119,694	119,694	0.00	0.00
	Quarter 2	207	119,480	119,480	119,480	0.00	-0.00
	Quarter 3	203	119,306	119,306	119,306	0.00	0.00
	Quarter 4	289	119,123	119,123	119,123	0.00	-0.00
Age Group	**12–17**	266	44,218	44,218	44,218	0.00	0.00
	18–25	228	59,164	58,232	58,232	1.60	0.00
	26–34	133	68,722	69,369	69,369	-0.93	-0.00
	35–49	214	101,026	102,504	102,504	-1.44	0.00
	50–64	73	107,516	114,041	114,041	-5.72	-0.00
	65+	64	96,957	89,240	89,241	8.65	-0.00
Race	**White**	865	441,816	447,086	447,086	-1.18	-0.00
	Black or African American	14	4,788	5,436	5,436	-11.92	-0.00
	American Indian/Alaska Native	34	15,414	11,628	11,628	32.56	-0.00
	Asian	12	5,868	5,451	5,451	7.65	0.00
	Two or More Races	53	9,718	8,003	8,003	21.43	-0.00
Hispanicity	**Hispanic or Latino**	114	48,118	43,296	43,296	11.14	-0.00
	Non-Hispanic or Latino	864	429,486	434,307	434,307	-1.11	0.00
Gender	**Male**	478	241,223	241,364	241,365	-0.06	-0.00
	Female	500	236,380	236,239	236,239	0.06	-0.00

[1] WT1*...*WT14 (before person poststratification).

[2] WT1*...*WT15 (after person poststratification).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Appendix I: Evaluation of Calibration Weights: Weight Summary Statistics

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Table I.1 2017 NSDUH Dwelling Unit–Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

Domain	*n*	Before res.du.nr (WT1*...*WT8)[1]						After res.du.nr & Before res.du.ps (WT1*...*WT9)[1]						After res.du.ps (WT1*...*WT10)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
United States	138,061	31	335	645	819	6,601	1.34	34	441	839	1,114	4,976	1.36	7	452	884	1,231	9,287	1.43
Alaska	2,015	82	84	91	94	434	1.11	85	103	116	134	339	1.08	31	112	132	155	433	1.08
Alabama	2,071	624	645	743	756	980	1.01	714	790	886	941	3,675	1.03	170	834	932	1,025	4,436	1.05
Arkansas	1,974	388	399	465	485	556	1.01	397	503	541	597	1,362	1.05	125	516	601	684	2,602	1.09
Arizona	1,609	149	675	970	1,063	1,719	1.06	394	768	1,183	1,472	3,078	1.11	330	1,175	1,529	1,992	6,584	1.17
California	8,250	832	863	972	1,047	5,061	1.03	1,040	1,297	1,433	1,583	3,752	1.04	659	1,395	1,580	1,800	8,503	1.09
Colorado	1,837	484	687	818	1,081	3,336	1.25	665	932	1,154	1,323	3,924	1.22	190	928	1,132	1,342	5,021	1.16
Connecticut	2,021	374	386	485	498	554	1.02	400	579	639	713	981	1.03	145	576	668	773	3,912	1.11
District of Columbia	3,727	31	32	46	52	163	1.17	34	49	62	92	314	1.37	7	53	74	104	460	1.27
Delaware	2,125	101	106	114	119	300	1.04	103	137	153	185	428	1.07	48	146	167	197	711	1.10
Florida	7,339	576	644	702	821	2,066	1.08	676	864	969	1,111	2,591	1.06	289	917	1,073	1,314	4,212	1.09
Georgia	2,722	802	824	946	1,166	1,662	1.02	901	1,068	1,239	1,513	4,966	1.10	395	1,200	1,420	1,652	6,298	1.09
Hawaii	2,107	73	109	121	163	178	1.05	98	148	197	227	503	1.10	51	161	208	263	1,108	1.18
Iowa	2,084	384	449	488	542	743	1.02	440	527	591	632	922	1.02	220	538	614	661	1,918	1.04
Idaho	1,615	253	265	292	321	1,039	1.05	264	316	352	425	1,299	1.06	79	328	380	465	1,371	1.10
Illinois	4,516	184	633	646	659	743	1.00	408	785	882	1,023	3,171	1.15	348	843	974	1,156	4,684	1.14
Indiana	1,933	889	937	999	1,042	1,070	1.00	1,037	1,194	1,283	1,409	3,277	1.02	329	1,155	1,315	1,474	5,178	1.10
Kansas	1,762	431	451	484	530	594	1.01	476	541	599	643	889	1.02	170	554	633	720	2,113	1.07
Kentucky	1,810	619	647	704	785	809	1.01	632	795	866	957	2,601	1.07	142	838	950	1,109	2,478	1.07
Louisiana	1,948	551	563	716	736	841	1.02	562	728	841	931	1,467	1.03	228	743	897	1,036	3,642	1.08
Massachusetts	2,340	598	611	765	789	1,687	1.02	636	958	1,076	1,249	2,695	1.06	206	938	1,120	1,292	6,350	1.12
Maryland	1,964	620	644	680	750	1,212	1.07	760	883	1,019	1,139	2,167	1.08	201	899	1,117	1,359	4,125	1.11
Maine	2,332	149	153	175	223	394	1.04	160	190	230	261	467	1.04	46	203	233	275	881	1.08
Michigan	4,956	547	567	618	643	1,156	1.01	612	705	760	823	2,705	1.04	208	726	797	885	3,273	1.06
Minnesota	1,862	656	699	725	947	1,208	1.03	675	886	1,011	1,206	1,708	1.03	361	977	1,111	1,304	4,377	1.06
Missouri	2,075	776	837	875	943	1,103	1.01	850	1,005	1,104	1,224	1,927	1.02	286	1,007	1,178	1,364	4,428	1.08

(continued)

Table I.1 2017 NSDUH Dwelling Unit–Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before res.du.nr (WT1*...*WT8)[1]						After res.du.nr & Before res.du.ps (WT1*...*WT9)[1]						After res.du.ps (WT1*...*WT10)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
Mississippi	1,737	360	435	561	572	642	1.02	360	570	637	722	1,054	1.03	115	542	658	742	2,631	1.08
Montana	2,161	115	117	130	176	241	1.04	115	148	165	199	443	1.06	66	170	200	226	610	1.06
North Carolina	2,968	833	864	944	1,050	1,148	1.01	932	1,113	1,222	1,322	4,192	1.02	243	1,191	1,357	1,508	5,741	1.07
North Dakota	2,210	97	100	103	106	132	1.01	105	114	120	128	166	1.02	39	121	133	158	430	1.06
Nebraska	1,850	256	270	286	292	341	1.01	291	343	355	414	1,054	1.04	103	336	380	437	1,609	1.12
New Hampshire	2,280	131	135	160	197	308	1.04	142	179	203	264	541	1.09	37	196	219	275	1,288	1.10
New Jersey	2,928	619	633	692	795	6,601	1.23	708	839	979	1,249	2,549	1.10	351	813	1,057	1,354	6,265	1.21
New Mexico	1,673	297	310	321	335	644	1.01	298	340	387	432	751	1.04	144	404	469	563	2,153	1.10
Nevada	1,559	294	305	431	509	1,564	1.15	303	464	561	831	3,123	1.37	124	483	617	829	3,325	1.30
New York	7,364	445	510	531	615	899	1.02	488	752	857	1,035	2,418	1.09	233	768	910	1,148	7,061	1.23
Ohio	4,974	623	643	651	687	775	1.00	695	817	860	950	1,930	1.02	230	855	935	1,033	4,026	1.05
Oklahoma	1,899	510	532	543	674	1,115	1.03	589	693	736	829	1,727	1.06	225	676	770	898	3,119	1.13
Oregon	2,340	372	385	467	535	721	1.04	427	518	607	725	1,477	1.06	272	565	658	810	4,118	1.09
Pennsylvania	5,248	662	678	700	756	1,385	1.00	754	840	896	956	2,094	1.02	344	878	945	1,041	4,346	1.04
Rhode Island	2,202	119	122	145	148	153	1.01	135	168	193	213	736	1.05	27	156	187	217	1,073	1.16
South Carolina	1,747	173	687	711	838	1,072	1.03	414	841	970	1,106	1,739	1.03	263	948	1,081	1,250	4,694	1.09
South Dakota	1,798	103	133	137	140	240	1.02	140	160	164	169	379	1.03	44	169	186	203	698	1.11
Tennessee	1,933	883	910	931	1,014	1,051	1.00	892	1,029	1,115	1,270	4,976	1.06	237	1,143	1,318	1,518	6,191	1.10
Texas	5,156	1,101	1,255	1,380	1,415	1,800	1.01	1,269	1,560	1,680	1,841	4,441	1.03	481	1,644	1,892	2,204	9,287	1.08
Utah	1,167	509	533	557	703	873	1.03	519	580	667	894	3,409	1.10	108	699	814	967	4,025	1.15
Virginia	2,967	201	755	763	789	970	1.01	769	895	965	1,108	1,628	1.02	167	933	1,052	1,265	6,141	1.09
Vermont	2,713	46	47	70	89	119	1.08	53	63	89	119	442	1.10	15	64	89	121	457	1.17
Washington	1,888	917	940	958	1,025	1,381	1.02	1,048	1,202	1,306	1,487	3,349	1.03	587	1,257	1,448	1,676	6,785	1.10
Wisconsin	2,227	674	751	770	796	1,708	1.03	719	841	944	1,066	4,086	1.05	417	895	1,009	1,165	4,110	1.07
West Virginia	2,202	227	231	233	284	297	1.01	263	283	299	358	1,360	1.02	57	289	327	380	782	1.05
Wyoming	1,876	72	74	92	96	112	1.01	73	95	110	115	215	1.02	21	108	126	142	441	1.07

[1] WT1*…*WT8 are design-based weight components; nr = nonresponse adjustment; ps = poststratification adjustment.

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table I.2 2017 NSDUH Selected Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

Domain	*n*	Before sel.per.ps (WT1*...*WT12)[1]						After sel.per.ps (WT1*...*WT13)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
United States	97,667	7	920	1,786	3,464	40,456	2.09	4	904	1,787	3,496	41,845	2.13
Alaska	1,429	31	165	311	484	2,274	1.67	47	162	309	519	2,210	1.66
Alabama	1,357	265	1,317	2,078	3,241	15,889	1.59	78	1,278	2,248	3,417	13,905	1.62
Arkansas	1,366	142	732	1,355	2,152	10,147	1.75	162	717	1,302	2,379	12,351	1.66
Arizona	1,121	478	1,910	3,456	5,645	36,369	1.88	436	1,795	3,437	5,802	39,725	2.09
California	6,962	741	2,227	3,840	5,831	37,595	1.50	393	2,212	3,880	5,982	31,191	1.50
Colorado	1,441	250	1,487	2,466	4,052	22,774	1.69	145	1,468	2,357	3,945	21,782	1.66
Connecticut	1,483	222	803	1,337	1,984	14,943	1.91	260	770	1,287	2,143	27,574	2.26
District of Columbia	1,304	7	119	336	608	2,676	1.78	4	117	320	627	3,071	1.89
Delaware	1,415	61	230	397	651	5,615	1.95	46	227	416	703	3,118	1.75
Florida	4,810	292	1,435	2,469	3,885	25,865	1.94	134	1,428	2,495	3,981	29,558	1.92
Georgia	2,053	628	1,948	3,313	5,166	26,434	1.49	413	1,964	3,196	5,076	32,758	1.63
Hawaii	1,408	68	293	509	956	9,601	2.05	33	292	537	976	6,394	1.96
Iowa	1,431	269	818	1,353	1,996	15,179	1.72	193	793	1,359	2,051	8,424	1.64
Idaho	1,291	89	492	789	1,173	5,617	1.73	93	505	757	1,153	7,153	1.78
Illinois	3,769	388	1,281	2,154	3,703	22,064	1.58	256	1,317	2,181	3,779	15,551	1.52
Indiana	1,378	376	1,923	3,184	5,161	32,650	1.58	255	2,010	3,142	5,263	17,579	1.46
Kansas	1,365	227	770	1,240	1,969	11,367	1.68	87	749	1,211	2,033	10,268	1.77
Kentucky	1,431	170	1,169	1,941	3,117	16,443	1.74	216	1,156	1,842	3,184	18,822	1.68
Louisiana	1,371	316	1,156	2,069	3,296	25,983	1.68	314	1,172	2,062	3,464	17,409	1.65
Massachusetts	1,668	333	1,325	2,476	4,145	29,712	1.90	253	1,253	2,240	4,115	33,049	2.08
Maryland	1,340	203	1,486	2,507	4,217	33,462	1.79	129	1,440	2,477	4,468	34,742	1.95
Maine	1,395	47	277	494	855	6,582	2.23	41	267	477	870	4,631	2.22
Michigan	3,396	246	1,076	1,730	2,511	29,892	1.75	137	1,073	1,703	2,648	17,304	1.81
Minnesota	1,358	554	1,339	2,712	4,109	16,236	1.64	337	1,298	2,531	4,044	24,566	1.77
Missouri	1,419	345	1,547	2,680	3,720	21,408	1.77	209	1,538	2,559	3,822	21,197	1.82

(continued)

Table I.2 2017 NSDUH Selected Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before sel.per.ps (WT1*...*WT12)[1]						After sel.per.ps (WT1*...*WT13)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
Mississippi	1,321	280	960	1,410	2,099	13,904	1.60	214	932	1,322	2,110	10,134	1.62
Montana	1,324	66	274	439	670	4,832	1.89	36	293	468	675	3,978	1.81
North Carolina	2,075	400	1,640	2,695	4,752	37,409	1.73	261	1,604	2,669	5,035	20,412	1.76
North Dakota	1,397	75	208	341	480	2,560	1.59	44	202	349	515	1,885	1.59
Nebraska	1,349	104	456	827	1,444	10,204	1.77	39	461	844	1,524	7,500	1.66
New Hampshire	1,430	56	281	523	916	4,423	1.89	59	285	534	988	4,368	1.86
New Jersey	2,364	422	1,294	2,045	3,656	32,966	1.89	362	1,196	2,053	4,018	28,523	1.99
New Mexico	1,147	169	630	1,074	1,734	7,908	1.64	114	630	1,052	1,742	10,908	1.81
Nevada	1,394	147	655	1,202	2,096	12,544	1.87	67	619	1,165	2,215	14,230	2.01
New York	5,216	335	1,240	2,175	3,737	40,456	1.93	396	1,256	2,171	4,020	41,723	1.97
Ohio	3,441	332	1,174	2,094	3,206	21,418	1.71	235	1,183	2,116	3,166	14,034	1.67
Oklahoma	1,392	295	1,008	1,686	2,696	17,866	1.65	266	966	1,753	3,009	15,924	1.62
Oregon	1,450	318	841	1,457	3,078	15,697	1.81	259	832	1,472	3,358	16,036	1.77
Pennsylvania	3,341	497	1,371	2,562	3,324	38,668	1.75	338	1,399	2,449	3,284	28,664	1.75
Rhode Island	1,457	43	263	427	697	4,612	1.79	34	260	424	660	7,560	1.94
South Carolina	1,311	318	1,154	2,086	3,781	31,533	1.90	243	1,161	2,123	3,791	23,171	1.82
South Dakota	1,339	44	223	377	543	4,866	1.84	39	221	361	550	3,967	1.83
Tennessee	1,341	391	1,725	3,097	5,173	27,367	1.75	121	1,636	2,986	5,142	33,205	1.73
Texas	4,474	932	2,398	4,337	6,698	26,615	1.43	918	2,413	4,206	6,823	25,474	1.44
Utah	1,251	124	985	1,668	2,529	8,597	1.39	41	1,012	1,700	2,691	10,205	1.43
Virginia	2,149	204	1,381	2,327	3,950	16,128	1.62	131	1,347	2,273	4,315	15,008	1.66
Vermont	1,429	23	146	241	381	3,514	2.10	9	143	235	381	2,644	2.27
Washington	1,445	735	1,641	3,313	4,661	39,263	1.74	663	1,700	3,104	5,012	41,845	1.79
Wisconsin	1,405	449	1,452	2,354	3,438	18,833	1.80	163	1,477	2,358	3,399	24,066	2.01
West Virginia	1,444	69	408	697	1,233	5,726	1.81	20	420	741	1,158	6,079	1.80
Wyoming	1,220	21	156	266	422	1,836	1.68	7	155	261	460	3,260	1.94

[1] WT1*...*WT12 and WT1*...*WT13 used demographic variables from screener data; ps = poststratification adjustment.

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.

Table I.3 2017 NSDUH Respondent Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

Domain	*n*	Before res.per.nr (WT1*...*WT13)[1]						After res.per.nr (WT1*...*WT14)[1]						Before res.per.ps (WT1*...*WT14)[2]						Final Weight After res.per.ps (WT1*...*WT15)[2]					
		Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]
United States	68,032	4	871	1,709	3,339	41,845	2.16	4	1,151	2,377	4,915	71,205	2.35	4	1,151	2,377	4,915	71,205	2.35	1	1,071	2,360	4,944	71,030	2.44
Alaska	978	47	159	298	497	2,210	1.68	51	216	427	770	4,689	1.83	51	216	427	770	4,689	1.83	50	216	425	796	4,818	1.83
Alabama	964	78	1,253	2,073	3,212	13,905	1.66	90	1,595	2,835	4,987	22,409	1.83	90	1,595	2,835	4,987	22,409	1.83	111	1,595	2,850	4,920	57,399	2.06
Arkansas	990	162	700	1,268	2,203	9,638	1.65	162	964	1,612	3,074	15,753	1.86	162	964	1,612	3,074	15,753	1.86	82	923	1,572	3,124	23,316	1.95
Arizona	860	436	1,756	3,210	5,636	39,725	2.11	453	2,119	4,098	7,984	66,605	2.22	453	2,119	4,098	7,984	66,605	2.22	249	2,146	4,121	8,331	51,604	2.34
California	4,478	393	2,084	3,670	5,620	31,191	1.52	469	2,916	5,502	9,576	44,285	1.67	469	2,916	5,502	9,576	44,285	1.67	106	2,800	5,546	9,848	61,235	1.79
Colorado	1,003	145	1,431	2,241	3,801	21,782	1.69	250	1,839	3,263	5,933	29,638	1.85	250	1,839	3,263	5,933	29,638	1.85	93	1,723	3,241	5,986	33,656	1.86
Connecticut	987	260	759	1,267	2,190	27,574	2.37	260	1,075	1,821	3,602	41,768	2.32	260	1,075	1,821	3,602	41,768	2.32	66	1,036	1,766	3,549	41,213	2.52
District of Columbia	975	4	114	306	618	3,071	1.90	4	149	401	819	6,312	2.09	4	149	401	819	6,312	2.09	1	137	391	828	5,957	2.20
Delaware	950	46	224	405	677	3,118	1.80	55	312	566	1,058	5,783	1.85	55	312	566	1,058	5,783	1.85	36	290	568	1,070	6,348	1.91
Florida	3,399	134	1,387	2,426	3,831	29,558	1.94	173	1,850	3,342	5,672	45,899	2.12	173	1,850	3,342	5,672	45,899	2.12	52	1,804	3,348	5,849	39,003	2.18
Georgia	1,487	413	1,942	3,132	4,836	28,056	1.63	413	2,542	4,166	6,698	41,729	1.77	413	2,542	4,166	6,698	41,729	1.77	208	2,494	4,211	6,775	68,015	1.92
Hawaii	971	33	281	497	926	4,500	1.89	38	367	700	1,349	11,256	2.35	38	367	700	1,349	11,256	2.35	8	359	683	1,349	8,906	2.33
Iowa	971	193	779	1,306	2,036	8,424	1.66	193	1,042	1,873	3,350	12,070	1.69	193	1,042	1,873	3,350	12,070	1.69	73	1,062	1,871	3,355	13,747	1.75
Idaho	980	93	495	750	1,133	7,153	1.79	105	620	925	1,603	10,639	1.91	105	620	925	1,603	10,639	1.91	21	613	958	1,615	9,269	1.90
Illinois	2,332	256	1,238	2,055	3,588	14,043	1.54	257	1,801	3,369	6,193	36,711	1.71	257	1,801	3,369	6,193	36,711	1.71	51	1,728	3,394	6,186	47,736	1.85
Indiana	942	255	1,957	3,040	5,291	15,072	1.46	457	2,661	4,520	8,156	29,572	1.53	457	2,661	4,520	8,156	29,572	1.53	192	2,613	4,463	8,010	38,304	1.60
Kansas	992	87	696	1,166	1,998	10,268	1.80	87	956	1,673	2,731	18,006	1.88	87	956	1,673	2,731	18,006	1.88	18	962	1,651	2,788	23,375	2.02
Kentucky	976	216	1,115	1,774	2,972	17,517	1.69	217	1,542	2,448	4,703	25,020	1.85	217	1,542	2,448	4,703	25,020	1.85	65	1,571	2,542	4,686	22,224	1.87
Louisiana	966	314	1,166	1,962	3,416	17,409	1.65	385	1,581	2,793	5,032	23,246	1.78	385	1,581	2,793	5,032	23,246	1.78	164	1,520	2,690	4,945	23,736	1.84
Massachusetts	986	253	1,232	2,121	4,116	33,049	2.08	254	1,841	3,372	7,227	71,205	2.28	254	1,841	3,372	7,227	71,205	2.28	112	1,803	3,485	7,076	58,901	2.44
Maryland	987	251	1,426	2,396	4,379	34,742	1.99	251	1,817	3,187	6,001	44,707	2.07	251	1,817	3,187	6,001	44,707	2.07	75	1,756	3,155	5,678	50,142	2.27
Maine	985	41	265	464	852	4,631	2.19	56	349	647	1,244	10,138	2.44	56	349	647	1,244	10,138	2.44	14	359	666	1,216	8,094	2.39
Michigan	2,402	137	1,042	1,660	2,556	17,304	1.82	160	1,420	2,285	3,762	24,592	1.96	160	1,420	2,285	3,762	24,592	1.96	91	1,426	2,314	3,860	41,577	1.98
Minnesota	968	348	1,302	2,475	4,039	24,566	1.79	384	1,689	3,408	6,263	33,849	1.76	384	1,689	3,408	6,263	33,849	1.76	158	1,732	3,363	6,247	35,027	1.76
Missouri	989	209	1,544	2,541	3,805	21,197	1.82	215	2,100	3,593	5,775	38,308	1.89	215	2,100	3,593	5,775	38,308	1.89	135	2,134	3,636	5,863	41,127	1.89

(continued)

Table I.3 2017 NSDUH Respondent Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before res.per.nr (WT1*...*WT13)[1]						After res.per.nr (WT1*...*WT14)[1]						Before res.per.ps (WT1*...*WT14)[2]						Final Weight After res.per.ps (WT1*...*WT15)[2]					
		Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]
Mississippi	936	214	884	1,249	1,919	8,385	1.62	215	1,111	1,756	3,056	17,877	1.83	215	1,111	1,756	3,056	17,877	1.83	46	1,112	1,720	3,061	16,707	1.86
Montana	971	36	287	469	674	3,978	1.83	36	385	631	977	5,609	1.78	36	385	631	977	5,609	1.78	33	382	628	996	6,500	1.83
North Carolina	1,491	261	1,578	2,551	4,869	20,412	1.78	362	2,011	3,643	6,881	36,554	1.90	362	2,011	3,643	6,881	36,554	1.90	192	1,949	3,696	7,159	46,144	1.98
North Dakota	981	69	199	347	508	1,885	1.60	86	252	493	778	2,986	1.60	86	252	493	778	2,986	1.60	45	249	481	775	2,929	1.66
Nebraska	961	39	452	834	1,451	7,500	1.66	51	613	1,122	2,122	10,943	1.76	51	613	1,122	2,122	10,943	1.76	21	629	1,122	2,105	16,433	1.82
New Hampshire	1,003	65	274	525	1,004	3,877	1.89	73	395	779	1,504	7,447	1.84	73	395	779	1,504	7,447	1.84	35	387	772	1,499	8,266	1.88
New Jersey	1,559	374	1,129	1,958	3,748	28,523	2.10	445	1,563	2,960	6,027	39,914	2.24	445	1,563	2,960	6,027	39,914	2.24	100	1,554	3,042	6,084	64,036	2.43
New Mexico	927	114	620	1,043	1,667	10,908	1.82	117	735	1,225	2,118	13,093	1.96	117	735	1,225	2,118	13,093	1.96	63	749	1,199	2,142	17,247	2.07
Nevada	958	67	600	1,067	2,072	12,707	2.03	67	773	1,567	3,238	20,627	2.24	67	773	1,567	3,238	20,627	2.24	53	763	1,536	3,256	28,414	2.35
New York	3,352	396	1,186	2,043	3,791	36,791	1.95	456	1,641	3,087	6,580	46,787	2.26	456	1,641	3,087	6,580	46,787	2.26	144	1,654	3,169	6,508	71,030	2.28
Ohio	2,418	235	1,167	2,037	3,124	14,034	1.68	235	1,607	2,793	4,579	33,233	1.78	235	1,607	2,793	4,579	33,233	1.78	47	1,593	2,794	4,568	28,869	1.81
Oklahoma	938	266	967	1,681	2,877	15,924	1.61	341	1,426	2,346	4,384	20,275	1.73	341	1,426	2,346	4,384	20,275	1.73	209	1,388	2,418	4,334	34,139	1.86
Oregon	987	259	839	1,505	3,300	16,036	1.77	286	1,167	2,184	4,771	18,539	1.84	286	1,167	2,184	4,771	18,539	1.84	112	1,164	2,193	4,776	18,716	1.87
Pennsylvania	2,392	382	1,383	2,385	3,197	28,664	1.76	384	1,892	3,110	4,739	36,381	1.89	384	1,892	3,110	4,739	36,381	1.89	185	1,871	3,140	4,808	54,798	1.92
Rhode Island	995	34	248	420	657	7,560	2.03	51	321	573	1,056	8,457	2.12	51	321	573	1,056	8,457	2.12	18	301	573	1,094	10,819	2.30
South Carolina	977	243	1,119	1,980	3,651	21,316	1.84	256	1,425	2,559	4,989	31,597	2.04	256	1,425	2,559	4,989	31,597	2.04	149	1,432	2,524	5,092	27,992	2.10
South Dakota	977	39	213	348	546	3,967	1.87	59	280	480	794	4,111	1.89	59	280	480	794	4,111	1.89	34	283	494	779	5,697	1.93
Tennessee	983	121	1,536	2,861	5,057	20,587	1.73	121	2,019	4,040	7,563	30,357	1.80	121	2,019	4,040	7,563	30,357	1.80	24	2,066	4,038	7,313	32,242	1.82
Texas	3,335	918	2,329	3,960	6,511	22,524	1.45	987	2,947	5,207	9,342	52,908	1.59	987	2,947	5,207	9,342	52,908	1.59	425	2,971	5,203	9,424	57,673	1.59
Utah	946	41	989	1,625	2,677	10,205	1.47	48	1,260	2,097	3,568	13,192	1.50	48	1,260	2,097	3,568	13,192	1.50	49	1,288	2,076	3,587	11,954	1.48
Virginia	1,521	131	1,314	2,171	3,985	15,008	1.65	131	1,731	2,952	5,519	34,958	1.94	131	1,731	2,952	5,519	34,958	1.94	39	1,701	2,977	5,610	39,356	2.02
Vermont	1,002	9	131	221	369	2,644	2.36	11	171	302	576	4,289	2.41	11	171	302	576	4,289	2.41	4	176	309	605	4,165	2.37
Washington	973	663	1,636	2,963	4,932	41,845	1.84	683	2,307	4,279	7,576	51,538	1.92	683	2,307	4,279	7,576	51,538	1.92	342	2,229	4,463	7,825	41,694	1.89
Wisconsin	989	163	1,391	2,267	3,301	24,066	2.04	264	1,844	3,181	5,068	56,818	2.15	264	1,844	3,181	5,068	56,818	2.15	53	1,826	3,297	5,251	56,818	2.20
West Virginia	964	20	415	741	1,132	6,079	1.83	20	640	1,034	1,758	8,975	1.87	20	640	1,034	1,758	8,975	1.87	6	610	1,068	1,789	15,177	1.95
Wyoming	978	7	151	248	446	3,260	1.95	7	180	316	573	5,632	2.17	7	180	316	573	5,632	2.17	3	173	321	574	4,056	2.10

[1] WT1*...*WT13 and WT1*...*WT14 used demographic variables from screener data; nr = nonresponse adjustment.

[2] WT1*...*WT14 and WT1*...*WT15 used demographic variables from questionnaire data; ps = poststratification adjustment.

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2017.