



2019 National Survey on Drug Use and Health (NSDUH) 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

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2019 National Survey on Drug Use and Health (NSDUH) Methodological Resource Book, Section 11: Person-Level Sampling Weight Calibration

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Originating Office

Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, 5600 Fishers Lane, Room 15-E09D, Rockville, MD 20857. For questions about this report, please e-mail CBHSQrequest@samhsa.hhs.gov.

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U.S. Department of Health and Human Services
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List of Terms and Abbreviations

| | |
|-------------------|--|
| <i>C</i> | Center point. |
| <i>CAI</i> | Computer-assisted interviewing. |
| <i>DU</i> | Dwelling unit. |
| <i>ev</i> | Extreme weight adjustment. See Section 4.1 for more detail. |
| <i>FI</i> | Field interviewer. |
| <i>GEM</i> | Generalized exponential model. See Chapter 2 for more detail. |
| <i>half-step</i> | This refers to halving the increment in the Newton-Raphson iterative process for fitting GEM. |
| <i>IQR</i> | Interquartile range. |
| <i>L</i> | Lower bound on adjustment factor. |
| <i>MPMN</i> | Multivariate predictive mean neighbor. |
| <i>nr</i> | Nonresponse adjustment. |
| <i>outwinsor</i> | The proportion of weights trimmed after extreme value adjustment via winsorization. |
| <i>PMN</i> | Predictive mean neighborhood. |
| <i>ps</i> | Poststratification adjustment. |
| <i>res.sdu.ev</i> | Respondent screener dwelling unit extreme weight adjustment step. See Section 5.1.4 for more detail. |
| <i>res.sdu.nr</i> | Respondent screener dwelling unit nonresponse adjustment step. See Section 5.1.2 for more detail. |
| <i>res.sdu.ps</i> | Respondent screener dwelling unit poststratification adjustment step. See Section 5.1.3 for more detail. |
| <i>res.per.ev</i> | Respondent person-level extreme weight adjustment step. See Section 5.2.5 for more detail. |
| <i>res.per.nr</i> | Respondent person-level nonresponse adjustment step. See Section 5.2.3 for more detail. |
| <i>res.per.ps</i> | Respondent person-level poststratification adjustment step. See Section 5.2.4 for more detail. |
| <i>SAE</i> | Small area estimate. |
| <i>SDU</i> | Screener dwelling unit. |
| <i>SE</i> | Standard error. |
| <i>sel.per.ps</i> | Selected person-level poststratification adjustment step. See Section 5.2.2 for more detail. |
| <i>SES</i> | Socioeconomic status indicator. See Exhibit 3.1 for more detail. |
| <i>slippage</i> | The difference between the total calibrated weight and target weight (e.g., census control total) for a domain (e.g., females aged 18 to 25). Slippage rate is defined as (calibrated weight – target weight)/target weight. |

| | |
|-----------------------------|--|
| <i>SSR</i> | State sampling region. |
| <i>U</i> | Upper bound on adjustment factor. |
| <i>UPMN</i> | Univariate predictive mean neighbor. |
| <i>UWE</i> | Unequal weighting effect. It refers to the contribution in the design effect due to unequal selection probability and is defined as $1 + [(n - 1)/n] * CV^2$ where CV = coefficient of variation of weights, and n is the sample size. |
| <i>VESTR</i> | Variance estimation stratum. |
| <i>VEREP</i> | Variance estimation replicates. |
| <i>Winsorization</i> | A method of extreme weight adjustment that replaces extreme weights with the critical values used for defining low and high extreme weights. |

Overview

This report contains a brief review of the sampling weight calibration methodology used for the 2019 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 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 and poststratification 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:

- NSDUH's inherent two-stage interview¹ design (viewing the large screener sample as the first stage and the actual questionnaire sample as the second stage) allows for the additional step of poststratifying the selected people to estimated controls from the large first-stage 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 of the screening interview reduced coverage bias resulting from the dwelling unit sampling and produced controls for use in poststratification at the selected-person level, respondent person-pair level, and respondent-household level in the main interview. This step again takes advantage of the inherent two-stage interview 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 2019 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.

¹ The screening interview involves listing all household members, along with their basic demographic information. Immediately after completion of the screening, 0, 1, or 2 people in the household are selected to complete the actual questionnaire interview. The first stage is screening, and the second stage is interviewing.

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1. Introduction

The respondent universe for the 2019 National Survey on Drug Use and Health (NSDUH) was the civilian, noninstitutionalized population aged 12 years or older residing within the 50 states and the District of Columbia. Consistent with NSDUH's design since 1991, the 2019 NSDUH (conducted by RTI International²) universe included residents of noninstitutional group quarters (e.g., shelters, rooming houses, dormitories, group homes), residents of Alaska and Hawaii, and civilians residing on military bases.

A coordinated sample design was developed for the 2014 through 2017 NSDUHs. A large reserve sample of area clusters or segments was selected at the time the 2014 through 2017 NSDUH sample was selected. This reserve sample is being used to field the 2018 through 2022 NSDUHs. Thus, the 2018 through 2022 NSDUH designs simply continue the coordinated design.

The coordinated design facilitates 50 percent overlap in third-stage units (area segments) within each successive 2-year period from 2014 through 2022. This designed sample overlap may slightly increase the precision of estimates of year-to-year trends when there is a small positive correlation in successive survey years due to an overlapped segment being somewhat homogeneous. The 50 percent overlap of segments significantly reduces segment listing costs because only one half of the segments need to be listed for the 2015 through 2022 surveys.

The 2014 through 2022 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 and as a reporting variable. The survey's sample was designed to yield the following:

- 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 2019 NSDUH was 67,507 people, and the achieved sample for the 2019 NSDUH was 67,625 people—corresponding to 50,488 responding dwelling units (DUs) out of 148,004³ DUs screened.

² RTI International is a trade name of Research Triangle Institute. RTI and the RTI logo are U.S. registered trademarks of Research Triangle Institute.

³ The number of DUs that completed the screening was 148,023, 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 148,004.

In addition to having a different sample allocation by state, the 2014 through 2022 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 of those who use drugs. For the 2014 through 2022 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 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 2022 NSDUHs was census tracts. This stage was included to contain sample segments within a single census tract to the extent possible.

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.

Before selecting census tracts, additional implicit stratification was achieved by sorting the first-stage sampling units by a core-based statistical area/socioeconomic status indicator and by the percentage of the population that is non-Hispanic and white. From this well-ordered sample frame, 48 census tracts per SSR were sequentially 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 address-based sampling design.

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 clusters⁴ 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

⁴ 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).

NSDUH refers to a housing unit or a group quarters listing unit, such as a dormitory room 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 the Substance Abuse and Mental Health Services Administration may wish to conduct.

Before selection, the segments were sorted in the order they were formed (i.e., geographically), and one segment was selected within each sampled census block group using Chromy's method of sequential random sampling (with probability proportionate to size and minimum replacement) (Chromy, 1979). The 48 selected segments then were randomly assigned to a survey year and quarter of data collection as described in Section 2.4.

An equal probability subsample of eight segments is used for each NSDUH year. These eight segments are randomly assigned to quarters and to two panels within each quarter. For 2019, the first panel segments (panel E) were used for the 2018 and 2019 surveys, constituting the overlap sample. The second panel segments (panel F) were used for the 2019 survey and are being used again for the 2020 survey.

After sample segments for the 2019 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, 0, 1, or 2 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,⁵ the 2019 NSDUH sample weighting posed challenges because of the sheer magnitude of the number of state-specific predictors used for nonresponse and poststratification 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.

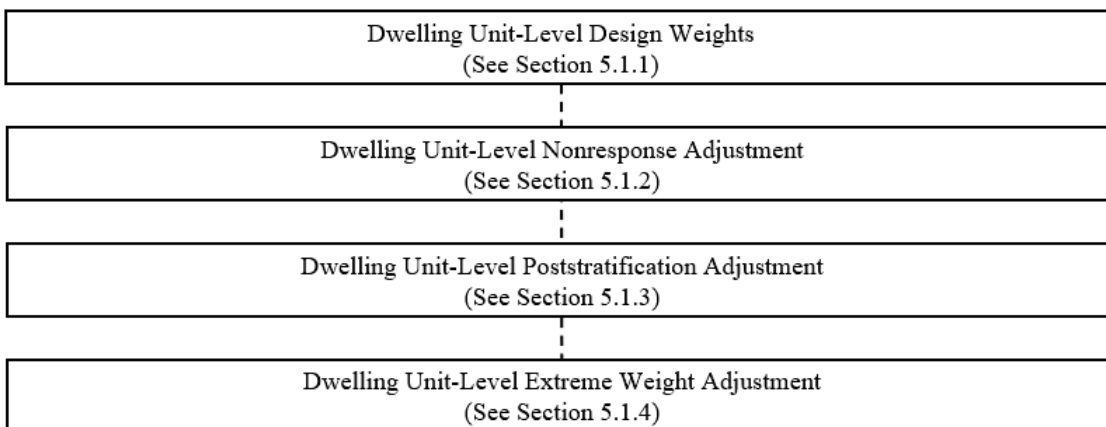
As with each survey after 1999, an important feature of the 2019 NSDUH sample weighting was to capitalize on the NSDUH two-stage interview design (although the design was primarily viewed as multistage) by adding a step to poststratify the household weights in the

⁵ The survey was known as the National Household Survey on Drug Abuse (NHSDA) before 2002.

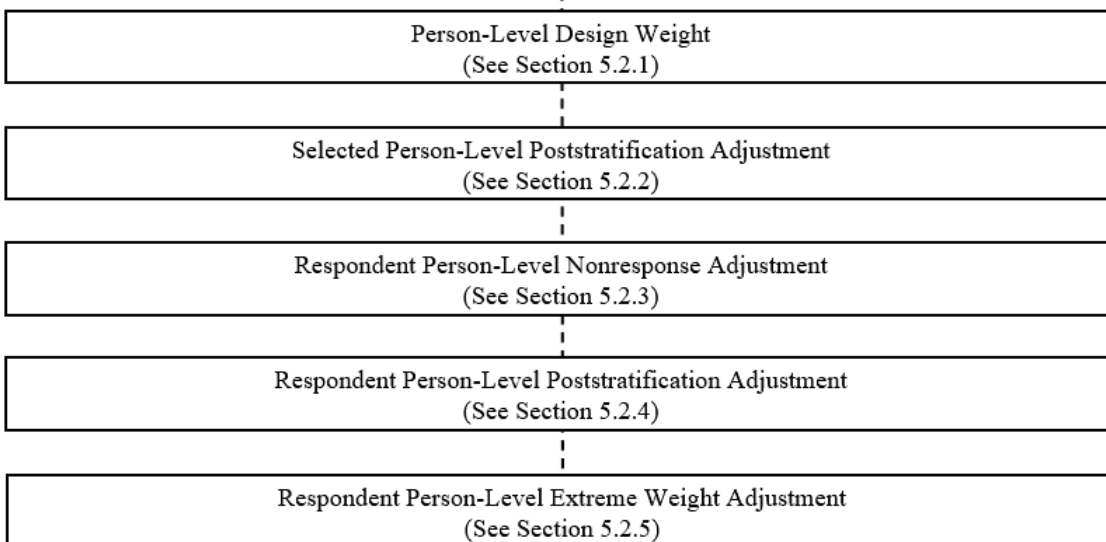
screening interview (see [Exhibit 1.1](#)). This reduced coverage bias resulting from the DU sampling and produced estimated controls for use in poststratification of person-pair weights and household weights in the main interview stage. No other suitable source was available for obtaining these controls 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 screener 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.

Exhibit 1.1 Sampling Weight Calibration Steps

Dwelling Unit Level



Person Level



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-stage interview 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 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 2019 NSDUH are presented, and in Chapter 5, details of the weight calibrations, including all weight components corresponding to screening and interviewing, 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 (GEM) 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 done to reduce the 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 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 2019 NSDUH

For the 2019 National Survey on Drug Use and Health (NSDUH), the initial set of predictor variables was identical to the set used for the 2018 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 adjustment.

Generally, it is desirable to include, whenever possible, poststratification predictors (correlated with the outcome variable) as part of nonresponse predictors (correlated with the response variable) because of the potential variance reduction; this works to offset the variance inflation, which is due to the random controls used in the nonresponse adjustment. In general, this is not possible because demographic information (often used for poststratification) is not available for nonrespondents. However, with a two-stage interview 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 |
| 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 |
| States⁴ 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, 2019.

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 2019 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 2019 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 2019 NSDUH, as in the 1999 through 2018 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 adjustment, poststratification (ps), and extreme weight 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

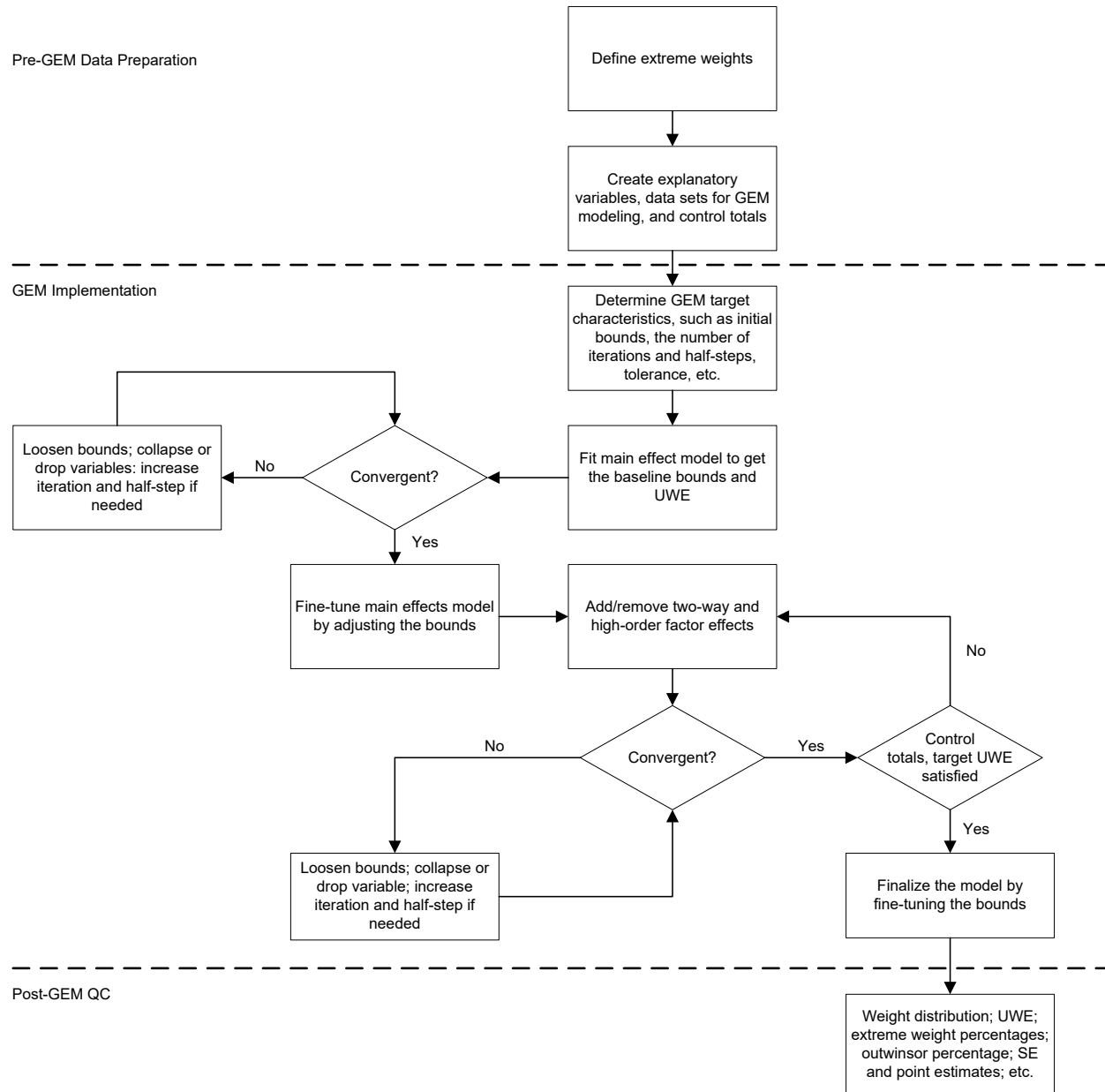
An important aspect of GEM is the built-in provision of extreme weight adjustment. Sampling weights for the survey generally were classified as extreme (high or low) if they fell outside the commonly used interval defined by the median $\pm 3 \times$ interquartile range (IQR) for some prespecified domains; these domains were usually defined by design strata, taking into account deep stratification. For example, the dwelling unit (DU)-level weight for the 2019 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 \times Age group, (2) State \times 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 \times 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 \times 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, we define a ratio m_k for each individual unit. The ratio m_k was defined as $b_{k(u)} / w_k$ for high extreme weights, and $b_{k(l)} / w_k$ 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 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 person-level nonresponse adjustment, which is the product of weight 1 to weight 13. The critical values $b_{k(l)}$ and $b_{k(u)}$ are defined as $\text{median} \pm 2.5 \times \text{IQR}$. L and U are nominal bounds that are specified in GEM modeling. The bound m_k is defined as 1 for nonextreme weights, $b_{k(u)}/\text{PRE_WT}$ for high extreme weights, and $b_{k(l)}/\text{PRE_WT}$ 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 the large screener sample. Specifically, for the 2019 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 screener sample (respondents who completed the screening) 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 and replicates 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 2019 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 2019 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 \times 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 \times 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 Dwelling Unit and Person Levels

The 2019 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 at the dwelling unit (DU) and person levels (see [Exhibit 5.1](#)). The five stages of selection were as follows: at the DU level, (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 at the person level, (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 2019 sample design report in the *NSDUH Methodological Resource Book* (Center for Behavioral Health Statistics and Quality, 2020).

As part of the postsurvey data-processing activities, analysis weights were calculated for the 2019 NSDUH respondents that reflected the selection probabilities from various stages of the sample design. These sample weights were adjusted at both the DU level (screener sample) and person level (main interview sample) to account for bias due to extreme weights, nonresponse, and coverage.

The final DU-level and person-level sample weights for the 2019 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 2019 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 2019 NSDUH person-level weight calibration.

Exhibit 5.1 Summary of 2019 NSDUH Sample Weight Components

Dwelling Unit Level

| 2014-2019 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 |

| 2014-2019 Weight Adjustment Components | | Corresponding 2005-2013 Weight Adjustment Components |
|--|--|--|
| #9 | Dwelling Unit Nonresponse Adjustment (<i>res.sdu.nr</i>)* | #8 |
| #10 | Dwelling Unit Poststratification Adjustment (<i>res.sdu.ps</i>)* | #9 |
| #11 | Dwelling Unit Extreme Weight Adjustment (<i>res.sdu.ev</i>)* | #10 |

Person Level

| 2014-2019 Design Weight Component | | Corresponding 2005-2013 Design Weight Component |
|-----------------------------------|--|---|
| #12 | Inverse Probability of Selecting a Person within a Dwelling Unit | #11 |

| 2014-2019 Weight Adjustment Components | | Corresponding 2005-2013 Weight Adjustment Components |
|--|---|--|
| #13 | Selecting Person-Level Poststratification Adjustment to Screener Data Controls (<i>sel.per.ps</i>)* | #12 |
| #14 | Person-Level Nonresponse Adjustment (<i>res.per.nr</i>)* | #13 |
| #15 | Person-Level Poststratification Adjustment (<i>res.per.ps</i>)* | #14 |
| #16 | Person-Level Extreme Weight Adjustment (<i>res.per.ev</i>)* | #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 Persons | Selected Persons | Completed Persons |
|--------------------|---------------------|----------------------|-------------------------|-------------------------|--------------------------|
| 1 | 20,476 | 14,421 | 30,092 | 9,130 | 5,736 |
| 2 | 25,786 | 16,330 | 36,039 | 11,573 | 7,136 |
| 3 | 29,076 | 20,295 | 42,254 | 14,124 | 9,236 |
| 4 | 19,929 | 15,302 | 30,706 | 9,948 | 6,721 |
| 5 | 43,209 | 29,282 | 60,714 | 18,099 | 12,620 |
| 6 | 10,030 | 8,109 | 16,511 | 5,795 | 3,984 |
| 7 | 14,514 | 11,421 | 24,098 | 8,661 | 6,062 |
| 8 | 20,883 | 15,103 | 31,848 | 11,005 | 7,559 |
| 9 | 26,341 | 17,760 | 40,779 | 13,174 | 8,571 |
| Total | 210,244 | 148,023 | 313,041 | 101,509 | 67,625 |

DU = dwelling unit.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

In the 2019 NSDUH, as in the 2000 through 2018 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 2019 NSDUH, the extreme weight adjustment step was not necessary either at the DU level or at the person level.

5.1 Household-Level Weight Components

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

The first eight components in the 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 2019 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 2018. Because the listing was done a short time before the 2019 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, 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 field interviewer (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 2019 sample design report (Center for Behavioral Health Statistics and Quality, 2020).

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, 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 person level 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 MULTLOG 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 and poststratification 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 | <i>n</i> | UWE |
|--|---------|----------------|--------|----------------|---------|------|----------|------|
| Design-Based Weight | 5 | 316 | 580 | 764 | 4,811 | 558 | 210,244 | 1.34 |
| Weight after DU-Level Adjustments | 17 | 413 | 828 | 1,162 | 10,643 | 857 | 148,004 | 1.45 |

DU = dwelling unit; UWE = unequal weighting effect.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

5.2 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 2019 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 2019. 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-stage interview 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 screener 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 2019 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 | 20 | 839 | 1,683 | 3,377 | 79,044 | 2,705 | 101,509 | 2.23 |
| Weight after Person-Level Adjustments | 4 | 1,061 | 2,386 | 5,048 | 67,794 | 4,070 | 67,625 | 2.46 |

UWE = unequal weighting effect.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

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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 2019 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 rates⁶ for DU screeners and person-level interviews. [Table E.1](#), at the national level, indicates an overall eligibility rate of 85.46 percent as compared with 85.08 percent for 2018. This similarity in overall rates held in nearly all states, with a few notable exceptions: the eligibility rate decreased from 87.34 to 81.63 percent for Rhode Island and increased from 72.32 to 80.44 percent for New Mexico. The screening rate at the national level decreased from 73.30 percent for 2018 to 70.50 percent for 2019. The national interview response rate was 64.90 percent, a decrease of 1.54 percentage points compared with 66.44 percent for 2018, with the biggest decrease for Missouri (from 73.36 percent for 2018 to 66.26 percent for 2019) and the biggest increase for the District of Columbia (from 71.87 percent for 2018 to 74.81 percent for 2019). [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 | 85.46% | 75.30% (Delaware) | 83.73% (North Carolina) | 92.85% (California) |
| Screener Response Rate | 70.50% | 48.17% (District of Columbia) | 74.58% (Utah) | 85.79% (Louisiana) |
| Person Level | | | | |
| Interview Response Rate | 64.90% | 54.03% (Illinois) | 66.86% (Ohio) | 75.93% (Wyoming) |

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 the input weight were calculated for some domains of interest prior to adjustment. These values

⁶ 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.

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 2019 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-level adjustment⁷ (DUNR, DUPS)
 - State sampling region (SSR)
- Person-level adjustment⁸ (SELPS, PRNR, PRPS)
 - SSR and age group⁹
 - State and age group
 - SSR
 - State

Before any weight adjustment was implemented, the percentage of unweighted extreme weights was 3.24 percent and the outwinsor was 0.72 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 1.42 percent and the outwinsor increased to 0.75 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 2.54 percent and the outwinsor increased to 1.51 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 0.87 percent and the outwinsor to 0.49 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

⁷ DUNR: DU level nonresponse adjustment; DUPS: DU level poststratification adjustment.

⁸ SELPS: selected person poststratification adjustment; PRNR: person nonresponse adjustment; PRPS: person poststratification.

⁹ Age group categories are 12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older.

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

Consider [Table H.11](#) for Florida, which indicates a sample size of 2,223 for race domain "white"; an initial total, also known as the design-based weight, of 13,645,038; a census total of 14,474,997; and an initial slippage rate of -5.73 percent. The ratio of the census total to the initial total gives the value of the weight adjustment: 1.06. 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 70 and an initial slippage rate of 7.72 percent. The initial total of 763,827 and the census total of 709,096 indicate that an adjustment of 0.93 would be required.

Occasionally, the final population estimates after poststratification do not match census control totals. Consider [Table H.31](#) for New Hampshire, the domain "American Indian/Alaska Native" contains a sample size of 20, an initial total of 22,594, and a final total of 4,965, which does not match the census total of 3,507. 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 57 and a combined final total of 38,846 (4,965 + 33,881) that matches the census total of 38,846 (3,507 + 35,339).

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 DESCRIP 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: 2019 NSDUH

| Variables | | United States | | California | | Florida | | Illinois | | Michigan | |
|----------------------------|-----------------|---------------|-------|------------|-------|----------|-------|----------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Cigarettes Lifetime | | | | | | | | | | | |
| Total | Point Estimates | 55.17 | 54.95 | 49.52 | 48.93 | 53.37 | 53.66 | 56.51 | 56.01 | 61.33 | 61.54 |
| | SE1 | 0.33 | 0.34 | 1.07 | 1.11 | 1.70 | 1.70 | 1.25 | 1.29 | 1.51 | 1.56 |
| | SE2 | 0.30 | 0.28 | 0.91 | 0.83 | 1.60 | 1.37 | 1.22 | 1.26 | 1.49 | 1.45 |
| 12-17 | Point Estimates | 9.06 | 9.05 | 7.47 | 7.53 | 6.73 | 6.89 | 6.78 | 6.63 | 9.25 | 9.38 |
| | SE1 | 0.29 | 0.29 | 1.00 | 1.02 | 1.06 | 1.07 | 1.14 | 1.15 | 1.18 | 1.21 |
| | SE2 | 0.29 | 0.29 | 0.99 | 1.02 | 1.06 | 1.11 | 1.14 | 1.15 | 1.18 | 1.23 |
| 18-25 | Point Estimates | 43.67 | 43.54 | 37.03 | 37.06 | 36.13 | 36.58 | 43.36 | 44.27 | 52.96 | 52.74 |
| | SE1 | 0.54 | 0.54 | 1.54 | 1.56 | 2.17 | 2.19 | 2.84 | 2.82 | 2.42 | 2.44 |
| | SE2 | 0.53 | 0.51 | 1.55 | 1.52 | 2.17 | 2.15 | 2.80 | 2.69 | 2.43 | 2.18 |
| 26-34 | Point Estimates | 60.40 | 60.25 | 54.22 | 53.94 | 54.38 | 55.19 | 60.65 | 60.03 | 66.58 | 66.59 |
| | SE1 | 0.65 | 0.66 | 1.99 | 2.03 | 3.10 | 3.07 | 3.24 | 3.32 | 2.69 | 2.71 |
| | SE2 | 0.64 | 0.60 | 1.94 | 1.90 | 3.03 | 2.66 | 3.21 | 3.17 | 2.69 | 2.50 |
| 35+ | Point Estimates | 62.69 | 62.41 | 56.93 | 56.06 | 61.23 | 61.39 | 65.06 | 64.43 | 69.01 | 69.27 |
| | SE1 | 0.44 | 0.45 | 1.55 | 1.61 | 2.06 | 2.04 | 1.68 | 1.79 | 2.06 | 2.12 |
| | SE2 | 0.42 | 0.39 | 1.43 | 1.30 | 2.00 | 1.79 | 1.70 | 1.82 | 2.06 | 2.03 |
| Alcohol Lifetime | | | | | | | | | | | |
| Total | Point Estimates | 80.48 | 80.28 | 78.14 | 77.75 | 80.35 | 80.08 | 81.95 | 81.58 | 83.83 | 83.99 |
| | SE1 | 0.24 | 0.25 | 0.90 | 0.96 | 1.04 | 1.07 | 1.07 | 1.17 | 0.99 | 0.99 |
| | SE2 | 0.21 | 0.20 | 0.79 | 0.72 | 0.96 | 0.82 | 1.01 | 1.06 | 0.97 | 0.90 |
| 12-17 | Point Estimates | 26.75 | 26.66 | 27.22 | 27.02 | 25.32 | 25.68 | 25.41 | 25.59 | 25.34 | 25.26 |
| | SE1 | 0.44 | 0.45 | 1.41 | 1.46 | 1.94 | 1.96 | 2.12 | 2.15 | 2.08 | 2.10 |
| | SE2 | 0.44 | 0.44 | 1.39 | 1.42 | 1.93 | 1.96 | 2.10 | 2.08 | 2.08 | 2.09 |
| 18-25 | Point Estimates | 79.00 | 78.92 | 77.66 | 78.07 | 73.91 | 73.68 | 82.43 | 82.53 | 84.76 | 84.53 |
| | SE1 | 0.46 | 0.46 | 1.49 | 1.47 | 1.82 | 1.84 | 1.95 | 1.97 | 2.14 | 2.18 |
| | SE2 | 0.45 | 0.44 | 1.48 | 1.50 | 1.83 | 1.81 | 1.95 | 1.91 | 2.16 | 2.18 |
| 26-34 | Point Estimates | 89.72 | 89.70 | 87.61 | 87.55 | 88.25 | 88.13 | 91.68 | 91.81 | 91.92 | 91.88 |
| | SE1 | 0.41 | 0.41 | 1.18 | 1.23 | 1.61 | 1.64 | 1.79 | 1.87 | 1.60 | 1.65 |
| | SE2 | 0.41 | 0.39 | 1.19 | 1.23 | 1.59 | 1.52 | 1.76 | 1.80 | 1.61 | 1.60 |
| 35+ | Point Estimates | 86.25 | 85.97 | 83.15 | 82.56 | 86.13 | 85.75 | 87.67 | 87.11 | 89.97 | 90.21 |
| | SE1 | 0.32 | 0.33 | 1.23 | 1.34 | 1.37 | 1.44 | 1.40 | 1.55 | 1.27 | 1.25 |
| | SE2 | 0.29 | 0.28 | 1.13 | 1.06 | 1.33 | 1.19 | 1.36 | 1.52 | 1.25 | 1.13 |

(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: 2019 NSDUH (continued)

| Variables | New York | | Ohio | | Pennsylvania | | Texas | | |
|----------------------------|-----------------|-------|----------|-------|--------------|-------|----------|-------|-------|
| | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | |
| Cigarettes Lifetime | | | | | | | | | |
| Total | Point Estimates | 50.86 | 50.55 | 60.48 | 60.59 | 58.73 | 58.22 | 50.17 | 49.90 |
| | SE1 | 1.66 | 1.66 | 1.35 | 1.33 | 1.57 | 1.61 | 1.18 | 1.21 |
| | SE2 | 1.53 | 1.38 | 1.32 | 1.18 | 1.56 | 1.62 | 1.11 | 1.08 |
| 12-17 | Point Estimates | 7.19 | 7.06 | 10.16 | 10.14 | 9.07 | 9.04 | 10.47 | 10.60 |
| | SE1 | 1.03 | 1.05 | 1.39 | 1.41 | 1.26 | 1.24 | 1.17 | 1.20 |
| | SE2 | 1.03 | 1.04 | 1.40 | 1.42 | 1.26 | 1.24 | 1.19 | 1.21 |
| 18-25 | Point Estimates | 38.60 | 38.70 | 51.75 | 51.55 | 49.68 | 49.89 | 43.70 | 43.46 |
| | SE1 | 2.44 | 2.49 | 2.21 | 2.24 | 2.71 | 2.65 | 2.31 | 2.29 |
| | SE2 | 2.39 | 2.18 | 2.21 | 2.21 | 2.70 | 2.65 | 2.28 | 2.16 |
| 26-34 | Point Estimates | 54.81 | 54.77 | 62.36 | 62.21 | 63.08 | 62.93 | 57.75 | 58.55 |
| | SE1 | 2.93 | 2.96 | 2.85 | 2.87 | 2.76 | 2.76 | 2.63 | 2.64 |
| | SE2 | 2.85 | 2.66 | 2.88 | 2.71 | 2.75 | 2.78 | 2.58 | 2.39 |
| 35+ | Point Estimates | 57.71 | 57.26 | 68.68 | 68.95 | 65.80 | 64.94 | 56.54 | 55.92 |
| | SE1 | 2.01 | 2.02 | 1.87 | 1.84 | 2.08 | 2.21 | 1.64 | 1.67 |
| | SE2 | 1.91 | 1.81 | 1.83 | 1.65 | 2.06 | 2.21 | 1.60 | 1.56 |
| Alcohol Lifetime | | | | | | | | | |
| Total | Point Estimates | 78.52 | 78.31 | 83.24 | 83.11 | 83.20 | 82.92 | 77.94 | 77.85 |
| | SE1 | 1.31 | 1.33 | 0.93 | 0.96 | 0.99 | 1.05 | 0.97 | 0.96 |
| | SE2 | 1.13 | 0.97 | 0.91 | 0.81 | 0.96 | 1.14 | 0.84 | 0.80 |
| 12-17 | Point Estimates | 29.03 | 28.63 | 26.92 | 26.95 | 28.39 | 28.39 | 27.77 | 27.70 |
| | SE1 | 1.87 | 1.84 | 2.07 | 2.09 | 2.05 | 2.07 | 1.83 | 1.85 |
| | SE2 | 1.84 | 1.78 | 2.06 | 2.05 | 2.04 | 2.04 | 1.83 | 1.86 |
| 18-25 | Point Estimates | 76.61 | 76.36 | 85.85 | 85.95 | 78.09 | 77.93 | 78.28 | 78.13 |
| | SE1 | 2.66 | 2.65 | 1.47 | 1.45 | 2.29 | 2.25 | 1.93 | 1.93 |
| | SE2 | 2.59 | 2.45 | 1.46 | 1.42 | 2.28 | 2.27 | 1.89 | 1.75 |
| 26-34 | Point Estimates | 87.39 | 87.19 | 89.38 | 89.32 | 91.19 | 91.25 | 87.13 | 88.18 |
| | SE1 | 2.11 | 2.18 | 1.71 | 1.71 | 1.61 | 1.58 | 1.95 | 1.64 |
| | SE2 | 2.06 | 2.07 | 1.72 | 1.62 | 1.59 | 1.55 | 1.92 | 1.60 |
| 35+ | Point Estimates | 83.00 | 82.81 | 89.22 | 89.05 | 89.43 | 88.95 | 84.22 | 83.85 |
| | SE1 | 1.54 | 1.55 | 1.21 | 1.25 | 1.29 | 1.40 | 1.22 | 1.24 |
| | SE2 | 1.38 | 1.23 | 1.19 | 1.16 | 1.25 | 1.57 | 1.16 | 1.13 |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

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: 2019 NSDUH

| Variables | | United States | | California | | Florida | | Illinois | | Michigan | |
|---------------------------|-----------------|---------------|-------|------------|-------|----------|-------|----------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Marijuana Lifetime | | | | | | | | | | | |
| Total | Point Estimates | 46.40 | 46.20 | 47.52 | 47.19 | 42.94 | 43.36 | 46.84 | 46.65 | 54.04 | 54.18 |
| | SE1 | 0.35 | 0.35 | 1.28 | 1.31 | 1.57 | 1.61 | 1.55 | 1.57 | 1.36 | 1.43 |
| | SE2 | 0.31 | 0.29 | 1.05 | 0.96 | 1.48 | 1.34 | 1.48 | 1.38 | 1.33 | 1.23 |
| 12-17 | Point Estimates | 15.85 | 15.85 | 18.09 | 18.09 | 14.09 | 14.34 | 16.97 | 17.26 | 15.66 | 15.61 |
| | SE1 | 0.37 | 0.37 | 1.21 | 1.26 | 1.52 | 1.54 | 2.25 | 2.32 | 1.91 | 1.93 |
| | SE2 | 0.36 | 0.36 | 1.19 | 1.21 | 1.53 | 1.62 | 2.24 | 2.30 | 1.91 | 1.91 |
| 18-25 | Point Estimates | 51.88 | 51.73 | 52.38 | 52.62 | 47.79 | 48.26 | 52.08 | 52.26 | 64.50 | 64.55 |
| | SE1 | 0.57 | 0.58 | 1.76 | 1.80 | 1.87 | 1.92 | 2.67 | 2.83 | 2.63 | 2.69 |
| | SE2 | 0.57 | 0.56 | 1.75 | 1.77 | 1.86 | 1.89 | 2.65 | 2.81 | 2.62 | 2.66 |
| 26-34 | Point Estimates | 59.08 | 58.89 | 59.80 | 59.66 | 55.24 | 55.54 | 59.01 | 58.32 | 67.89 | 68.00 |
| | SE1 | 0.66 | 0.66 | 2.12 | 2.16 | 2.62 | 2.64 | 2.73 | 2.74 | 2.49 | 2.52 |
| | SE2 | 0.64 | 0.61 | 2.09 | 2.04 | 2.60 | 2.50 | 2.64 | 2.53 | 2.50 | 2.43 |
| 35+ | Point Estimates | 46.77 | 46.52 | 47.60 | 47.12 | 43.09 | 43.55 | 47.32 | 47.15 | 54.37 | 54.51 |
| | SE1 | 0.46 | 0.48 | 1.74 | 1.80 | 1.97 | 2.04 | 2.09 | 2.12 | 1.84 | 1.91 |
| | SE2 | 0.42 | 0.40 | 1.44 | 1.29 | 1.87 | 1.71 | 2.03 | 1.94 | 1.80 | 1.69 |
| Cocaine Lifetime | | | | | | | | | | | |
| Total | Point Estimates | 15.12 | 15.06 | 19.11 | 18.77 | 13.74 | 14.05 | 13.47 | 13.58 | 14.58 | 14.81 |
| | SE1 | 0.25 | 0.25 | 0.97 | 0.98 | 1.10 | 1.15 | 0.98 | 1.00 | 1.05 | 1.08 |
| | SE2 | 0.22 | 0.22 | 0.82 | 0.77 | 1.06 | 1.02 | 0.96 | 0.94 | 1.04 | 1.02 |
| 12-17 | Point Estimates | 0.62 | 0.62 | 0.96 | 1.07 | 0.76 | 0.73 | 0.50 | 0.47 | 0.71 | 0.69 |
| | SE1 | 0.08 | 0.08 | 0.33 | 0.37 | 0.39 | 0.39 | 0.34 | 0.32 | 0.33 | 0.33 |
| | SE2 | 0.08 | 0.08 | 0.33 | 0.37 | 0.39 | 0.39 | 0.34 | 0.33 | 0.33 | 0.33 |
| 18-25 | Point Estimates | 11.31 | 11.29 | 13.75 | 13.73 | 8.23 | 8.46 | 10.85 | 11.20 | 12.20 | 12.22 |
| | SE1 | 0.36 | 0.36 | 1.33 | 1.39 | 1.26 | 1.29 | 1.50 | 1.54 | 1.58 | 1.60 |
| | SE2 | 0.35 | 0.34 | 1.33 | 1.34 | 1.25 | 1.22 | 1.49 | 1.50 | 1.57 | 1.56 |
| 26-34 | Point Estimates | 18.50 | 18.53 | 21.61 | 21.28 | 16.97 | 17.48 | 18.21 | 18.46 | 15.80 | 15.90 |
| | SE1 | 0.53 | 0.53 | 2.06 | 2.03 | 2.18 | 2.24 | 2.29 | 2.42 | 1.86 | 1.88 |
| | SE2 | 0.52 | 0.49 | 2.01 | 1.89 | 2.17 | 2.03 | 2.25 | 2.01 | 1.87 | 1.71 |
| 35+ | Point Estimates | 17.12 | 17.03 | 22.17 | 21.72 | 15.47 | 15.78 | 14.69 | 14.80 | 16.69 | 17.00 |
| | SE1 | 0.33 | 0.34 | 1.36 | 1.39 | 1.43 | 1.50 | 1.32 | 1.34 | 1.56 | 1.60 |
| | SE2 | 0.31 | 0.30 | 1.21 | 1.11 | 1.39 | 1.35 | 1.31 | 1.35 | 1.55 | 1.53 |

(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: 2019 NSDUH (continued)

| Variables | | New York | | Ohio | | Pennsylvania | | Texas | |
|---------------------------|-----------------|----------|-------|----------|-------|--------------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Marijuana Lifetime | | | | | | | | | |
| Total | Point Estimates | 45.08 | 45.33 | 49.13 | 49.02 | 48.49 | 46.94 | 37.64 | 37.48 |
| | SE1 | 1.42 | 1.42 | 1.43 | 1.41 | 1.75 | 1.83 | 1.37 | 1.39 |
| | SE2 | 1.31 | 1.14 | 1.41 | 1.38 | 1.72 | 1.60 | 1.29 | 1.27 |
| 12-17 | Point Estimates | 16.03 | 16.09 | 14.93 | 14.79 | 16.69 | 16.80 | 16.03 | 16.22 |
| | SE1 | 1.49 | 1.50 | 1.96 | 1.98 | 1.43 | 1.42 | 1.41 | 1.41 |
| | SE2 | 1.47 | 1.45 | 1.96 | 2.00 | 1.44 | 1.44 | 1.41 | 1.41 |
| 18-25 | Point Estimates | 52.47 | 52.22 | 58.48 | 58.44 | 51.92 | 51.68 | 43.08 | 42.78 |
| | SE1 | 2.75 | 2.75 | 2.61 | 2.57 | 2.32 | 2.41 | 2.92 | 2.90 |
| | SE2 | 2.71 | 2.59 | 2.60 | 2.46 | 2.33 | 2.26 | 2.87 | 2.80 |
| 26-34 | Point Estimates | 58.45 | 58.16 | 55.86 | 55.79 | 59.87 | 58.94 | 48.88 | 49.56 |
| | SE1 | 2.89 | 2.87 | 2.82 | 2.84 | 2.85 | 2.88 | 2.94 | 2.91 |
| | SE2 | 2.85 | 2.63 | 2.82 | 2.67 | 2.86 | 2.82 | 2.88 | 2.64 |
| 35+ | Point Estimates | 44.16 | 44.64 | 50.64 | 50.55 | 49.49 | 47.37 | 37.27 | 36.87 |
| | SE1 | 1.89 | 1.89 | 1.93 | 1.89 | 2.50 | 2.62 | 1.74 | 1.75 |
| | SE2 | 1.78 | 1.59 | 1.89 | 1.87 | 2.42 | 2.19 | 1.70 | 1.71 |
| Cocaine Lifetime | | | | | | | | | |
| Total | Point Estimates | 14.15 | 14.29 | 16.12 | 15.98 | 15.97 | 15.24 | 12.52 | 12.54 |
| | SE1 | 0.96 | 0.98 | 1.07 | 1.08 | 1.09 | 1.07 | 0.99 | 0.99 |
| | SE2 | 0.93 | 0.88 | 1.05 | 1.03 | 1.08 | 1.00 | 0.98 | 0.94 |
| 12-17 | Point Estimates | 0.29 | 0.22 | 0.47 | 0.44 | 0.60 | 0.58 | 0.85 | 0.83 |
| | SE1 | 0.21 | 0.16 | 0.27 | 0.26 | 0.38 | 0.37 | 0.41 | 0.41 |
| | SE2 | 0.21 | 0.17 | 0.28 | 0.27 | 0.38 | 0.37 | 0.41 | 0.40 |
| 18-25 | Point Estimates | 13.27 | 12.87 | 10.21 | 9.95 | 11.21 | 10.97 | 9.20 | 9.08 |
| | SE1 | 1.64 | 1.63 | 1.31 | 1.28 | 1.32 | 1.31 | 1.36 | 1.33 |
| | SE2 | 1.63 | 1.45 | 1.30 | 1.21 | 1.33 | 1.28 | 1.33 | 1.27 |
| 26-34 | Point Estimates | 16.14 | 16.31 | 20.50 | 20.18 | 20.66 | 20.82 | 15.36 | 15.60 |
| | SE1 | 2.17 | 2.19 | 2.51 | 2.49 | 2.53 | 2.51 | 2.19 | 2.19 |
| | SE2 | 2.14 | 2.00 | 2.51 | 2.40 | 2.52 | 2.43 | 2.15 | 2.12 |
| 35+ | Point Estimates | 15.59 | 15.85 | 18.45 | 18.36 | 17.81 | 16.68 | 14.54 | 14.55 |
| | SE1 | 1.26 | 1.28 | 1.54 | 1.54 | 1.54 | 1.51 | 1.29 | 1.29 |
| | SE2 | 1.23 | 1.19 | 1.50 | 1.47 | 1.53 | 1.44 | 1.30 | 1.29 |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

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: 2019 NSDUH

| Variables | | United States | | California | | Florida | | Illinois | | Michigan | |
|-----------------------------|-----------------|---------------|-------|------------|-------|----------|-------|----------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Cigarettes Past Year | | | | | | | | | | | |
| Total | Point Estimates | 20.15 | 20.18 | 14.97 | 14.86 | 18.01 | 18.40 | 20.48 | 20.26 | 23.37 | 23.44 |
| | SE1 | 0.25 | 0.25 | 0.66 | 0.66 | 0.98 | 1.02 | 1.18 | 1.17 | 1.27 | 1.32 |
| | SE2 | 0.24 | 0.23 | 0.64 | 0.63 | 0.96 | 0.91 | 1.18 | 1.13 | 1.27 | 1.24 |
| 12-17 | Point Estimates | 5.35 | 5.35 | 3.95 | 3.98 | 3.46 | 3.51 | 3.16 | 3.04 | 5.92 | 6.06 |
| | SE1 | 0.22 | 0.23 | 0.68 | 0.70 | 0.73 | 0.73 | 0.83 | 0.81 | 1.07 | 1.11 |
| | SE2 | 0.22 | 0.22 | 0.68 | 0.70 | 0.72 | 0.77 | 0.83 | 0.83 | 1.07 | 1.11 |
| 18-25 | Point Estimates | 25.93 | 25.85 | 22.01 | 21.94 | 21.92 | 22.50 | 21.61 | 21.87 | 31.48 | 31.37 |
| | SE1 | 0.47 | 0.46 | 1.31 | 1.31 | 1.76 | 1.80 | 2.01 | 1.96 | 2.07 | 2.10 |
| | SE2 | 0.46 | 0.44 | 1.31 | 1.33 | 1.74 | 1.72 | 2.00 | 1.93 | 2.09 | 1.96 |
| 26-34 | Point Estimates | 29.77 | 29.69 | 24.24 | 23.93 | 28.58 | 29.04 | 29.57 | 29.26 | 32.23 | 32.36 |
| | SE1 | 0.59 | 0.59 | 1.89 | 1.93 | 2.57 | 2.57 | 2.83 | 2.81 | 2.55 | 2.58 |
| | SE2 | 0.58 | 0.56 | 1.88 | 1.89 | 2.55 | 2.40 | 2.84 | 2.66 | 2.56 | 2.57 |
| 35+ | Point Estimates | 18.93 | 19.02 | 12.73 | 12.68 | 17.00 | 17.39 | 20.63 | 20.38 | 22.34 | 22.39 |
| | SE1 | 0.33 | 0.34 | 0.91 | 0.90 | 1.27 | 1.30 | 1.59 | 1.57 | 1.67 | 1.73 |
| | SE2 | 0.32 | 0.31 | 0.90 | 0.87 | 1.24 | 1.21 | 1.58 | 1.53 | 1.66 | 1.67 |
| Alcohol Past Year | | | | | | | | | | | |
| Total | Point Estimates | 65.26 | 65.09 | 64.48 | 64.05 | 65.67 | 65.60 | 68.78 | 68.79 | 68.93 | 69.27 |
| | SE1 | 0.31 | 0.32 | 1.13 | 1.17 | 1.32 | 1.34 | 1.32 | 1.30 | 1.34 | 1.35 |
| | SE2 | 0.29 | 0.28 | 1.07 | 1.00 | 1.29 | 1.22 | 1.30 | 1.31 | 1.34 | 1.35 |
| 12-17 | Point Estimates | 21.24 | 21.18 | 22.10 | 22.00 | 20.31 | 20.62 | 18.80 | 18.83 | 19.02 | 18.93 |
| | SE1 | 0.41 | 0.42 | 1.29 | 1.35 | 1.84 | 1.85 | 1.93 | 1.98 | 1.86 | 1.86 |
| | SE2 | 0.41 | 0.41 | 1.28 | 1.31 | 1.84 | 1.84 | 1.93 | 1.98 | 1.87 | 1.84 |
| 18-25 | Point Estimates | 71.99 | 71.97 | 71.18 | 71.58 | 66.90 | 67.01 | 75.41 | 75.51 | 81.32 | 81.28 |
| | SE1 | 0.52 | 0.53 | 1.64 | 1.66 | 1.96 | 1.97 | 2.51 | 2.58 | 2.26 | 2.30 |
| | SE2 | 0.52 | 0.50 | 1.60 | 1.64 | 1.96 | 1.89 | 2.50 | 2.45 | 2.28 | 2.26 |
| 26-34 | Point Estimates | 79.81 | 79.77 | 78.27 | 78.39 | 75.07 | 75.32 | 86.05 | 86.11 | 84.08 | 83.98 |
| | SE1 | 0.54 | 0.54 | 1.72 | 1.76 | 2.22 | 2.22 | 2.32 | 2.33 | 2.18 | 2.24 |
| | SE2 | 0.53 | 0.51 | 1.71 | 1.72 | 2.21 | 2.17 | 2.30 | 2.25 | 2.19 | 2.21 |
| 35+ | Point Estimates | 66.86 | 66.62 | 65.68 | 64.96 | 68.84 | 68.64 | 70.68 | 70.75 | 70.20 | 70.70 |
| | SE1 | 0.43 | 0.44 | 1.56 | 1.62 | 1.83 | 1.87 | 1.82 | 1.77 | 1.95 | 1.95 |
| | SE2 | 0.41 | 0.39 | 1.48 | 1.40 | 1.81 | 1.74 | 1.81 | 1.84 | 1.93 | 1.87 |

(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: 2019 NSDUH (continued)

| Variables | | New York | | Ohio | | Pennsylvania | | Texas | |
|-----------------------------|-----------------|----------|-------|----------|-------|--------------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Cigarettes Past Year | | | | | | | | | |
| Total | Point Estimates | 17.32 | 17.66 | 26.93 | 26.76 | 22.50 | 22.24 | 19.94 | 19.85 |
| | SE1 | 0.92 | 0.94 | 1.33 | 1.34 | 1.59 | 1.59 | 0.92 | 0.91 |
| | SE2 | 0.89 | 0.88 | 1.32 | 1.26 | 1.59 | 1.60 | 0.90 | 0.89 |
| 12-17 | Point Estimates | 3.57 | 3.57 | 5.42 | 5.36 | 6.17 | 6.07 | 6.38 | 6.44 |
| | SE1 | 0.69 | 0.69 | 1.01 | 1.00 | 1.10 | 1.08 | 0.95 | 1.00 |
| | SE2 | 0.68 | 0.67 | 1.01 | 1.00 | 1.10 | 1.07 | 0.96 | 1.01 |
| 18-25 | Point Estimates | 21.18 | 21.31 | 33.63 | 33.41 | 32.82 | 32.93 | 26.66 | 26.64 |
| | SE1 | 2.03 | 2.03 | 2.07 | 2.10 | 2.70 | 2.64 | 2.06 | 2.07 |
| | SE2 | 1.99 | 1.88 | 2.09 | 2.08 | 2.70 | 2.65 | 2.05 | 1.96 |
| 26-34 | Point Estimates | 25.13 | 25.66 | 36.29 | 36.18 | 31.38 | 31.14 | 28.78 | 29.26 |
| | SE1 | 2.27 | 2.31 | 3.11 | 3.08 | 3.10 | 3.07 | 2.22 | 2.27 |
| | SE2 | 2.25 | 2.25 | 3.11 | 3.02 | 3.10 | 3.06 | 2.23 | 2.24 |
| 35+ | Point Estimates | 16.46 | 16.83 | 26.61 | 26.46 | 20.82 | 20.50 | 18.52 | 18.25 |
| | SE1 | 1.23 | 1.26 | 1.75 | 1.76 | 1.98 | 2.00 | 1.25 | 1.25 |
| | SE2 | 1.18 | 1.16 | 1.74 | 1.66 | 1.96 | 2.03 | 1.20 | 1.19 |
| Alcohol Past Year | | | | | | | | | |
| Total | Point Estimates | 63.11 | 63.24 | 65.56 | 65.38 | 68.11 | 67.83 | 63.61 | 63.42 |
| | SE1 | 1.69 | 1.69 | 1.69 | 1.71 | 1.30 | 1.33 | 1.09 | 1.12 |
| | SE2 | 1.58 | 1.45 | 1.67 | 1.59 | 1.28 | 1.38 | 0.97 | 0.94 |
| 12-17 | Point Estimates | 24.02 | 23.64 | 21.70 | 21.66 | 23.08 | 22.98 | 21.50 | 21.20 |
| | SE1 | 1.84 | 1.85 | 1.91 | 1.92 | 1.90 | 1.91 | 1.70 | 1.68 |
| | SE2 | 1.81 | 1.78 | 1.90 | 1.86 | 1.89 | 1.86 | 1.69 | 1.68 |
| 18-25 | Point Estimates | 69.85 | 69.56 | 79.64 | 79.74 | 71.38 | 71.35 | 71.17 | 71.00 |
| | SE1 | 2.74 | 2.74 | 1.75 | 1.74 | 2.63 | 2.59 | 2.25 | 2.26 |
| | SE2 | 2.68 | 2.53 | 1.75 | 1.70 | 2.63 | 2.52 | 2.23 | 2.09 |
| 26-34 | Point Estimates | 77.65 | 77.75 | 76.92 | 77.05 | 80.01 | 79.98 | 78.44 | 79.85 |
| | SE1 | 2.74 | 2.79 | 2.57 | 2.56 | 2.18 | 2.17 | 2.33 | 2.15 |
| | SE2 | 2.67 | 2.56 | 2.58 | 2.47 | 2.16 | 2.15 | 2.27 | 2.07 |
| 35+ | Point Estimates | 63.30 | 63.55 | 66.52 | 66.25 | 70.73 | 70.32 | 65.42 | 64.84 |
| | SE1 | 2.20 | 2.17 | 2.34 | 2.37 | 1.78 | 1.85 | 1.48 | 1.54 |
| | SE2 | 2.09 | 1.98 | 2.32 | 2.26 | 1.74 | 1.93 | 1.38 | 1.40 |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

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: 2019 NSDUH

| Variables | | United States | | California | | Florida | | Illinois | | Michigan | |
|----------------------------|-----------------|---------------|-------|------------|-------|----------|-------|----------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Marijuana Past Year | | | | | | | | | | | |
| Total | Point Estimates | 17.60 | 17.53 | 21.46 | 21.20 | 15.26 | 15.46 | 17.09 | 17.18 | 21.69 | 21.91 |
| | SE1 | 0.24 | 0.24 | 0.91 | 0.91 | 0.98 | 0.99 | 1.10 | 1.12 | 1.13 | 1.16 |
| | SE2 | 0.22 | 0.21 | 0.81 | 0.77 | 0.94 | 0.87 | 1.06 | 0.94 | 1.09 | 1.01 |
| 12-17 | Point Estimates | 13.13 | 13.18 | 15.85 | 15.97 | 11.74 | 12.04 | 14.84 | 15.24 | 12.18 | 12.14 |
| | SE1 | 0.34 | 0.35 | 1.15 | 1.21 | 1.44 | 1.46 | 2.04 | 2.11 | 1.73 | 1.75 |
| | SE2 | 0.34 | 0.34 | 1.13 | 1.16 | 1.44 | 1.51 | 2.04 | 2.10 | 1.74 | 1.78 |
| 18-25 | Point Estimates | 35.56 | 35.43 | 39.83 | 39.92 | 32.38 | 33.01 | 35.33 | 35.27 | 45.90 | 46.20 |
| | SE1 | 0.54 | 0.54 | 1.83 | 1.84 | 1.94 | 1.99 | 2.63 | 2.72 | 2.41 | 2.45 |
| | SE2 | 0.54 | 0.52 | 1.80 | 1.77 | 1.91 | 1.85 | 2.59 | 2.61 | 2.43 | 2.46 |
| 26-34 | Point Estimates | 28.67 | 28.57 | 30.40 | 30.26 | 28.62 | 28.65 | 32.22 | 31.48 | 37.37 | 37.61 |
| | SE1 | 0.62 | 0.63 | 2.20 | 2.22 | 2.40 | 2.41 | 2.97 | 2.89 | 2.63 | 2.66 |
| | SE2 | 0.61 | 0.59 | 2.15 | 2.12 | 2.39 | 2.34 | 2.92 | 2.54 | 2.62 | 2.62 |
| 35+ | Point Estimates | 12.26 | 12.19 | 16.24 | 15.86 | 10.38 | 10.53 | 10.55 | 10.77 | 15.01 | 15.24 |
| | SE1 | 0.28 | 0.28 | 1.15 | 1.13 | 1.08 | 1.12 | 1.09 | 1.15 | 1.33 | 1.36 |
| | SE2 | 0.27 | 0.26 | 1.08 | 1.01 | 1.06 | 1.06 | 1.07 | 1.03 | 1.30 | 1.25 |
| Cocaine Past Year | | | | | | | | | | | |
| Total | Point Estimates | 1.98 | 1.99 | 2.69 | 2.68 | 1.62 | 1.64 | 1.92 | 2.01 | 1.55 | 1.54 |
| | SE1 | 0.08 | 0.08 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.31 | 0.25 | 0.25 |
| | SE2 | 0.07 | 0.07 | 0.26 | 0.25 | 0.27 | 0.27 | 0.28 | 0.27 | 0.24 | 0.25 |
| 12-17 | Point Estimates | 0.37 | 0.39 | 0.94 | 1.06 | 0.17 | 0.16 | 0.17 | 0.16 | 0.45 | 0.43 |
| | SE1 | 0.06 | 0.07 | 0.33 | 0.37 | 0.14 | 0.14 | 0.17 | 0.16 | 0.28 | 0.27 |
| | SE2 | 0.06 | 0.07 | 0.33 | 0.37 | 0.14 | 0.14 | 0.17 | 0.16 | 0.28 | 0.28 |
| 18-25 | Point Estimates | 5.28 | 5.30 | 8.13 | 8.24 | 4.28 | 4.39 | 3.61 | 3.58 | 5.84 | 5.68 |
| | SE1 | 0.25 | 0.25 | 1.01 | 1.06 | 1.06 | 1.08 | 0.90 | 0.91 | 1.13 | 1.11 |
| | SE2 | 0.25 | 0.24 | 1.01 | 1.03 | 1.05 | 1.02 | 0.91 | 0.93 | 1.12 | 1.10 |
| 26-34 | Point Estimates | 4.41 | 4.38 | 6.09 | 5.85 | 3.26 | 3.40 | 6.24 | 6.56 | 1.92 | 1.92 |
| | SE1 | 0.28 | 0.28 | 1.15 | 1.11 | 0.92 | 0.96 | 1.65 | 1.78 | 0.72 | 0.72 |
| | SE2 | 0.28 | 0.27 | 1.13 | 1.08 | 0.91 | 0.93 | 1.65 | 1.60 | 0.72 | 0.71 |
| 35+ | Point Estimates | 1.02 | 1.03 | 0.96 | 0.98 | 1.05 | 1.04 | 0.86 | 0.94 | 0.78 | 0.81 |
| | SE1 | 0.08 | 0.09 | 0.23 | 0.24 | 0.33 | 0.32 | 0.29 | 0.32 | 0.33 | 0.33 |
| | SE2 | 0.08 | 0.08 | 0.23 | 0.23 | 0.33 | 0.32 | 0.28 | 0.31 | 0.32 | 0.33 |

(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: 2019 NSDUH (continued)

| Variables | | New York | | Ohio | | Pennsylvania | | Texas | |
|----------------------------|-----------------|----------|-------|----------|-------|--------------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Marijuana Past Year | | | | | | | | | |
| Total | Point Estimates | 18.06 | 18.13 | 18.15 | 17.99 | 17.22 | 16.67 | 13.37 | 13.33 |
| | SE1 | 1.05 | 1.04 | 1.13 | 1.14 | 1.04 | 1.04 | 0.96 | 0.95 |
| | SE2 | 0.98 | 0.87 | 1.11 | 1.02 | 1.05 | 0.96 | 0.92 | 0.87 |
| 12-17 | Point Estimates | 13.99 | 14.07 | 12.59 | 12.40 | 13.32 | 13.33 | 12.93 | 13.19 |
| | SE1 | 1.48 | 1.50 | 1.86 | 1.87 | 1.37 | 1.36 | 1.37 | 1.38 |
| | SE2 | 1.46 | 1.46 | 1.87 | 1.88 | 1.37 | 1.35 | 1.37 | 1.38 |
| 18-25 | Point Estimates | 37.90 | 37.44 | 38.93 | 38.99 | 32.60 | 32.29 | 26.50 | 26.49 |
| | SE1 | 2.54 | 2.54 | 2.64 | 2.58 | 2.48 | 2.48 | 2.63 | 2.63 |
| | SE2 | 2.54 | 2.47 | 2.63 | 2.56 | 2.49 | 2.42 | 2.62 | 2.60 |
| 26-34 | Point Estimates | 28.40 | 28.26 | 26.16 | 26.10 | 27.42 | 26.49 | 23.30 | 23.22 |
| | SE1 | 2.42 | 2.42 | 2.15 | 2.14 | 2.26 | 2.22 | 2.62 | 2.54 |
| | SE2 | 2.40 | 2.33 | 2.15 | 2.07 | 2.25 | 2.25 | 2.64 | 2.45 |
| 35+ | Point Estimates | 12.40 | 12.57 | 13.27 | 13.09 | 12.73 | 12.24 | 7.96 | 7.87 |
| | SE1 | 1.21 | 1.18 | 1.33 | 1.34 | 1.27 | 1.28 | 0.87 | 0.87 |
| | SE2 | 1.17 | 1.09 | 1.32 | 1.27 | 1.26 | 1.12 | 0.88 | 0.86 |
| Cocaine Past Year | | | | | | | | | |
| Total | Point Estimates | 2.26 | 2.27 | 2.34 | 2.34 | 1.80 | 1.79 | 1.70 | 1.70 |
| | SE1 | 0.33 | 0.33 | 0.35 | 0.36 | 0.35 | 0.35 | 0.34 | 0.34 |
| | SE2 | 0.32 | 0.32 | 0.35 | 0.35 | 0.35 | 0.35 | 0.32 | 0.32 |
| 12-17 | Point Estimates | 0.00 | 0.00 | 0.32 | 0.29 | 0.13 | 0.12 | 0.49 | 0.49 |
| | SE1 | 0.00 | 0.00 | 0.23 | 0.22 | 0.13 | 0.12 | 0.33 | 0.33 |
| | SE2 | 0.00 | 0.00 | 0.23 | 0.22 | 0.13 | 0.13 | 0.33 | 0.34 |
| 18-25 | Point Estimates | 6.51 | 6.22 | 5.14 | 5.13 | 4.92 | 4.90 | 4.54 | 4.50 |
| | SE1 | 1.04 | 1.01 | 0.78 | 0.78 | 1.09 | 1.08 | 1.05 | 1.03 |
| | SE2 | 1.04 | 0.95 | 0.78 | 0.77 | 1.10 | 1.01 | 1.03 | 0.97 |
| 26-34 | Point Estimates | 3.75 | 3.85 | 5.10 | 5.14 | 5.11 | 5.30 | 2.97 | 3.07 |
| | SE1 | 1.08 | 1.11 | 1.34 | 1.35 | 1.56 | 1.58 | 0.94 | 0.96 |
| | SE2 | 1.07 | 1.09 | 1.34 | 1.35 | 1.56 | 1.57 | 0.93 | 0.94 |
| 35+ | Point Estimates | 1.40 | 1.43 | 1.50 | 1.50 | 0.73 | 0.71 | 0.95 | 0.95 |
| | SE1 | 0.32 | 0.33 | 0.49 | 0.50 | 0.28 | 0.27 | 0.33 | 0.35 |
| | SE2 | 0.31 | 0.32 | 0.48 | 0.48 | 0.28 | 0.27 | 0.33 | 0.34 |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

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: 2019 NSDUH

| Variables | | United States | | California | | Florida | | Illinois | | Michigan | |
|------------------------------|-----------------|---------------|-------|------------|-------|----------|-------|----------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Cigarettes Past Month | | | | | | | | | | | |
| Total | Point Estimates | 16.68 | 16.67 | 11.17 | 11.05 | 14.99 | 15.33 | 17.00 | 16.74 | 19.35 | 19.54 |
| | SE1 | 0.23 | 0.24 | 0.64 | 0.64 | 0.94 | 0.98 | 1.11 | 1.11 | 1.21 | 1.26 |
| | SE2 | 0.23 | 0.22 | 0.62 | 0.61 | 0.92 | 0.88 | 1.11 | 1.11 | 1.21 | 1.21 |
| 12-17 | Point Estimates | 2.30 | 2.30 | 1.25 | 1.29 | 1.05 | 1.08 | 1.90 | 1.78 | 2.03 | 2.07 |
| | SE1 | 0.14 | 0.15 | 0.38 | 0.41 | 0.40 | 0.41 | 0.63 | 0.60 | 0.58 | 0.60 |
| | SE2 | 0.14 | 0.14 | 0.38 | 0.41 | 0.40 | 0.41 | 0.64 | 0.61 | 0.58 | 0.60 |
| 18-25 | Point Estimates | 17.62 | 17.54 | 14.44 | 14.29 | 12.78 | 13.02 | 15.03 | 15.13 | 20.58 | 20.58 |
| | SE1 | 0.41 | 0.40 | 1.24 | 1.23 | 1.31 | 1.32 | 1.82 | 1.78 | 2.05 | 2.06 |
| | SE2 | 0.40 | 0.39 | 1.24 | 1.23 | 1.30 | 1.31 | 1.79 | 1.73 | 2.05 | 2.01 |
| 26-34 | Point Estimates | 23.96 | 23.82 | 16.87 | 16.71 | 23.68 | 24.02 | 23.04 | 22.55 | 27.23 | 27.39 |
| | SE1 | 0.55 | 0.56 | 1.70 | 1.73 | 2.55 | 2.58 | 2.50 | 2.48 | 2.36 | 2.38 |
| | SE2 | 0.55 | 0.52 | 1.70 | 1.69 | 2.54 | 2.49 | 2.50 | 2.37 | 2.36 | 2.37 |
| 35+ | Point Estimates | 16.86 | 16.90 | 10.47 | 10.36 | 15.25 | 15.63 | 18.12 | 17.88 | 19.85 | 20.06 |
| | SE1 | 0.32 | 0.32 | 0.88 | 0.87 | 1.22 | 1.26 | 1.52 | 1.50 | 1.61 | 1.69 |
| | SE2 | 0.30 | 0.30 | 0.86 | 0.83 | 1.19 | 1.15 | 1.51 | 1.50 | 1.60 | 1.63 |
| Alcohol Past Month | | | | | | | | | | | |
| Total | Point Estimates | 50.91 | 50.77 | 48.93 | 48.56 | 51.57 | 51.47 | 54.42 | 54.42 | 52.69 | 53.02 |
| | SE1 | 0.34 | 0.34 | 1.11 | 1.12 | 1.60 | 1.62 | 1.36 | 1.33 | 1.46 | 1.48 |
| | SE2 | 0.32 | 0.30 | 1.03 | 1.02 | 1.57 | 1.52 | 1.34 | 1.31 | 1.47 | 1.49 |
| 12-17 | Point Estimates | 9.42 | 9.42 | 9.76 | 10.07 | 8.51 | 8.58 | 6.84 | 6.75 | 8.08 | 8.00 |
| | SE1 | 0.29 | 0.30 | 1.00 | 1.08 | 1.22 | 1.22 | 1.33 | 1.34 | 1.25 | 1.24 |
| | SE2 | 0.29 | 0.29 | 0.99 | 1.06 | 1.21 | 1.22 | 1.33 | 1.33 | 1.24 | 1.22 |
| 18-25 | Point Estimates | 54.39 | 54.32 | 53.07 | 53.35 | 49.36 | 49.71 | 54.91 | 55.40 | 62.58 | 62.46 |
| | SE1 | 0.59 | 0.59 | 1.95 | 1.96 | 2.11 | 2.12 | 2.50 | 2.54 | 2.63 | 2.67 |
| | SE2 | 0.58 | 0.55 | 1.91 | 1.93 | 2.09 | 1.97 | 2.49 | 2.60 | 2.66 | 2.61 |
| 26-34 | Point Estimates | 64.32 | 64.28 | 60.55 | 60.49 | 59.82 | 59.49 | 74.79 | 74.29 | 67.26 | 67.41 |
| | SE1 | 0.63 | 0.63 | 1.98 | 2.00 | 2.66 | 2.66 | 2.27 | 2.32 | 2.74 | 2.76 |
| | SE2 | 0.62 | 0.60 | 1.94 | 1.92 | 2.65 | 2.66 | 2.25 | 2.21 | 2.76 | 2.75 |
| 35+ | Point Estimates | 53.04 | 52.84 | 50.75 | 50.14 | 55.24 | 55.11 | 56.38 | 56.56 | 53.85 | 54.28 |
| | SE1 | 0.46 | 0.47 | 1.51 | 1.54 | 2.19 | 2.22 | 1.99 | 1.96 | 2.06 | 2.07 |
| | SE2 | 0.44 | 0.43 | 1.43 | 1.43 | 2.18 | 2.14 | 1.98 | 1.90 | 2.04 | 2.01 |

(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: 2019 NSDUH (continued)

| Variables | | New York | | Ohio | | Pennsylvania | | Texas | |
|------------------------------|-----------------|----------|-------|----------|-------|--------------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Cigarettes Past Month | | | | | | | | | |
| Total | Point Estimates | 14.62 | 14.83 | 22.81 | 22.68 | 18.59 | 18.16 | 16.54 | 16.37 |
| | SE1 | 0.90 | 0.92 | 1.25 | 1.26 | 1.43 | 1.40 | 0.89 | 0.88 |
| | SE2 | 0.87 | 0.87 | 1.24 | 1.19 | 1.42 | 1.46 | 0.88 | 0.87 |
| 12-17 | Point Estimates | 1.54 | 1.57 | 2.86 | 2.82 | 3.35 | 3.31 | 2.49 | 2.47 |
| | SE1 | 0.58 | 0.58 | 0.77 | 0.76 | 0.86 | 0.85 | 0.58 | 0.58 |
| | SE2 | 0.58 | 0.57 | 0.77 | 0.75 | 0.86 | 0.85 | 0.57 | 0.57 |
| 18-25 | Point Estimates | 14.05 | 14.24 | 25.70 | 25.66 | 23.64 | 23.70 | 18.38 | 18.37 |
| | SE1 | 1.58 | 1.58 | 2.02 | 2.01 | 2.47 | 2.40 | 1.82 | 1.82 |
| | SE2 | 1.56 | 1.48 | 2.03 | 1.99 | 2.48 | 2.39 | 1.81 | 1.76 |
| 26-34 | Point Estimates | 21.25 | 21.66 | 31.51 | 31.48 | 25.66 | 24.86 | 22.98 | 22.93 |
| | SE1 | 2.15 | 2.21 | 2.88 | 2.86 | 2.72 | 2.63 | 2.10 | 2.09 |
| | SE2 | 2.14 | 2.16 | 2.88 | 2.80 | 2.71 | 2.61 | 2.10 | 2.03 |
| 35+ | Point Estimates | 14.78 | 14.98 | 23.13 | 22.98 | 18.11 | 17.63 | 16.91 | 16.64 |
| | SE1 | 1.22 | 1.24 | 1.68 | 1.68 | 1.79 | 1.75 | 1.25 | 1.23 |
| | SE2 | 1.17 | 1.17 | 1.67 | 1.59 | 1.77 | 1.90 | 1.21 | 1.18 |
| Alcohol Past Month | | | | | | | | | |
| Total | Point Estimates | 49.88 | 50.22 | 51.12 | 51.02 | 51.77 | 51.49 | 49.93 | 49.88 |
| | SE1 | 1.58 | 1.58 | 1.81 | 1.84 | 1.62 | 1.64 | 1.31 | 1.33 |
| | SE2 | 1.46 | 1.37 | 1.80 | 1.79 | 1.60 | 1.57 | 1.19 | 1.19 |
| 12-17 | Point Estimates | 10.88 | 10.59 | 9.43 | 9.36 | 9.94 | 9.98 | 11.31 | 11.68 |
| | SE1 | 1.29 | 1.27 | 1.48 | 1.47 | 1.20 | 1.22 | 1.25 | 1.30 |
| | SE2 | 1.29 | 1.24 | 1.48 | 1.44 | 1.20 | 1.22 | 1.23 | 1.30 |
| 18-25 | Point Estimates | 54.59 | 54.49 | 61.53 | 61.80 | 51.56 | 51.63 | 51.77 | 51.38 |
| | SE1 | 2.74 | 2.72 | 2.29 | 2.29 | 3.13 | 3.04 | 2.64 | 2.62 |
| | SE2 | 2.67 | 2.53 | 2.28 | 2.26 | 3.12 | 2.98 | 2.56 | 2.40 |
| 26-34 | Point Estimates | 64.53 | 65.96 | 61.32 | 61.59 | 66.63 | 66.65 | 64.52 | 66.02 |
| | SE1 | 3.07 | 3.03 | 2.75 | 2.74 | 2.61 | 2.52 | 2.54 | 2.51 |
| | SE2 | 3.04 | 2.83 | 2.77 | 2.78 | 2.62 | 2.48 | 2.50 | 2.46 |
| 35+ | Point Estimates | 50.42 | 50.64 | 52.72 | 52.52 | 53.99 | 53.53 | 52.45 | 52.00 |
| | SE1 | 2.15 | 2.15 | 2.47 | 2.52 | 2.24 | 2.29 | 1.77 | 1.80 |
| | SE2 | 2.04 | 1.94 | 2.45 | 2.45 | 2.21 | 2.19 | 1.67 | 1.68 |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

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: 2019 NSDUH

| Variables | | United States | | California | | Florida | | Illinois | | Michigan | |
|-----------------------------|-----------------|---------------|-------|------------|-------|----------|-------|----------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Marijuana Past Month | | | | | | | | | | | |
| Total | Point Estimates | 11.54 | 11.48 | 14.33 | 14.21 | 11.00 | 11.14 | 11.00 | 11.01 | 14.73 | 14.88 |
| | SE1 | 0.19 | 0.19 | 0.66 | 0.66 | 0.81 | 0.81 | 0.95 | 0.98 | 0.95 | 0.97 |
| | SE2 | 0.18 | 0.17 | 0.62 | 0.60 | 0.78 | 0.73 | 0.92 | 0.84 | 0.92 | 0.87 |
| 12-17 | Point Estimates | 7.32 | 7.38 | 9.74 | 10.12 | 5.63 | 5.83 | 7.00 | 7.13 | 6.41 | 6.31 |
| | SE1 | 0.26 | 0.26 | 0.92 | 1.00 | 0.98 | 1.02 | 1.20 | 1.22 | 1.31 | 1.31 |
| | SE2 | 0.25 | 0.26 | 0.92 | 0.99 | 0.98 | 1.03 | 1.20 | 1.22 | 1.30 | 1.29 |
| 18-25 | Point Estimates | 23.01 | 22.97 | 26.19 | 26.20 | 21.34 | 21.86 | 21.99 | 21.87 | 30.76 | 30.96 |
| | SE1 | 0.45 | 0.45 | 1.51 | 1.51 | 1.74 | 1.77 | 2.14 | 2.16 | 2.14 | 2.17 |
| | SE2 | 0.45 | 0.44 | 1.49 | 1.46 | 1.72 | 1.74 | 2.12 | 2.08 | 2.15 | 2.18 |
| 26-34 | Point Estimates | 19.08 | 18.98 | 20.26 | 20.20 | 20.98 | 21.00 | 22.88 | 22.26 | 22.87 | 22.87 |
| | SE1 | 0.51 | 0.51 | 1.57 | 1.58 | 2.04 | 2.06 | 2.52 | 2.45 | 2.45 | 2.48 |
| | SE2 | 0.51 | 0.48 | 1.54 | 1.54 | 2.03 | 1.99 | 2.49 | 2.31 | 2.43 | 2.43 |
| 35+ | Point Estimates | 8.21 | 8.15 | 11.06 | 10.85 | 8.05 | 8.15 | 6.79 | 6.94 | 11.04 | 11.25 |
| | SE1 | 0.23 | 0.23 | 0.97 | 0.94 | 0.91 | 0.93 | 0.99 | 1.05 | 1.06 | 1.08 |
| | SE2 | 0.22 | 0.21 | 0.94 | 0.87 | 0.90 | 0.89 | 0.97 | 0.96 | 1.04 | 1.03 |
| Cocaine Past Month | | | | | | | | | | | |
| Total | Point Estimates | 0.74 | 0.73 | 0.92 | 0.88 | 0.76 | 0.76 | 0.57 | 0.57 | 0.73 | 0.72 |
| | SE1 | 0.05 | 0.05 | 0.16 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| | SE2 | 0.05 | 0.05 | 0.16 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| 12-17 | Point Estimates | 0.13 | 0.14 | 0.26 | 0.30 | 0.17 | 0.16 | 0.17 | 0.16 | 0.00 | 0.00 |
| | SE1 | 0.04 | 0.05 | 0.15 | 0.17 | 0.14 | 0.14 | 0.17 | 0.16 | 0.00 | 0.00 |
| | SE2 | 0.04 | 0.05 | 0.15 | 0.18 | 0.14 | 0.14 | 0.17 | 0.16 | 0.00 | 0.00 |
| 18-25 | Point Estimates | 1.60 | 1.60 | 2.42 | 2.34 | 0.86 | 0.87 | 0.48 | 0.44 | 2.73 | 2.66 |
| | SE1 | 0.13 | 0.13 | 0.53 | 0.55 | 0.41 | 0.40 | 0.22 | 0.21 | 0.72 | 0.70 |
| | SE2 | 0.13 | 0.13 | 0.53 | 0.55 | 0.41 | 0.39 | 0.22 | 0.21 | 0.72 | 0.68 |
| 26-34 | Point Estimates | 1.54 | 1.50 | 1.60 | 1.39 | 1.40 | 1.46 | 1.48 | 1.61 | 0.50 | 0.50 |
| | SE1 | 0.16 | 0.16 | 0.58 | 0.51 | 0.59 | 0.62 | 0.80 | 0.88 | 0.36 | 0.36 |
| | SE2 | 0.16 | 0.16 | 0.57 | 0.50 | 0.59 | 0.63 | 0.81 | 0.87 | 0.36 | 0.36 |
| 35+ | Point Estimates | 0.48 | 0.47 | 0.53 | 0.53 | 0.68 | 0.68 | 0.43 | 0.42 | 0.48 | 0.49 |
| | SE1 | 0.06 | 0.06 | 0.19 | 0.18 | 0.27 | 0.26 | 0.24 | 0.23 | 0.30 | 0.30 |
| | SE2 | 0.06 | 0.06 | 0.19 | 0.18 | 0.27 | 0.26 | 0.24 | 0.23 | 0.30 | 0.30 |

(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: 2019 NSDUH (continued)

| Variables | New York | | Ohio | | Pennsylvania | | Texas | | |
|-----------------------------|-----------------|-------|----------|-------|--------------|-------|----------|-------|-------|
| | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | |
| Marijuana Past Month | | | | | | | | | |
| Total | Point Estimates | 12.11 | 12.08 | 12.15 | 12.05 | 11.13 | 10.77 | 8.02 | 7.98 |
| | SE1 | 0.87 | 0.85 | 0.90 | 0.91 | 0.83 | 0.84 | 0.65 | 0.63 |
| | SE2 | 0.82 | 0.74 | 0.90 | 0.85 | 0.84 | 0.81 | 0.62 | 0.57 |
| 12-17 | Point Estimates | 8.85 | 8.85 | 6.88 | 6.85 | 6.86 | 6.86 | 6.78 | 6.96 |
| | SE1 | 1.25 | 1.28 | 1.18 | 1.19 | 1.01 | 1.01 | 0.99 | 1.00 |
| | SE2 | 1.24 | 1.27 | 1.18 | 1.17 | 1.02 | 1.00 | 0.98 | 0.98 |
| 18-25 | Point Estimates | 25.68 | 25.19 | 25.43 | 25.78 | 21.46 | 21.14 | 15.00 | 15.19 |
| | SE1 | 1.93 | 1.89 | 2.33 | 2.32 | 2.14 | 2.13 | 1.85 | 1.85 |
| | SE2 | 1.93 | 1.84 | 2.33 | 2.35 | 2.14 | 2.04 | 1.84 | 1.82 |
| 26-34 | Point Estimates | 18.50 | 18.57 | 17.09 | 17.02 | 18.31 | 17.94 | 15.19 | 14.99 |
| | SE1 | 2.14 | 2.16 | 1.74 | 1.74 | 2.42 | 2.36 | 2.05 | 1.99 |
| | SE2 | 2.14 | 2.10 | 1.74 | 1.69 | 2.41 | 2.33 | 2.07 | 1.91 |
| 35+ | Point Estimates | 8.46 | 8.46 | 9.30 | 9.13 | 8.26 | 7.91 | 4.83 | 4.75 |
| | SE1 | 1.00 | 0.96 | 1.08 | 1.08 | 0.88 | 0.88 | 0.66 | 0.65 |
| | SE2 | 0.97 | 0.89 | 1.08 | 1.06 | 0.87 | 0.81 | 0.66 | 0.63 |
| Cocaine Past Month | | | | | | | | | |
| Total | Point Estimates | 1.01 | 1.01 | 0.83 | 0.80 | 0.71 | 0.70 | 0.59 | 0.61 |
| | SE1 | 0.22 | 0.23 | 0.24 | 0.22 | 0.22 | 0.22 | 0.18 | 0.20 |
| | SE2 | 0.22 | 0.22 | 0.24 | 0.22 | 0.22 | 0.22 | 0.18 | 0.19 |
| 12-17 | Point Estimates | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.12 | 0.44 | 0.44 |
| | SE1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.12 | 0.33 | 0.33 |
| | SE2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.13 | 0.33 | 0.33 |
| 18-25 | Point Estimates | 1.60 | 1.64 | 1.06 | 1.04 | 0.77 | 0.75 | 1.51 | 1.48 |
| | SE1 | 0.50 | 0.52 | 0.40 | 0.40 | 0.44 | 0.43 | 0.59 | 0.56 |
| | SE2 | 0.49 | 0.51 | 0.40 | 0.40 | 0.44 | 0.44 | 0.59 | 0.56 |
| 26-34 | Point Estimates | 1.76 | 1.72 | 1.81 | 1.83 | 2.51 | 2.49 | 1.01 | 1.03 |
| | SE1 | 0.78 | 0.77 | 0.75 | 0.76 | 1.11 | 1.07 | 0.51 | 0.52 |
| | SE2 | 0.78 | 0.78 | 0.75 | 0.76 | 1.10 | 1.06 | 0.51 | 0.51 |
| 35+ | Point Estimates | 0.86 | 0.85 | 0.69 | 0.65 | 0.39 | 0.39 | 0.30 | 0.33 |
| | SE1 | 0.29 | 0.30 | 0.33 | 0.31 | 0.19 | 0.19 | 0.22 | 0.25 |
| | SE2 | 0.29 | 0.29 | 0.33 | 0.29 | 0.19 | 0.19 | 0.21 | 0.24 |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2019.

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: 2019 NSDUH

| Variables | | United States | | California | | Florida | | Illinois | | Michigan | |
|---------------------------------|-----------------|---------------|-------|------------|-------|----------|-------|----------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Major Depressive Episode | | | | | | | | | | | |
| Total | Point Estimates | 7.83 | 7.83 | 7.55 | 7.46 | 6.76 | 6.79 | 6.87 | 7.03 | 8.79 | 9.07 |
| | SE1 | 0.17 | 0.17 | 0.55 | 0.55 | 0.59 | 0.59 | 0.76 | 0.81 | 0.75 | 0.83 |
| | SE2 | 0.17 | 0.16 | 0.55 | 0.53 | 0.58 | 0.56 | 0.74 | 0.86 | 0.75 | 0.77 |
| 18-25 | Point Estimates | 15.15 | 15.20 | 12.15 | 12.50 | 14.24 | 14.30 | 16.39 | 16.46 | 16.12 | 16.01 |
| | SE1 | 0.40 | 0.40 | 1.03 | 1.05 | 1.18 | 1.17 | 1.57 | 1.54 | 1.44 | 1.43 |
| | SE2 | 0.40 | 0.38 | 1.05 | 1.04 | 1.18 | 1.11 | 1.55 | 1.46 | 1.44 | 1.43 |
| 26-34 | Point Estimates | 10.96 | 10.90 | 10.31 | 10.29 | 13.18 | 13.36 | 8.12 | 7.23 | 10.36 | 10.34 |
| | SE1 | 0.44 | 0.44 | 1.34 | 1.34 | 1.81 | 1.86 | 2.24 | 2.07 | 1.69 | 1.69 |
| | SE2 | 0.44 | 0.44 | 1.33 | 1.33 | 1.81 | 1.84 | 2.23 | 2.01 | 1.68 | 1.71 |
| 35+ | Point Estimates | 5.72 | 5.72 | 5.90 | 5.73 | 4.35 | 4.34 | 4.84 | 5.21 | 7.04 | 7.48 |
| | SE1 | 0.20 | 0.21 | 0.69 | 0.68 | 0.64 | 0.64 | 0.93 | 1.02 | 0.97 | 1.09 |
| | SE2 | 0.20 | 0.20 | 0.67 | 0.65 | 0.64 | 0.63 | 0.91 | 1.11 | 0.96 | 0.98 |
| Serious Mental Illness | | | | | | | | | | | |
| Total | Point Estimates | 5.22 | 5.24 | 4.84 | 4.85 | 4.47 | 4.52 | 4.41 | 4.30 | 5.22 | 5.45 |
| | SE1 | 0.14 | 0.14 | 0.45 | 0.45 | 0.50 | 0.51 | 0.62 | 0.57 | 0.57 | 0.64 |
| | SE2 | 0.14 | 0.14 | 0.44 | 0.44 | 0.49 | 0.48 | 0.61 | 0.61 | 0.57 | 0.60 |
| 18-25 | Point Estimates | 8.57 | 8.60 | 6.29 | 6.45 | 7.28 | 7.53 | 9.47 | 9.66 | 8.24 | 8.06 |
| | SE1 | 0.29 | 0.29 | 0.73 | 0.74 | 0.79 | 0.79 | 1.30 | 1.31 | 1.21 | 1.19 |
| | SE2 | 0.29 | 0.28 | 0.73 | 0.74 | 0.78 | 0.78 | 1.28 | 1.28 | 1.21 | 1.18 |
| 26-34 | Point Estimates | 8.05 | 8.03 | 7.17 | 7.22 | 9.79 | 10.08 | 5.96 | 5.33 | 5.25 | 5.20 |
| | SE1 | 0.35 | 0.35 | 0.99 | 0.99 | 1.61 | 1.66 | 1.59 | 1.38 | 1.10 | 1.10 |
| | SE2 | 0.35 | 0.34 | 0.98 | 0.97 | 1.59 | 1.59 | 1.57 | 1.34 | 1.11 | 1.10 |
| 35+ | Point Estimates | 3.93 | 3.96 | 3.93 | 3.91 | 2.99 | 2.96 | 3.13 | 3.05 | 4.63 | 5.00 |
| | SE1 | 0.17 | 0.17 | 0.53 | 0.53 | 0.57 | 0.57 | 0.77 | 0.71 | 0.75 | 0.85 |
| | SE2 | 0.16 | 0.16 | 0.53 | 0.54 | 0.57 | 0.56 | 0.77 | 0.79 | 0.75 | 0.77 |

(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: 2019 NSDUH (continued)





| Variables | | New York | | Ohio | | Pennsylvania | | Texas | |
|---------------------------------|-----------------|----------|-------|----------|-------|--------------|-------|----------|-------|
| | | Baseline | Final | Baseline | Final | Baseline | Final | Baseline | Final |
| Major Depressive Episode | | | | | | | | | |
| Total | Point Estimates | 6.59 | 6.79 | 9.98 | 9.96 | 7.56 | 7.50 | 6.74 | 6.63 |
| | SE1 | 0.65 | 0.67 | 0.76 | 0.77 | 0.68 | 0.71 | 0.60 | 0.59 |
| | SE2 | 0.64 | 0.65 | 0.74 | 0.73 | 0.69 | 0.69 | 0.55 | 0.51 |
| 18-25 | Point Estimates | 12.17 | 12.40 | 18.80 | 18.49 | 17.39 | 17.13 | 15.29 | 15.31 |
| | SE1 | 1.44 | 1.49 | 1.82 | 1.83 | 1.89 | 1.87 | 1.75 | 1.76 |
| | SE2 | 1.44 | 1.44 | 1.83 | 1.80 | 1.89 | 1.82 | 1.72 | 1.67 |
| 26-34 | Point Estimates | 8.08 | 8.12 | 11.36 | 11.52 | 11.75 | 11.95 | 12.07 | 12.00 |
| | SE1 | 1.49 | 1.52 | 1.70 | 1.72 | 1.76 | 1.85 | 1.89 | 1.87 |
| | SE2 | 1.49 | 1.55 | 1.70 | 1.70 | 1.78 | 1.84 | 1.89 | 1.88 |
| 35+ | Point Estimates | 5.19 | 5.40 | 8.03 | 8.03 | 4.90 | 4.86 | 3.49 | 3.36 |
| | SE1 | 0.87 | 0.90 | 1.00 | 1.00 | 0.79 | 0.80 | 0.56 | 0.55 |
| | SE2 | 0.86 | 0.84 | 0.98 | 0.96 | 0.79 | 0.77 | 0.56 | 0.53 |
| Serious Mental Illness | | | | | | | | | |
| Total | Point Estimates | 4.04 | 4.20 | 7.49 | 7.54 | 5.36 | 5.28 | 4.90 | 4.89 |
| | SE1 | 0.55 | 0.56 | 0.80 | 0.82 | 0.62 | 0.62 | 0.49 | 0.48 |
| | SE2 | 0.55 | 0.54 | 0.79 | 0.78 | 0.61 | 0.61 | 0.47 | 0.45 |
| 18-25 | Point Estimates | 6.46 | 6.79 | 11.23 | 11.41 | 10.83 | 10.63 | 8.69 | 8.66 |
| | SE1 | 1.01 | 1.10 | 1.51 | 1.58 | 1.48 | 1.45 | 1.12 | 1.11 |
| | SE2 | 1.01 | 1.06 | 1.51 | 1.58 | 1.49 | 1.38 | 1.12 | 1.10 |
| 26-34 | Point Estimates | 4.80 | 4.94 | 10.46 | 10.56 | 6.86 | 6.88 | 8.78 | 8.89 |
| | SE1 | 1.04 | 1.07 | 1.48 | 1.50 | 1.52 | 1.52 | 1.36 | 1.37 |
| | SE2 | 1.04 | 1.04 | 1.48 | 1.48 | 1.52 | 1.54 | 1.36 | 1.37 |
| 35+ | Point Estimates | 3.41 | 3.53 | 6.15 | 6.17 | 4.04 | 3.99 | 3.06 | 3.02 |
| | SE1 | 0.75 | 0.76 | 1.03 | 1.05 | 0.71 | 0.71 | 0.51 | 0.50 |
| | SE2 | 0.75 | 0.72 | 1.02 | 1.02 | 0.70 | 0.72 | 0.50 | 0.47 |

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, 2019.

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List of Contributors

This methodological report was prepared by the Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Behavioral Health Statistics and Quality, and by RTI International. Work by RTI was performed under Contract No. HHSS283201700002C. Rong Cai served as government project officer and as the contracting officer representative, and David Hunter served as the RTI project director.

The contributor to this report at SAMHSA was Qiyuan Pan.

Contributors to this report at RTI included Patrick Chen, Lanting Dai, Harper Gordek, Jeff Laufenberg (formerly with RTI), Neeraja Sathe, and Matthew Westlake. Also at RTI, report and web production staff included Teresa Bass, Claudia Clark, Margaret Johnson, and Staci Rachman.

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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 minimized under the generalized exponential model (GEM), subject to calibration constraints, is given by the distance function below:

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

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, \dots, x_p) . Then, the calibration constraints for the above minimization problem are

$$\sum_{k \in s} x_k d_k a_k = T_x. \quad (\text{A.1.2})$$

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

$$a_k(\lambda) = \frac{\ell_k (u_k - c_k) + u_k (c_k - \ell_k) \exp\{A_k x'_k \lambda\}}{(u_k - c_k) + (c_k - \ell_k) \exp\{A_k x'_k \lambda\}}. \quad (\text{A.1.3})$$

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

$$\ell_k < a_k < u_k, k = 1, \dots, n. \quad (\text{A.1.4})$$

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 $k = 1, \dots, n$, we have

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

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 GEM 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 $1 \leq \ell_1 < \rho^{-1} = c_1 < u_1$ are prescribed numbers. Similarly, for extreme weights with low weights, $\ell_k = \ell_3 m_k$, $c_k = \rho^{-1} m_k$, $u_k = u_3 m_k$, and $1 \leq \ell_3 < \rho^{-1} = c_3 < u_3$.

For the poststratification adjustment, 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 $\phi_k^{(v)} = \left[(u_k - a_k^{(v)}) (a_k^{(v)} - \ell_k) \right] / \left[(u_k - c_k) (c_k - \ell_k) \right]$.

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

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

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 $\|T_x - \hat{T}_x^{(\nu)}\|$, which is defined as $\sqrt{(T_x - \hat{T}_x^{(\nu)})' (T_x - \hat{T}_x^{(\nu)})}$. 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 ($6 \times 5 \times 2 \times 2$) ([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 2019, 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 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 2019 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 2002-2018, the predictive mean neighborhood (PMN) methodology was used for the 2019 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 2019 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 2019 editing and imputation report in the *NSDUH Methodological Resource Book* (Center for Behavioral Health Statistics and Quality, 2021).

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 2019 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 2019 NSDUH Person Weight (United States)

| Statistics | <i>sel.sdu.des</i> ¹ | | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 5 | 0.37 | 22 | 0.12 | 17 | 1.01 | 20 | 0.13 | 9 | 0.35 | 16 | 0.09 | 4 | |
| 1% | 36 | 1.00 | 71 | 0.52 | 65 | 1.01 | 108 | 0.52 | 98 | 1.00 | 126 | 0.21 | 100 | |
| 5% | 77 | 1.08 | 107 | 0.76 | 112 | 1.01 | 212 | 0.74 | 208 | 1.06 | 294 | 0.45 | 259 | |
| 10% | 99 | 1.14 | 143 | 0.86 | 151 | 1.01 | 358 | 0.81 | 347 | 1.13 | 494 | 0.80 | 436 | |
| 25% | 316 | 1.23 | 417 | 0.97 | 413 | 1.29 | 839 | 0.91 | 829 | 1.26 | 1,144 | 0.96 | 1,061 | |
| Median | 580 | 1.34 | 791 | 1.06 | 828 | 2.46 | 1,683 | 1.00 | 1,698 | 1.43 | 2,394 | 1.02 | 2,386 | |
| 75% | 764 | 1.51 | 1,078 | 1.17 | 1,162 | 3.29 | 3,377 | 1.10 | 3,402 | 1.66 | 5,014 | 1.08 | 5,048 | |
| 90% | 930 | 1.78 | 1,406 | 1.32 | 1,557 | 7.63 | 6,575 | 1.22 | 6,557 | 1.95 | 9,943 | 1.22 | 9,920 | |
| 95% | 1,038 | 2.01 | 1,570 | 1.47 | 1,826 | 8.80 | 9,098 | 1.32 | 9,066 | 2.21 | 13,799 | 1.39 | 13,915 | |
| 99% | 1,334 | 3.28 | 2,160 | 2.04 | 2,558 | 10.70 | 13,474 | 1.71 | 13,724 | 2.97 | 23,174 | 1.83 | 23,501 | |
| Maximum | 4,811 | 6.59 | 4,899 | 5.00 | 10,643 | 27.77 | 79,044 | 8.05 | 37,416 | 6.01 | 70,410 | 5.40 | 69,794 | |
| n | 210,244 | 148,023 | 148,023 | 148,004 | 148,004 | 101,509 | 101,509 | 101,509 | 101,509 | 67,625 | 67,625 | 67,625 | 67,625 | |
| Max/Mean | 8.63 | - | 6.18 | - | 12.41 | - | 29.22 | - | 13.80 | - | 17.30 | - | 17.15 | |

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, 2019.

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 |
| States⁴ 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, 2019.

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.

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

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

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

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

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

| State \times 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 \times Age \times 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 \times Race (5 levels). Because collapsing was done on this term, all three-factor crosses involving State \times Race must maintain this same collapsing scheme.

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

| State × Age × Race (3 Levels) | White | Black 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 2019 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 2019 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 2019 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 2019 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 2019 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 | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 5.58 | 9.83 | 1.14 | 1.70940 | 306 | (1.18, 1.60) | (1.18, 1.60) |
| | 1.70 | 1.48 | 0.31 | 1.87836 | 121 | (1.00, 4.90) | (1.01, 4.88) |
| | | | | | | (1.40, 5.00) | (1.40, 1.43) |
| <i>res.sdu.ps</i> | 1.70 | 1.48 | 0.31 | 1.87837 | 232 | (0.51, 1.10) | (0.51, 1.10) |
| | 1.57 | 2.68 | 0.57 | 1.95158 | 232 | (0.27, 4.42) | (0.28, 4.36) |
| | | | | | | (0.90, 2.37) | (0.90, 2.37) |
| <i>sel.per.ps</i> | 2.35 | 5.07 | 1.28 | 3.19384 | 332 | (0.20, 2.89) | (0.20, 2.88) |
| | 1.84 | 5.14 | 1.26 | 3.18991 | 306 | (0.20, 4.54) | (0.20, 4.51) |
| | | | | | | (0.90, 1.62) | (0.90, 1.62) |
| <i>res.per.nr</i> | 2.16 | 5.34 | 1.25 | 3.15640 | 332 | (1.00, 2.90) | (1.00, 2.90) |
| | 2.46 | 8.96 | 1.56 | 3.73286 | 267 | (1.00, 5.00) | (1.00, 5.00) |
| | | | | | | (1.60, 5.00) | (1.60, 1.60) |
| <i>res.per.ps</i> | 2.51 | 8.95 | 1.60 | 3.73286 | 267 | (0.20, 3.00) | (0.20, 3.00) |
| | 1.41 | 5.43 | 1.40 | 3.89359 | 228 | (0.20, 4.97) | (0.20, 4.96) |
| | | | | | | (0.90, 1.71) | (0.90, 1.71) |

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, 2019.

Table D.1b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 1: New England)

| Statistics | <i>sel.sdu.des</i> ¹ | | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 62 | 0.43 | 64 | 0.28 | 33 | 1.01 | 42 | 0.15 | 24 | 0.35 | 32 | 0.12 | 11 | |
| 1% | 63 | 1.05 | 74 | 0.57 | 78 | 1.01 | 90 | 0.43 | 75 | 1.00 | 88 | 0.20 | 46 | |
| 5% | 69 | 1.12 | 88 | 0.76 | 98 | 1.01 | 132 | 0.68 | 122 | 1.02 | 164 | 0.34 | 142 | |
| 10% | 82 | 1.15 | 101 | 0.88 | 107 | 1.01 | 165 | 0.78 | 160 | 1.12 | 218 | 0.76 | 200 | |
| 25% | 112 | 1.26 | 153 | 0.97 | 157 | 1.22 | 289 | 0.89 | 291 | 1.31 | 420 | 0.94 | 400 | |
| Median | 147 | 1.34 | 199 | 1.06 | 215 | 2.40 | 644 | 0.99 | 633 | 1.50 | 931 | 1.00 | 896 | |
| 75% | 426 | 1.50 | 539 | 1.14 | 565 | 3.26 | 1,672 | 1.10 | 1,681 | 1.78 | 2,451 | 1.08 | 2,442 | |
| 90% | 605 | 1.77 | 932 | 1.29 | 993 | 9.14 | 3,309 | 1.26 | 3,301 | 2.18 | 5,334 | 1.27 | 5,553 | |
| 95% | 615 | 1.97 | 1,130 | 1.44 | 1,194 | 11.03 | 5,217 | 1.42 | 5,165 | 2.49 | 8,751 | 1.57 | 8,770 | |
| 99% | 892 | 2.94 | 1,623 | 2.15 | 1,754 | 11.81 | 10,436 | 2.13 | 10,050 | 3.93 | 18,321 | 2.29 | 18,752 | |
| Maximum | 908 | 4.88 | 2,502 | 4.36 | 4,258 | 20.00 | 37,164 | 4.51 | 35,165 | 5.00 | 49,919 | 5.40 | 69,794 | |
| n | 20,476 | 14,421 | 14,421 | 14,418 | 14,418 | 9,130 | 9,130 | 9,130 | 9,130 | 5,736 | 5,736 | 5,736 | 5,736 | |
| Max/Mean | 3.35 | - | 6.49 | - | 10.43 | - | 26.42 | - | 25.05 | - | 22.34 | - | 31.24 | |

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, 2019.

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 the Rent/Housing \times percent Hispanic or Latino, State \times Quarter, and State \times Rent/Housing interactions. Out of 122 proposed variables, 79 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 160 proposed variables, 18 were included in the model.

In the final model, a total of 121 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.

All 127 proposed three-factor effects were included in the model.

In the final model, a total of 232 variables were included; see [Exhibit D1.2](#).

Selected Person-Level Poststratification

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 \times percent Hispanic or Latino, percent Owner-Occupied \times Rent/Housing, Rent/Housing \times percent Black or African American, State \times percent Black or African American, State \times percent Hispanic or Latino, and State \times percent Owner-Occupied interactions. Out of 168 proposed variables, 151 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age \times Race \times Gender, Age \times Hispanicity \times Gender, State \times Age \times Race, and State \times Age \times Gender interactions. Out of 127 proposed variables, 118 were included in the model.

In the final model, a total of 306 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 \times percent Hispanic or Latino, percent Owner-Occupied \times Rent/Housing, Rent/Housing \times percent Black or African American, State \times Race, State \times percent Black or African American, State \times percent Hispanic or Latino, and State \times percent Owner-Occupied interactions. Out of 168 proposed variables, 148 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age \times Hispanicity \times Gender, State \times Age \times Gender, and State \times Hispanicity \times Gender interactions. Out of 127 proposed variables, 82 were included in the model.

In the final model, a total of 267 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 \times Race interaction. Out of 95 proposed variables, 92 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Race \times Hispanicity \times Gender, State \times Age \times Gender, and State \times Race \times Gender interactions. Out of 152 proposed variables, 116 were included in the model.

In the final model, a total of 228 variables were included; see [Exhibit D1.5](#).

Exhibit D1.1 Covariates for 2019 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 | 79 | |
| % Owner-Occupied × % Black or African American | 3 × 3 | 4 | 2 | Drop (3,1/2); conv. |
| % Owner-Occupied × % Hispanic or Latino | 3 × 3 | 4 | 3 | Drop (2,1); sing. |
| % Owner-Occupied × Rent/Housing | 3 × 5 | 8 | 4 | Drop (3,*); sing./conv. |
| Rent/Housing × % Black or African American | 3 × 5 | 8 | 6 | Drop (1/4,1); zero/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; zero/sing. |
| State × Group Quarter | 6 × 3 | 10 | 3 | Coll. (1,1) & (1,2); conv. Coll. (2,1) & (2,2); conv. Drop (3,1), (4/5,1/2); sing./zero/conv. |
| State × % Black or African American | 6 × 3 | 10 | 4 | Keep (1/2/4/5,2), drop all others; sing./zero. |
| State × % Hispanic or Latino | 6 × 3 | 10 | 5 | Keep (1,1/2), (3,2),(4,1/2), drop all others; sing./zero. |
| State × % Owner-Occupied | 6 × 3 | 10 | 5 | Coll. (1,3) & (1,2), repeat for all states; conv. |
| State × Rent/Housing | 6 × 5 | 20 | 20 | All levels present. |
| Three-Factor Effects | | | | |
| | | 160 | 18 | |
| State × % Owner-Occupied × % Black or African American | 6 × 3 × 3 | 20 | 0 | Drop all; hier. |
| State × % Owner-Occupied × % Hispanic or Latino | 6 × 3 × 3 | 20 | 2 | Coll. (1,3,2) & (1,2,2), coll. (4,3,2) & (4,2,2); conv.; drop all others; hier./sing. |
| State × % Owner-Occupied × Rent/Housing | 6 × 3 × 5 | 40 | 0 | Drop all; hier. |
| State × Rent/Housing × % Black or African American | 6 × 3 × 5 | 40 | 6 | Keep (1,*,2) & (4,1/2,2), drop all others; hier./sing./zero. |
| State × Rent/Housing × % Hispanic or Latino | 6 × 3 × 5 | 40 | 10 | Keep (1,1/2,1), (1,2/3/4,2), (4,1/2,1), & (4,2/3/4,2), drop all others; hier./sing./zero. |
| Total | | 306 | 121 | |

**Exhibit D1.2 Covariates for 2019 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 | 127 | |
| 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 | 10 | All levels present. |
| 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 | 232 | |

**Exhibit D1.3 Covariates for 2019 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 | 151 | |
| 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 | 7 | Drop (3,2); sing. |
| Rent/Housing × % Black or African American | 3 × 5 | 8 | 6 | Drop (1/4,1); zero/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 | 20 | All levels present. |
| 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 | 4 | Drop (1,1), (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 | 8 | Coll. (4,2) & (4,3); conv. Drop (5,2); sing. |
| State × Rent/Housing | 6 × 5 | 20 | 20 | All levels present. |
| Three-Factor Effects | | | | |
| | | 127 | 118 | |
| 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 | 1 | Coll. (2,1,1) & (3,1,1); conv. |
| State × Age × Race (3 levels) | 6 × 5 × 3 | 40 | 40 | All levels present. |
| State × Age × Hispanicity | 6 × 5 × 2 | 20 | 19 | Drop (5,4,1); sing. |
| State × Age × Gender | 6 × 5 × 2 | 20 | 20 | All levels present. |
| State × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 6 | Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1), (5,2,1) & (5,3,1), drop (2,*,1); conv. |
| State × Race (3 levels) × Gender | 6 × 3 × 2 | 10 | 9 | Coll. (3,2,1) & (3,3,1); conv. |
| State × Hispanicity × Gender | 6 × 2 × 2 | 5 | 4 | Drop (2,1,1); conv. |
| Total | | 332 | 306 | |

**Exhibit D1.4 Covariates for 2019 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 | 148 | |
| 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 | 7 | Drop (3,2); sing. |
| Rent/Housing × % Black or African American | 3 × 5 | 8 | 6 | Drop (1/4,1), zero, 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 | 16 | Coll. (2,3), (2,4), & (2,5); coll. (3,3) & (3,4), coll. (5,3) & (5,4), 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 | 4 | Drop (*,1), (3,2); zero, sing. |
| State × % Hispanic or Latino | 6 × 3 | 10 | 5 | Drop (2/5,1/2), (3,1), zero. |
| State × % Owner-Occupied | 6 × 3 | 10 | 9 | Drop (5,3), sing. |
| State × Rent/Housing | 6 × 5 | 20 | 20 | All levels present. |
| Three-Factor Effects | | | | |
| | | 127 | 82 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 0 | Drop all, sing., conv. |
| Age × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 7 | Coll. (4,2,1) & (4,3,1), conv. |
| Age × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 1 | Coll. (2,1,1) & (3,1,1), conv. |
| State × Age × Race (3 levels) | 6 × 5 × 3 | 40 | 20 | Keep (*, 1/2, 2/3), drop all others, conv. |
| State × Age × Hispanicity | 6 × 5 × 2 | 20 | 17 | Drop (2,3/4,1), (5,4,1), 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, conv. |
| State × Race (3 levels) × Gender | 5 × 3 × 2 | 10 | 8 | Coll. (2,2,1) & (2,3,1); coll. (3,2,1) & (3,3,1), conv. |
| State × Hispanicity × Gender | 5 × 2 × 2 | 5 | 5 | All levels present. |
| Total | | 332 | 267 | |

**Exhibit D1.5 Covariates for 2019 NSDUH Person Weights (res.per.ps), Model Group 1:
New England**

| Variables | Levels | Proposed | Final | Comments |
|--|---------------|-----------------|--------------|---|
| One-Factor Effects | | | | |
| 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 | | | | |
| 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 | 17 | Coll. (2,3) & (2,4); (3,3) & (3,4); (5,3) & (5,4); conv. |
| State × Hispanicity | 6 × 2 | 5 | 5 | All levels present. |
| State × Gender | 6 × 2 | 5 | 5 | All levels present. |
| Three-Factor Effects | | | | |
| Age × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 8 | Drop (5,2/3,1); sing. |
| Age × Race (3 levels) × Gender | 6 × 3 × 2 | 10 | 8 | Drop (5,2/3,1); conv. |
| Age × Hispanicity × Gender | 6 × 2 × 2 | 5 | 4 | Drop (5,1,1); sing. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| State × Age × Race (3 levels) | 6 × 5 × 3 | 50 | 33 | Drop (2,5,2/3), repeat for all states; sing./zero/conv. Coll. (1,4,2) & (1,4,3), repeat for all states; conv. Drop (2/3,4,2/3); conv. |
| State × Age × Hispanicity | 6 × 6 × 2 | 25 | 19 | Drop (2,3/4/5,1), (3,5,1), & (5,4/5,1); sing./zero/conv. |
| State × Age × Gender | 6 × 6 × 2 | 25 | 25 | All levels present. |
| State × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 5 | Coll. (2,2,1) & (2,3,1), repeat for NH, RI, & VT; conv. Drop (2,2/3,1); conv. |
| State × Race (3 levels) × Gender | 6 × 3 × 2 | 10 | 10 | All levels present. |
| State × Hispanicity × Gender | 6 × 2 × 2 | 5 | 2 | Drop (2/3/5,1,1); conv. |
| Total | | 267 | 228 | |

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

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Table D.2a 2019 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 | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 1.59 | 2.66 | 0.36 | 1.03369 | 153 | (1.44, 1.60) | (1.44, 1.60) |
| | 1.82 | 3.23 | 0.49 | 1.07290 | 107 | (1.11, 4.99) | (1.12, 4.99) |
| | | | | | | (N/A, N/A) | (N/A, N/A) |
| <i>res.sdu.ps</i> | 1.82 | 3.23 | 0.49 | 1.07291 | 127 | (0.66, 1.10) | (0.66, 1.10) |
| | 1.78 | 4.80 | 1.52 | 1.16343 | 127 | (0.29, 5.00) | (0.31, 5.00) |
| | | | | | | (0.90, 1.25) | (0.90, 1.25) |
| <i>sel.per.ps</i> | 2.94 | 7.58 | 2.27 | 1.92621 | 197 | (0.42, 2.40) | (0.44, 2.39) |
| | 1.90 | 5.22 | 1.15 | 1.88529 | 197 | (0.44, 2.32) | (0.46, 2.31) |
| | | | | | | (0.90, 1.24) | (0.90, 1.23) |
| <i>res.per.nr</i> | 2.27 | 6.28 | 1.50 | 1.95647 | 197 | (1.00, 2.90) | (1.00, 2.90) |
| | 1.89 | 5.13 | 0.77 | 2.07940 | 194 | (1.00, 4.46) | (1.00, 4.46) |
| | | | | | | (1.60, 1.93) | (1.60, 1.60) |
| <i>res.per.ps</i> | 1.92 | 5.20 | 0.79 | 2.07940 | 147 | (0.22, 1.40) | (0.22, 1.40) |
| | 0.71 | 2.27 | 0.33 | 2.10407 | 146 | (0.21, 3.52) | (0.21, 3.51) |
| | | | | | | (0.96, 5.00) | (0.97, 0.97) |

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, 2019.

Table D.2b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 2: Middle Atlantic)

| Statistics | <i>sel.sdu.des</i> ¹ | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 463 | 1.00 | 604 | 0.28 | 248 | 1.01 | 271 | 0.26 | 156 | 0.48 | 211 | 0.14 | 49 |
| 1% | 465 | 1.14 | 639 | 0.55 | 465 | 1.01 | 525 | 0.60 | 473 | 1.00 | 579 | 0.22 | 311 |
| 5% | 468 | 1.23 | 664 | 0.70 | 606 | 1.01 | 695 | 0.76 | 683 | 1.17 | 899 | 0.44 | 728 |
| 10% | 473 | 1.28 | 689 | 0.80 | 656 | 1.01 | 822 | 0.83 | 818 | 1.23 | 1,094 | 0.80 | 1,018 |
| 25% | 518 | 1.39 | 784 | 0.93 | 757 | 1.30 | 1,148 | 0.92 | 1,158 | 1.37 | 1,690 | 0.97 | 1,683 |
| Median | 580 | 1.50 | 898 | 1.00 | 893 | 2.58 | 2,101 | 1.00 | 2,035 | 1.54 | 3,138 | 1.02 | 3,168 |
| 75% | 630 | 1.70 | 1,021 | 1.08 | 1,070 | 3.21 | 3,381 | 1.10 | 3,440 | 1.80 | 5,843 | 1.09 | 5,880 |
| 90% | 685 | 1.98 | 1,218 | 1.21 | 1,318 | 7.97 | 7,280 | 1.19 | 7,316 | 2.18 | 11,536 | 1.32 | 11,637 |
| 95% | 808 | 2.21 | 1,328 | 1.35 | 1,512 | 9.61 | 8,760 | 1.27 | 9,112 | 2.47 | 15,321 | 1.57 | 15,452 |
| 99% | 1,014 | 2.81 | 1,538 | 2.33 | 2,561 | 10.07 | 12,402 | 1.48 | 12,761 | 3.13 | 24,358 | 1.74 | 25,711 |
| Maximum | 1,529 | 4.99 | 3,591 | 5.00 | 6,279 | 16.28 | 49,560 | 2.32 | 34,728 | 4.46 | 49,003 | 3.51 | 57,916 |
| n | 25,786 | 16,330 | 16,330 | 16,327 | 16,327 | 11,573 | 11,573 | 11,573 | 11,573 | 7,136 | 7,136 | 7,136 | 7,136 |
| Max/Mean | 2.57 | - | 3.82 | - | 6.49 | - | 16.48 | - | 11.50 | - | 10.01 | - | 11.83 |

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, 2019.

Model Group 2 Overview

Dwelling Unit Nonresponse

For the one-factor effects, College Dorm and Other Group Quarter were dropped. Out of 21 proposed variables, 19 were included in the model.

For the two-factor effects, variable dropping was present in the State \times Population Density and State \times Group Quarter interactions. Out of 68 proposed variables, 62 were included in the model.

Variable dropping was present in all three-factor effects. Out of 64 proposed variables, 26 were included in the model.

In the final model, a total of 107 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

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

All 99 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 197 variables were included; see [Exhibit D2.3](#).

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing was present in the State \times Race interaction. Out of 99 proposed variables, 97 were included in the model.

For the three-factor effects, variable collapsing was present in the State \times Race \times Hispanicity interaction. Out of 64 proposed variables, 63 were included in the model.

In the final model, a total of 194 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 \times Race interaction. Out of 53 proposed variables, 52 were included in the model.

For the three-factor effects, variable dropping was present in the State \times Age \times Hispanicity interaction. Out of 77 proposed variables, 76 were included in the model.

In the final model, a total of 145 variables were included; see [Exhibit D2.5](#).

Exhibit D2.1 Covariates for 2019 NSDUH Person Weights (res.sdu.nr), Model Group 2: Middle Atlantic

| Variables | Levels | Proposed | Final | Comments |
|--|-----------|------------|------------|---|
| One-Factor Effects | | 21 | 19 | |
| 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 | 0 | Drop 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 | | 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 | 8 | All levels present. |
| State × Quarter | 3 × 4 | 6 | 6 | All levels present. |
| State × Population Density | 3 × 4 | 6 | 4 | Drop (2,3) & (3,2); sing. |
| State × Group Quarter | 3 × 3 | 4 | 0 | Drop all; hier. |
| 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 | 26 | |
| State × % Owner-Occupied × % Black or African American | 3 × 3 × 3 | 8 | 3 | Keep (2,2,1/2), (3,2/3,1), (2,2,2), drop others; zero, sing., conv. |
| State × % Owner-Occupied × % Hispanic or Latino | 3 × 3 × 3 | 8 | 5 | Drop (2,3,1), (2,3,2), (3,3,2); zero, sing. |
| State × % Owner-Occupied × Rent/Housing | 3 × 3 × 5 | 16 | 5 | Keep (2,2/3,1), (2,2,2/3), (3,2,2), (3,2,3), (3,2,4), drop others; zero/sing./conv. |
| State × Rent/Housing × % Black or African American | 3 × 3 × 5 | 16 | 5 | Keep (2,1,1), (2,1,2), (2,2,2), (3,3,2), (3,4,2), drop others; sing./conv. |
| State × Rent/Housing × % Hispanic or Latino | 3 × 3 × 5 | 16 | 8 | Drop (2,2,1), (2,3,1), (2,4,1), (2,4,2), (3,1,1), (3,1,2), (3,2,1), (3,4,1); zero/sing./conv. |
| Total | | 153 | 107 | |

Exhibit D2.2 Covariates for 2019 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 2019 NSDUH Person Weights (sel.per.ps), Model Group 2: Middle Atlantic

| Variables | Levels | Proposed | Final | Comments |
|--|-----------|------------|------------|---------------------|
| One-Factor Effects | | 34 | 34 | |
| Intercept | 1 | 1 | 1 | All levels present. |
| State | 3 | 2 | 2 | All levels present. |
| Quarter | 4 | 3 | 3 | All levels present. |
| Age | 5 | 4 | 4 | All levels present. |
| Race (5 levels) | 5 | 4 | 4 | All levels present. |
| Gender | 2 | 1 | 1 | All levels present. |
| Hispanicity | 2 | 1 | 1 | All levels present. |
| Relation to Householder | 4 | 3 | 3 | All levels present. |
| Population Density | 4 | 3 | 3 | All levels present. |
| Group Quarter | 3 | 2 | 2 | All levels present. |
| % Black 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 | 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. |
| % 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 | 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 | 8 | 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 | | 197 | 197 | |

Exhibit D2.4 Covariates for 2019 NSDUH Person Weights (res.per.nr), Model Group 2: Middle Atlantic

| Variables | Levels | Proposed | Final | Comments |
|--|-----------|------------|------------|---|
| One-Factor Effects | | 34 | 34 | |
| Intercept | 1 | 1 | 1 | All levels present. |
| State | 3 | 2 | 2 | All levels present. |
| Quarter | 4 | 3 | 3 | All levels present. |
| Age | 5 | 4 | 4 | All levels present. |
| Race (5 levels) | 5 | 4 | 4 | All levels present. |
| Gender | 2 | 1 | 1 | All levels present. |
| Hispanicity | 2 | 1 | 1 | All levels present. |
| Relation to Householder | 4 | 3 | 3 | All levels present. |
| Population Density | 4 | 3 | 3 | All levels present. |
| Group Quarter | 3 | 2 | 2 | All levels present. |
| % Black 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 | 8 | 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 | 6 | Coll. (2,3) & (2,4), (3,3) & (3,4); conv. |
| State × Hispanicity | 3 × 2 | 2 | 2 | All levels present. |
| State × Gender | 3 × 2 | 2 | 2 | All levels present. |
| 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 | 63 | |
| 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 | 3 | Coll. (3,2,1) & (3,3,1); conv. |
| State × Race (3 levels) × Gender | 3 × 3 × 2 | 4 | 4 | All levels present. |
| State × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| Total | | 197 | 194 | |

Exhibit D2.5 Covariates for 2019 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 | 76 | |
| 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 | 9 | Drop (3,5,1); conv. |
| 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 | 145 | |

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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 2019 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 | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 4.79 | 5.64 | 0.54 | 1.04465 | 255 | (1.00, 2.00) | (1.00, 2.00) |
| | 2.83 | 4.26 | 0.93 | 1.11308 | 150 | (1.00, 4.99) | (1.00, 4.99) |
| | | | | | | (1.40, 1.51) | (1.40, 1.48) |
| <i>res.sdu.ps</i> | 2.83 | 4.26 | 0.93 | 1.11310 | 197 | (0.65, 1.10) | (0.65, 1.10) |
| | 1.53 | 2.87 | 0.45 | 1.13118 | 197 | (0.36, 3.25) | (0.37, 3.21) |
| | | | | | | (0.90, 2.14) | (0.90, 2.14) |
| <i>sel.per.ps</i> | 3.11 | 7.36 | 1.66 | 1.81445 | 287 | (0.34, 1.60) | (0.34, 1.59) |
| | 1.50 | 3.61 | 0.46 | 1.77871 | 282 | (0.46, 2.44) | (0.47, 2.41) |
| | | | | | | (0.90, 1.69) | (0.90, 1.69) |
| <i>res.per.nr</i> | 1.63 | 3.71 | 0.45 | 1.79018 | 287 | (1.00, 2.40) | (1.00, 2.40) |
| | 1.38 | 3.84 | 0.55 | 1.88996 | 250 | (1.00, 4.92) | (1.00, 4.92) |
| | | | | | | (1.50, 1.60) | (1.50, 1.52) |
| <i>res.per.ps</i> | 1.42 | 3.93 | 0.63 | 1.88996 | 227 | (0.20, 2.71) | (0.20, 2.71) |
| | 0.83 | 2.75 | 0.50 | 1.93454 | 196 | (0.20, 2.99) | (0.20, 2.98) |
| | | | | | | (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, 2019.

Table D.3b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 3: East North Central)

| Statistics | <i>sel.sdu.des</i> ¹ | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 218 | 0.85 | 479 | 0.28 | 262 | 1.01 | 285 | 0.18 | 206 | 0.45 | 238 | 0.12 | 80 |
| 1% | 423 | 1.07 | 484 | 0.58 | 477 | 1.01 | 548 | 0.63 | 506 | 1.00 | 675 | 0.20 | 374 |
| 5% | 426 | 1.14 | 555 | 0.85 | 556 | 1.01 | 709 | 0.77 | 684 | 1.13 | 946 | 0.67 | 850 |
| 10% | 438 | 1.17 | 593 | 0.92 | 604 | 1.01 | 825 | 0.84 | 813 | 1.21 | 1,144 | 0.89 | 1,085 |
| 25% | 485 | 1.22 | 670 | 0.99 | 707 | 1.30 | 1,151 | 0.92 | 1,146 | 1.33 | 1,628 | 0.98 | 1,612 |
| Median | 564 | 1.34 | 796 | 1.06 | 868 | 2.44 | 1,919 | 1.00 | 1,942 | 1.47 | 2,827 | 1.02 | 2,855 |
| 75% | 686 | 1.46 | 947 | 1.15 | 1,058 | 3.14 | 3,324 | 1.08 | 3,392 | 1.68 | 5,178 | 1.05 | 5,241 |
| 90% | 777 | 1.69 | 1,132 | 1.28 | 1,258 | 7.72 | 6,528 | 1.19 | 6,431 | 1.93 | 10,090 | 1.12 | 10,012 |
| 95% | 806 | 1.95 | 1,337 | 1.40 | 1,477 | 8.22 | 8,410 | 1.27 | 8,131 | 2.12 | 12,815 | 1.26 | 12,855 |
| 99% | 873 | 4.10 | 1,955 | 1.83 | 2,115 | 9.10 | 11,157 | 1.61 | 11,344 | 2.71 | 18,745 | 1.61 | 19,130 |
| Maximum | 1,481 | 4.99 | 3,793 | 3.21 | 6,595 | 19.69 | 40,379 | 2.41 | 31,464 | 4.92 | 46,852 | 2.98 | 67,544 |
| n | 29,076 | 20,295 | 20,295 | 20,291 | 20,291 | 14,124 | 14,124 | 14,124 | 14,124 | 9,236 | 9,236 | 9,236 | 9,236 |
| Max/Mean | 2.48 | - | 4.44 | - | 7.14 | - | 14.36 | - | 11.25 | - | 10.95 | - | 15.79 |

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, 2019.

Model Group 3 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied \times percent Hispanic or Latino, Rent/Housing \times percent Hispanic or Latino, State \times Group Quarter, State \times percent Hispanic or Latino, and State \times percent Owner-Occupied interactions. Out of 104 proposed variables, 86 were included in the model.

Variable dropping was present in all three-factor effects. Out of 128 proposed variables, 42 were included in the model.

In the final model, a total of 150 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

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

For the two-factor effects, variable dropping was present in the Rent/Housing \times percent Hispanic or Latino, State \times percent Hispanic or Latino, and State \times percent Owner-Occupied interactions. Out of 145 proposed variables, 141 were included in the model.

For the three-factor effects, variable collapsing was present in the State \times Race \times Hispanicity interaction. Out of 106 proposed variables, 105 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 dropping was present in the Rent/Housing \times percent Hispanic or Latino, State \times percent Hispanic or Latino, and State \times percent Owner-Occupied interactions. Out of 145 proposed variables, 141 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age \times Race \times Hispanicity, State \times Age \times Race, State \times Race \times Hispanicity, and State \times Race \times Gender interactions. Out of 106 proposed variables, 73 were included in the model.

In the final model, a total of 250 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 \times Race interaction. Out of 81 proposed variables, 79 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age \times Race \times Hispanicity, State \times Age \times Race, State \times Age \times Hispanicity, and State \times Race \times Hispanicity interactions. Out of 127 proposed variables, 98 were included in the model.

In the final model, a total of 196 variables were included; see [Exhibit D3.5](#).

Exhibit D3.1 Covariates for 2019 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 | 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 | 86 | |
| % 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); conv. |
| % 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 (2,1); zero. |
| 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 | 0 | Coll. (1,1) & (1,2), repeat for all states; hier. Drop all; conv. |
| State × % Black or African American | 5 × 3 | 8 | 8 | All levels present. |
| State × % Hispanic or Latino | 5 × 3 | 8 | 4 | Drop (4,1); zero. Drop (5,1); sing. Coll. (1,1) & (1,2), (3,1) & (3,2); conv. |
| State × % Owner-Occupied | 5 × 3 | 8 | 4 | Drop (4,3); sing. Coll. (1,3) & (1,2), (3,3) & (3,2), (5,3) & (5,2); conv. |
| State × Rent/Housing | 5 × 5 | 16 | 16 | All levels present. |
| Three-Factor Effects | | 128 | 42 | |
| State × % Owner-Occupied × % Black or African American | 5 × 3 × 3 | 16 | 5 | Keep (1,3,2), (1,2,2), (3,3,1), (3,2,1), (3,3,2), (3,2,2), (5,3,1), (5,2,1), (5,3,2), (5,2,2), drop all others; hier./zero/sing. |
| State × % Owner-Occupied × % Hispanic or Latino | 5 × 3 × 3 | 16 | 3 | Keep (1,3,1), (1,3,2), (1,2,1), (1,2,2), (3,3,1), (3,3,2), (3,2,1), (3,2,2), (4,2,2), drop all others; hier./zero. |
| State × % Owner-Occupied × Rent/Housing | 5 × 3 × 5 | 32 | 11 | Keep (1,3,2), (1,2,2), (1,3,3), (1,2,3), (1,3,4), (1,2,4), (3,3,1), (3,2,1), (3,3,2), (3,2,2), (3,3,3), (3,2,3), (3,3,4), (3,2,4), (4,2,2), (4,2,3), (5,3,3), (5,2,3), (5,3,4), (5,2,4), drop all others; hier./zero/sing. |
| State × Rent/Housing × % Black or African American | 5 × 3 × 5 | 32 | 15 | Keep (1,1,1), (1,1,2), (1,2,1), (1,2,2), (1,3,1), (1,3,2), (1,4,2), (3,1,2), (3,2,1), (3,2,2), (3,3,1), (3,3,2), (3,4,2), (4,2,2), (4,3,2), (5,1,1), (5,1,2), (5,2,1), (5,2,2), (5,3,1), (5,3,2), (5,4,2); drop all others; zero/sing./conv. |
| State × Rent/Housing × % Hispanic or Latino | 5 × 3 × 5 | 32 | 8 | Keep (1,1,1), (1,1,2), (1,3,1), (1,3,2), (1,4,1), (1,4,2), (3,1,1), (3,1,2), (4,2,2), (4,3,2), (4,4,2), (5,1,2), drop all others; hier./zero/sing. |
| Total | | 255 | 150 | |

**Exhibit D3.2 Covariates for 2019 NSDUH Person Weights (res.sdu.ps), Model Group 3:
East North Central**

| Variables | Levels | Proposed | Final | Comments |
|--|---------------|-----------------|--------------|---------------------|
| One-Factor Effects | | | | |
| 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 2019 NSDUH Person Weights (sel.per.ps), 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 | 141 | |
| 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 | 7 | Drop (2,1); zero. |
| 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 (4,1); zero. Drop (5,1); sing. |
| State × % Owner-Occupied | 5 × 3 | 8 | 7 | Drop (4,3); sing. |
| State × Rent/Housing | 5 × 5 | 16 | 16 | All levels present. |
| Three-Factor Effects | | | | |
| | | 106 | 105 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 8 | All levels present. |
| Age × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 8 | All levels present. |
| Age × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| State × Age × Race (3 levels) | 5 × 5 × 3 | 32 | 32 | All levels present. |
| State × Age × Hispanicity | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Age × Gender | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 7 | Coll. (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 2019 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 | 141 | |
| 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 (2,1); zero. |
| 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 (4,1); zero. Drop (5,1); sing. |
| State × % Owner-Occupied | 5 × 3 | 8 | 7 | Drop (4,3); sing. |
| State × Rent/Housing | 5 × 5 | 16 | 16 | All levels present. |
| Three-Factor Effects | | | | |
| | | 106 | 73 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 4 | Coll. (1,2,1) & (1,3,1), repeat for all age groups; 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 | 15 | Coll. (4,4,2) & (4,4,3); sing. Coll. (1,1,2) & (1,1,3), repeat for all states and all remaining age groups; conv. Drop (4,4,2) & (4,4,3); conv. |
| State × Age × Hispanicity | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Age × Gender | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 0 | Coll. (1,2,1) & (1,3,1), repeat for all states; conv. Drop all levels; conv. |
| State × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 4 | Coll. (1,2,1) & (1,3,1), repeat for all states; conv. |
| State × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Total | | 287 | 250 | |

**Exhibit D3.5 Covariates for 2019 NSDUH Person Weights (res.per.ps), Model Group 3:
East North Central**

| Variables | Levels | Proposed | Final | Comments |
|--|---------------|-----------------|--------------|--|
| One-Factor Effects | | | | |
| 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 | | | | |
| 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 | 14 | Coll. (1,3) & (1,4), (5,3) & (5,4); conv. |
| State × Hispanicity | 5 × 2 | 4 | 4 | All levels present. |
| State × Gender | 5 × 2 | 4 | 4 | All levels present. |
| Three-Factor Effects | | | | |
| Age × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 9 | Coll. (5,3,1) & (5,2,1); 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 | 20 | Coll. (4,5,2) & (4,5,3); sing. Coll. (1,1,2) & (1,1,3), repeat for all remaining age groups and states; conv. |
| State × Age × Hispanicity | 5 × 6 × 2 | 20 | 16 | Drop (1,5,1), repeat for all states; conv. |
| 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 | 196 | |

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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 2019 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 | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 3.15 | 8.00 | 0.53 | 1.45804 | 357 | (1.20, 1.50) | (1.20, 1.50) |
| | 1.69 | 3.71 | 0.70 | 1.51086 | 189 | (1.00, 4.91) | (1.00, 4.90) |
| | | | | | | (1.24, 1.32) | (1.24, 1.32) |
| <i>res.sdu.ps</i> | 1.69 | 3.71 | 0.70 | 1.51086 | 267 | (0.58, 1.10) | (0.58, 1.10) |
| | 1.59 | 3.23 | 0.57 | 1.54443 | 264 | (0.22, 5.00) | (0.23, 4.99) |
| | | | | | | (0.93, 4.50) | (0.94, 4.50) |
| <i>sel.per.ps</i> | 2.39 | 4.85 | 1.40 | 2.74331 | 377 | (0.20, 2.40) | (0.20, 2.40) |
| | 1.45 | 3.07 | 0.73 | 2.55259 | 350 | (0.20, 3.71) | (0.20, 3.71) |
| | | | | | | (0.40, 1.17) | (0.40, 1.17) |
| <i>res.per.nr</i> | 1.67 | 3.18 | 0.72 | 2.48239 | 377 | (1.00, 3.00) | (1.00, 3.00) |
| | 1.62 | 4.53 | 0.97 | 2.68875 | 306 | (1.00, 5.00) | (1.00, 5.00) |
| | | | | | | (1.40, 1.51) | (1.40, 1.51) |
| <i>res.per.ps</i> | 1.59 | 4.49 | 1.02 | 2.68875 | 307 | (0.20, 2.80) | (0.20, 2.80) |
| | 1.07 | 3.56 | 1.11 | 2.78178 | 253 | (0.20, 5.00) | (0.20, 5.00) |
| | | | | | | (0.99, 5.00) | (0.99, 0.99) |

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, 2019.

Table D.4b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 4: West North Central)

| Statistics | <i>sel.sdu.des</i> ¹ | | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 76 | 0.68 | 89 | 0.23 | 32 | 1.01 | 38 | 0.13 | 9 | 0.49 | 20 | 0.10 | 4 | |
| 1% | 77 | 1.01 | 95 | 0.54 | 80 | 1.01 | 93 | 0.35 | 77 | 1.00 | 105 | 0.21 | 95 | |
| 5% | 78 | 1.10 | 105 | 0.79 | 105 | 1.01 | 162 | 0.68 | 150 | 1.01 | 219 | 0.70 | 204 | |
| 10% | 87 | 1.14 | 116 | 0.88 | 123 | 1.01 | 229 | 0.77 | 221 | 1.08 | 330 | 0.82 | 306 | |
| 25% | 125 | 1.21 | 160 | 0.97 | 181 | 1.25 | 432 | 0.90 | 433 | 1.23 | 637 | 0.95 | 624 | |
| Median | 365 | 1.28 | 458 | 1.05 | 484 | 2.54 | 1,053 | 1.01 | 1,033 | 1.41 | 1,458 | 1.01 | 1,445 | |
| 75% | 646 | 1.35 | 792 | 1.15 | 834 | 3.15 | 2,033 | 1.13 | 2,125 | 1.63 | 3,152 | 1.09 | 3,163 | |
| 90% | 780 | 1.47 | 1,054 | 1.27 | 1,142 | 8.24 | 4,075 | 1.26 | 4,249 | 1.90 | 6,446 | 1.17 | 6,341 | |
| 95% | 853 | 1.57 | 1,215 | 1.44 | 1,337 | 9.05 | 6,823 | 1.37 | 6,725 | 2.18 | 9,540 | 1.28 | 9,534 | |
| 99% | 1,089 | 2.11 | 1,486 | 1.96 | 1,794 | 10.44 | 11,079 | 1.83 | 10,519 | 3.38 | 16,517 | 2.14 | 16,579 | |
| Maximum | 2,125 | 4.90 | 3,156 | 4.99 | 6,438 | 24.15 | 79,044 | 3.71 | 28,481 | 6.01 | 43,317 | 5.00 | 56,811 | |
| n | 19,929 | 15,302 | 15,302 | 15,302 | 15,302 | 9,948 | 9,948 | 9,948 | 9,948 | 6,721 | 6,721 | 6,721 | 6,721 | |
| Max/Mean | 5.21 | - | 5.94 | - | 11.33 | - | 44.18 | - | 15.92 | - | 16.36 | - | 21.46 | |

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, 2019.

Model Group 4 Overview

Dwelling Unit Nonresponse

For the one-factor effects, College Dorm was collapsed with Other Group Quarter. Out of 25 proposed variables, 24 were included in the model.

Variable collapsing or dropping was present in all two-factor effects except the percent Owner-Occupied \times percent Hispanic or Latino, percent Owner-Occupied \times Rent/Housing, State \times Quarter, and State \times percent Owner-Occupied interactions. Out of 140 proposed variables, 114 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 192 proposed variables, 51 were included in the model.

In the final model, a total of 189 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 \times Race \times Hispanicity and State \times Race \times Hispanicity interactions. Out of 148 proposed variables, 145 were included in the model.

In the final model, a total of 264 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 \times percent Black or African American, Rent/Housing \times percent Black or African American, Rent/Housing \times percent Hispanic or Latino, State \times percent Black or African American, and State \times percent Hispanic or Latino interactions. Out of 191 proposed variables, 179 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age \times Race \times Hispanicity, Race \times Hispanicity \times Gender, State \times Age \times Race, State \times Age \times Hispanicity, and State \times Race \times Hispanicity interactions. Out of 148 proposed variables, 133 were included in the model.

In the final model, a total of 350 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 or dropping was present in the percent Owner-Occupied \times percent Black or African American, Rent/Housing \times percent Black or African American, Rent/Housing \times percent Hispanic or Latino, State \times percent Black or African American, and State \times percent Hispanic or Latino interactions. Out of 191 proposed variables, 177 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age \times Race \times Gender, Race \times Hispanicity \times Gender, State \times Age \times Gender, and State \times Hispanicity \times Gender interactions. Out of 148 proposed variables, 91 were included in the model.

In the final model, a total of 306 variables were included; see [Exhibit D4.4](#).

Respondent Person-Level Poststratification

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

For the two-factor effects, variable dropping was present in the Age \times Hispanicity interaction. Out of 109 proposed variables, 108 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in all three-factor effects except Age \times Race \times Gender, Race \times Hispanicity \times Gender, State \times Age \times Gender, and State \times Hispanicity \times Gender interactions. Out of 177 proposed variables, 124 were included in the model.

In the final model, a total of 253 variables were included; see [Exhibit D4.5](#).

Exhibit D4.1 Covariates for 2019 NSDUH Person Weights (res.sdu.nr), Model Group 4: West North Central

| Variables | Levels | Proposed | Final | Comments |
|--|-----------|------------|------------|---|
| One-Factor Effects | | 25 | 24 | |
| 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 | 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 | | 140 | 114 | |
| % Owner-Occupied × % Black or African American | 3 × 3 | 4 | 3 | Coll. (3,1) & (3,2); 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 | 6 | Coll. (1,1) & (1,2); zero. Coll. (4,1) & (4,2); sing. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 7 | Coll. (4,1) & (4,2); sing. |
| 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 | 2 | Coll. (1,1) & (1,2), repeat for every state; hier. Coll. (2,1) & (2,2) & (5,1) & (5,2), (6,1) & (6,2) & (7,1) & (7,2), drop the rest; conv. |
| State × % Black or African American | 7 × 3 | 12 | 10 | Coll. (6,1) & (6,2), (7,1) & (7,2); zero. |
| State × % Hispanic or Latino | 7 × 3 | 12 | 6 | Coll. (1,1) & (1,2), do the same for states 6 & 7; zero. Coll. (2,1) & (2,2), do the same for states 3 & 5; 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 | 51 | |
| State × % Owner-Occupied × % Black or African American | 7 × 3 × 3 | 24 | 6 | Coll. (1,2,1) & (1,2,2) & (1,3,1) & (1,3,2); conv. Coll. (5,2,1) & (5,2,2) & (5,3,1) & (5,3,2), (2,3,1) & (2,3,2), do the same for state 3; sing. Coll. (2,2,1) & (2,2,2), do the same for state 3; hier. Drop the rest; zero. |
| State × % Owner-Occupied × % Hispanic or Latino | 7 × 3 × 3 | 24 | 7 | Coll. (1,2,1) & (1,2,2) & (1,3,1) & (1,3,2), do the same for state 7; zero. Coll. (5,2,1) & (5,2,2) & (5,3,1) & (5,3,2); sing. Coll. (2,2,1) & (2,2,2), (2,3,1) & (2,3,2); do the same for state 3; hier. Drop the rest; sing., zero. |
| State × % Owner-Occupied × Rent/Housing | 7 × 3 × 5 | 48 | 18 | Coll. (1,2,1) & (1,3,1) & (1,2,2) & (1,3,2), do the same for states 2, 3, & 5; zero. Coll. (1,2,3) & (1,3,3), (1,2,4) & (1,3,4), do the same for states 3, 5, 6, & 7. Coll. (7,2,1) & (7,3,1), (7,2,2) & (7,2,3); zero, sing. Coll. (2,2,3) & (2,3,3) & (2,2,4) & (2,3,4); sing. Coll. (6,2,1) & (6,3,1) & (6,2,2) & (6,3,2); conv. |
| State × Rent/Housing × % Black or African American | 7 × 3 × 5 | 48 | 9 | Coll. (2,1,1) & (2,1,2), (2,4,1) & (2,4,2), (3,4,1) & (3,4,2), (5,4,1) & (5,4,2); hier. Coll. (2,2,1) & (2,2,2), (2,3,1) & (2,3,2), (3,3,1) & (3,3,2), (5,3,1) & (5,3,2); Coll. (5,1,1) & (5,1,2) & (5,2,1) & (5,2,2); sing. Drop the rest. Zero/sing. |
| State × Rent/Housing × % Hispanic or Latino | 7 × 3 × 5 | 48 | 11 | Coll. (1,1,1) & (1,1,2), do the same for states 2 & 5, coll. (1,2,1) & (1,2,2), do the same for states 2 & 5, coll. (1,3,1) & (1,3,2), do the same for states 2 & 3. Coll. (3,4,1) & (3,4,2); hier. Coll. (3,1,1) & (3,1,2) & (3,2,1) & (3,2,2); zero. Drop (1/2,4,1/2), (5,3/4,1/2); sing. Drop the rest; sing./zero. |
| Total | | 357 | 189 | |

**Exhibit D4.2 Covariates for 2019 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 | 145 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 6 | Coll. (4,2,1) & (4,3,1), (2,2,1) & (2,3,1); conv. |
| Age × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 8 | All levels present. |
| Age × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| State × Age × Race (3 levels) | 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 | 11 | Coll. (7,2,1) & (7,3,1); 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 | | 267 | 264 | |

**Exhibit D4.3 Covariates for 2019 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 | 179 | |
| 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 | 3 | Coll. (3,1) & (3,2); 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 | 6 | Coll. (1,1) & (1,2), sing. Coll. (4,1) & (4,2); zero. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 7 | 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 | 10 | Coll. (6,1) & (6,2), (7,1) & (7,2); zero. |
| State × % Hispanic or Latino | 7 × 3 | 12 | 6 | Coll. (1,1) & (1,2), do the same for states 6 & 7; zero. Coll. (2,1) & (2,2), do the same for states 3 & 5; 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 | 133 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 3 | Coll. (3,2,1) & (3,3,1); zero. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), drop (4,2,1); 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 | 1 | Coll. (2,1,1) & (3,1,1); conv. |
| State × Age × Race (3 levels) | 7 × 5 × 3 | 48 | 47 | Coll. (6,4,2) & (6,4,3); sing. |
| State × Age × Hispanicity | 7 × 5 × 2 | 24 | 22 | Drop (6,4,1); sing. Drop (7,4,1); conv. |
| State × Race (3 levels) × Hispanicity | 7 × 3 × 2 | 12 | 6 | Coll. (6,2,1) & (6,3,1); zero. Coll. (7,2,1) & (7,3,1); sing. Coll. (1,2,1) & (1,3,1), do the same for states 2, 3, & 5; 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 | 350 | |

**Exhibit D4.4 Covariates for 2019 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 | 177 | |
| 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 | 3 | Coll. (3,1) & (3,2); 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 | 6 | Coll. (1,1) & (1,2), sing. Coll. (4,1) & (4,2); zero. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 7 | 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 | 8 | Coll. (7,1) & (7,2); zero. Coll. (1,1) & (1,2), Drop (6,1/2); conv. |
| State × % Hispanic or Latino | 7 × 3 | 12 | 6 | Coll. (1,1) & (1,2), do the same for states 6 & 7; zero. Coll. (2,1) & (2,2), do the same for states 3 & 5; 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 | 91 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 3 | Coll. (3,2,1) & (3,3,1); zero. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), 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 | 3 | Drop (4,1,1); conv. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| State × Age × Race (3 levels) | 7 × 5 × 3 | 48 | 33 | Coll. (6,4,2) & (6,4,3), (7,4,2) & (7,4,3); sing. Coll. (1,1,2) & (1,1,3), (1,2,2) & (1,2,3), (1,3,2) & (1,3,3), do the same for states 2 & 6, coll. (2,4,2) & (2,4,3), (5,4,2) & (5,4,3), drop (1,4,2/3); conv. |
| State × Age × Hispanicity | 7 × 5 × 2 | 24 | 0 | Drop all; sing., conv. |
| State × Age × Gender | 7 × 5 × 2 | 24 | 24 | All levels present. |
| State × Race (3 levels) × Hispanicity | 7 × 3 × 2 | 12 | 2 | Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), drop the rest; conv. |
| State × Race (3 levels) × Gender | 7 × 3 × 2 | 12 | 10 | Coll. (5,2,1) & (5,3,1), (7,2,1) & (7,3,1); conv. |
| State × Hispanicity × Gender | 7 × 2 × 2 | 6 | 6 | All levels present. |
| Total | | 377 | 306 | |

**Exhibit D4.5 Covariates for 2019 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 | 108 | |
| Age × Race (3 levels) | 6 × 3 | 10 | 10 | All levels present. |
| Age × Hispanicity | 6 × 2 | 5 | 4 | Drop (5,1); conv. |
| Age × Gender | 6 × 2 | 5 | 5 | All levels present. |
| Race (3 levels) × Hispanicity | 3 × 2 | 2 | 2 | All levels present. |
| Race (3 levels) × Gender | 3 × 2 | 2 | 2 | All levels present. |
| Hispanicity × Gender | 2 × 2 | 1 | 1 | All levels present. |
| State × Quarter | 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 | 124 | |
| Age × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 4 | Drop (5,2/3,1), hier. Coll. (4,2,1) & (4,3,1); sing. Coll. (1,2,1) & (1,3,1), do the same for age groups 2 & 3. 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); hier. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| State × Age × Race (3 levels) | 7 × 6 × 3 | 60 | 32 | Drop (1,5,2/3), coll. (6,5,2) & (6,5,3), (7,5,2) & (7,5,3); zero. Coll. (5,5,2) & (5,5,3), coll. (1,4,2) & (1,4,3), do the same for states 6 & 7; sing. Coll. (1,1,2) & (1,1,3), coll. (1,2,2) & (1,2,3), coll. (1,3,2) & (1,3,3), do the same for states 2, 3, & 6; conv. Coll. (5,4,2) & (5,4,3), (3,4,2) & (3,4,3), drop (2,4/5,2/3), (3,5,2/3); conv. |
| State × Age × Hispanicity | 7 × 6 × 2 | 30 | 20 | Drop (*,5,1); hier. Drop (6,4,1); sing. Drop (2/5/7,4,1); conv. |
| State × Age × Gender | 7 × 6 × 2 | 30 | 30 | All levels present. |
| State × Race (3 levels) × Hispanicity | 7 × 3 × 2 | 12 | 5 | Coll. (6,2,1) & (6,3,1), (7,2,1) & (7,3,1); zero. Coll. (1,2,1) & (1,3,1), do the same for states 3 & 5, drop (2,2/3,1); conv. |
| State × Race (3 levels) × Gender | 7 × 3 × 2 | 12 | 11 | Coll. (2,2,1) & (2,3,1); conv. |
| State × Hispanicity × Gender | 7 × 2 × 2 | 6 | 6 | All levels present. |
| Total | | 307 | 253 | |

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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 2019 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 | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 2.35 | 4.75 | 1.09 | 1.38474 | 459 | (1.16, 1.60) | (1.16, 1.60) |
| | 2.01 | 2.97 | 0.40 | 1.40381 | 273 | (1.00, 5.00) | (1.00, 5.00) |
| | | | | | | (1.00, 4.61) | (1.00, 4.61) |
| <i>res.sdu.ps</i> | 2.01 | 2.97 | 0.40 | 1.40367 | 337 | (0.55, 1.10) | (0.55, 1.10) |
| | 1.02 | 2.01 | 0.35 | 1.45390 | 336 | (0.20, 4.95) | (0.20, 4.94) |
| | | | | | | (0.90, 2.23) | (0.90, 2.23) |
| <i>sel.per.ps</i> | 2.27 | 4.65 | 1.02 | 2.28160 | 467 | (0.34, 2.97) | (0.36, 2.96) |
| | 1.15 | 2.45 | 0.35 | 2.28794 | 459 | (0.24, 3.33) | (0.25, 3.21) |
| | | | | | | (0.90, 2.25) | (0.90, 2.25) |
| <i>res.per.nr</i> | 1.51 | 3.91 | 0.58 | 2.25509 | 467 | (1.00, 2.80) | (1.00, 2.80) |
| | 1.30 | 3.67 | 0.71 | 2.42716 | 451 | (1.00, 4.37) | (1.00, 4.31) |
| | | | | | | (1.40, 5.00) | (1.40, 1.40) |
| <i>res.per.ps</i> | 1.48 | 4.01 | 0.77 | 2.42716 | 387 | (0.20, 1.90) | (0.20, 1.90) |
| | 0.75 | 2.39 | 0.41 | 2.46064 | 375 | (0.20, 4.84) | (0.20, 4.84) |
| | | | | | | (0.90, 1.26) | (1.19, 1.26) |

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, 2019.

Table D.5b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 5: South Atlantic)

| Statistics | <i>sel.sdu.des</i> ¹ | | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 5 | 0.37 | 22 | 0.20 | 17 | 1.01 | 20 | 0.16 | 12 | 0.55 | 16 | 0.09 | 4 | |
| 1% | 26 | 1.00 | 43 | 0.49 | 38 | 1.01 | 66 | 0.57 | 64 | 1.00 | 70 | 0.21 | 58 | |
| 5% | 37 | 1.06 | 71 | 0.72 | 69 | 1.01 | 181 | 0.75 | 179 | 1.06 | 268 | 0.46 | 224 | |
| 10% | 44 | 1.13 | 101 | 0.82 | 104 | 1.01 | 342 | 0.82 | 337 | 1.12 | 515 | 0.78 | 423 | |
| 25% | 154 | 1.24 | 252 | 0.96 | 264 | 1.31 | 918 | 0.92 | 919 | 1.22 | 1,249 | 0.97 | 1,193 | |
| Median | 638 | 1.38 | 875 | 1.08 | 949 | 2.60 | 1,850 | 1.00 | 1,853 | 1.37 | 2,549 | 1.02 | 2,536 | |
| 75% | 801 | 1.60 | 1,147 | 1.20 | 1,270 | 3.47 | 3,663 | 1.09 | 3,685 | 1.58 | 5,280 | 1.08 | 5,317 | |
| 90% | 952 | 1.92 | 1,419 | 1.37 | 1,613 | 8.56 | 7,966 | 1.20 | 7,823 | 1.85 | 11,183 | 1.17 | 11,021 | |
| 95% | 1,032 | 2.45 | 1,642 | 1.49 | 1,854 | 8.99 | 10,607 | 1.30 | 10,681 | 2.07 | 15,363 | 1.30 | 15,819 | |
| 99% | 1,490 | 3.78 | 2,150 | 2.02 | 2,482 | 11.35 | 15,517 | 1.63 | 15,591 | 2.71 | 24,361 | 1.88 | 25,186 | |
| Maximum | 4,811 | 6.59 | 3,170 | 4.94 | 5,947 | 27.77 | 44,484 | 4.09 | 35,394 | 4.31 | 70,410 | 4.84 | 60,399 | |
| n | 43,209 | 29,282 | 29,282 | 29,278 | 29,278 | 18,099 | 18,099 | 18,099 | 18,099 | 12,620 | 12,620 | 12,620 | 12,620 | |
| Max/Mean | 8.70 | - | 3.89 | - | 6.66 | - | 14.56 | - | 11.57 | - | 16.04 | - | 13.76 | |

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, 2019.

Model Group 5 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the State × Population Density, State × Group Quarter, State × percent Hispanic or Latino, and State × Rent/Housing interactions. Out of 176 proposed variables, 151 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 256 proposed variables, 95 were included in the model.

In the final model, a total of 273 variables were included; see [Exhibit D5.1](#).

Dwelling Unit Poststratification

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

All 125 proposed two-factor effects were included in the model.

For the three-factor effects, variable collapsing was present in the State × Race × Hispanicity interaction. Out of 190 proposed variables, 189 were included in the model.

In the final model, a total of 336 variables were included; see [Exhibit D5.2](#).

Selected Person-Level Poststratification

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

For the two-factor effects, variable dropping was present in the State × percent Hispanic or Latino and State × Rent/Housing interactions. Out of 237 proposed variables, 233 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 190 proposed variables, 186 were included in the model.

In the final model, a total of 459 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 dropping was present in the State \times percent Hispanic or Latino and State \times Rent/Housing interactions. Out of 237 proposed variables, 233 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State \times Age \times Race, State \times Age \times Hispanicity, and State \times Race \times Hispanicity interactions. Out of 190 proposed variables, 178 were included in the model.

In the final model, a total of 451 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 State \times Race interaction. Out of 137 proposed variables, 129 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State \times Age \times Race and State \times Age \times Hispanicity interactions. Out of 227 proposed variables, 223 were included in the model.

In the final model, a total of 375 variables were included; see [Exhibit D5.5](#).

Exhibit D5.1 Covariates for 2019 NSDUH Person Weights (res.sdu.nr), Model Group 5: South Atlantic

| Variables | Levels | Proposed | Final | Comments |
|--|-----------|------------|------------|--|
| One-Factor Effects | | 27 | 27 | |
| Intercept | 1 | 1 | 1 | All levels present. |
| State | 9 | 8 | 8 | All levels present. |
| Quarter | 4 | 3 | 3 | All levels present. |
| Population Density | 4 | 3 | 3 | All levels present. |
| Group Quarter | 3 | 2 | 2 | All levels present. |
| % Black 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 | 151 | |
| % 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 | 16 | Drop (1,1/3), (2,2/3), (4,3), (6,3); zero. Drop (1,2), (2,1); sing. |
| State × Group Quarter | 9 × 3 | 16 | 3 | Coll. (9,1) & (9,2), repeat for DC, NC, & VA, then drop for NC & VA; conv. Drop (1,2), (4,1/2), (6,1), (8,2); zero. Drop (1,1), (6,2); conv. |
| State × % Black or African American | 9 × 3 | 16 | 16 | All levels present. |
| State × % Hispanic or Latino | 9 × 3 | 16 | 13 | Drop (2,1), (8,1/2); zero. |
| State × % Owner-Occupied | 9 × 3 | 16 | 16 | All levels present. |
| State × Rent/Housing | 9 × 5 | 32 | 31 | Drop (8,4); sing. |
| Three-Factor Effects | | 256 | 95 | |
| State × % Owner-Occupied × % Black or African American | 9 × 3 × 3 | 32 | 16 | Keep (9,2,1/2), (2,3,1), (2,2,1/2), (4,2,1/2), (5,2,1/2), (6,2,1/2), (7,3,1), (7,2,1/2), (8,2,2), coll. (5,3,1) & (5,3,2), drop all others; sing./zero/conv. |
| State × % Owner-Occupied × % Hispanic or Latino | 9 × 3 × 3 | 32 | 11 | Coll. (9,3,1) & (9,3,2), keep (9,2,1/2), (1,3,2), (1,2,2), (2,2,2), (4,3,2), (4,2,2), (5/6/7,2,2), drop all others; sing./zero/conv. |
| State × % Owner-Occupied × Rent/Housing | 9 × 3 × 5 | 64 | 17 | Coll. (9,3,2) & (9,3,3), (9,2,1) & (9,2,2), (1,3,3) & (1,3,4), keep (9,2,3/4), (1,2,1/2/3), (4,2,3/4), (5,2,1/2/3), (6,2,1/2/3), (7,2,1), drop all others; sing./zero/conv. |
| State × Rent/Housing × % Black or African American | 9 × 3 × 5 | 64 | 31 | Coll. (9,1,1) & (9,1,2), (9,4,1) & (9,4,2), (4,4,1) & (4,4,2), keep (9,2,1/2), (9,3,1/2), (1,3,1/2), (1,2,1), (1,4,1/2), (2,4,1), (4,3,1/2), (4,2,1), (5,1,1/2), (5,2,1/2), (5,3,2), (6,1,1/2), (6,2,1/2), (6,3,2), (7,1,1/2), (7,2,2), (7,3,1/2), drop all others; sing./zero/conv. |
| State × Rent/Housing × % Hispanic or Latino | 9 × 3 × 5 | 64 | 20 | Coll. (9,2,1) & (9,2,2), keep (9,1,2), (9,3,1/2), (9,4,1/2), (1,2,2), (1,3/4,2), (2,4,2), (4,3,2), (4,4,1/2), (5,1/2,2), (5,3,2), (6,1/2,2), (6,3,2), (7,1,2), drop all others; sing./zero/conv. |
| Total | | 459 | 273 | |

Exhibit D5.2 Covariates for 2019 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 | 125 | |
| 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 | 32 | All levels present. |
| State × Hispanicity | 9 × 2 | 8 | 8 | All levels present. |
| State × Gender | 9 × 2 | 8 | 8 | All levels present. |
| Three-Factor Effects | | 190 | 189 | |
| 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 | 15 | Coll. (8,2,1) & (8,3,1); conv. |
| State × Race (3 levels) × Gender | 9 × 3 × 2 | 16 | 16 | All levels present. |
| State × Hispanicity × Gender | 9 × 2 × 2 | 8 | 8 | All levels present. |
| Total | | 337 | 336 | |

Exhibit D5.3 Covariates for 2019 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 | 233 | |
| 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 | 16 | All levels present. |
| State × % Hispanic or Latino | 9 × 3 | 16 | 13 | Drop (2,1), (8,1/2); zero. |
| State × % Owner-Occupied | 9 × 3 | 16 | 16 | All levels present. |
| State × Rent/Housing | 9 × 5 | 32 | 31 | Drop (8,4); zero. |
| Three-Factor Effects | | 190 | 186 | |
| 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 | 29 | Drop (8,2/3/4); conv. |
| State × Age × Gender | 9 × 5 × 2 | 32 | 32 | All levels present. |
| State × Race (3 levels) × Hispanicity | 9 × 3 × 2 | 16 | 15 | Coll. (8,2,1) & (8,3,1); conv. |
| State × Race (3 levels) × Gender | 9 × 3 × 2 | 16 | 16 | All levels present. |
| State × Hispanicity × Gender | 9 × 2 × 2 | 8 | 8 | All levels present. |
| Total | | 467 | 459 | |

Exhibit D5.4 Covariates for 2019 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 | 233 | |
| 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 | 16 | All levels present. |
| State × % Hispanic or Latino | 9 × 3 | 16 | 13 | Drop (2,1), (8,1/2); zero. |
| State × % Owner-Occupied | 9 × 3 | 16 | 16 | All levels present. |
| State × Rent/Housing | 9 × 5 | 32 | 31 | Drop (8,4); sing. |
| Three-Factor Effects | | 190 | 178 | |
| 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 | 62 | Coll. (8,3,2) & (8,3,3), (8,4,2) & (8,4,3); conv. |
| State × Age × Hispanicity | 9 × 5 × 2 | 32 | 31 | Drop (8,4,1); sing. |
| State × Age × Gender | 9 × 5 × 2 | 32 | 32 | All levels present. |
| State × Race (3 levels) × Hispanicity | 9 × 3 × 2 | 16 | 7 | Coll. (8,2,1) & (8,3,1); zero. Repeat for all other states; conv. Drop (8,2/3,1); 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 | 451 | |

Exhibit D5.5 Covariates for 2019 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 | 129 | |
| 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 | 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 | 223 | |
| 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) | 9 × 6 × 3 | 80 | 79 | Coll. (8,3,2) & (8,3,3); conv. |
| State × Age × Hispanicity | 9 × 6 × 2 | 40 | 37 | Drop (6,5,1), (8,5,1); zero. Drop (8,4,1); sing. |
| State × Age × Gender | 9 × 6 × 2 | 40 | 40 | All levels present. |
| State × Race (3 levels) × Hispanicity | 9 × 3 × 2 | 16 | 16 | All levels present. |
| State × Race (3 levels) × Gender | 9 × 3 × 2 | 16 | 16 | All levels present. |
| State × Hispanicity × Gender | 9 × 2 × 2 | 8 | 8 | All levels present. |
| Total | | 387 | 375 | |

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

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Table D.6a 2019 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 | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 3.23 | 6.02 | 0.43 | 1.10909 | 204 | (1.05, 2.82) | (1.06, 2.82) |
| | 1.01 | 1.87 | 0.29 | 1.13608 | 134 | (1.00, 4.13) | (1.00, 4.12) |
| | | | | | | (N/A, N/A) | (N/A, N/A) |
| <i>res.sdu.ps</i> | 1.01 | 1.87 | 0.29 | 1.13608 | 162 | (0.20, 1.10) | (0.20, 1.10) |
| | 1.43 | 3.06 | 0.80 | 1.21014 | 158 | (0.20, 5.00) | (0.20, 5.00) |
| | | | | | | (0.90, 1.10) | (1.04, 1.09) |
| <i>sel.per.ps</i> | 2.69 | 5.57 | 1.40 | 1.79930 | 242 | (0.20, 2.32) | (0.20, 2.29) |
| | 1.69 | 4.27 | 0.82 | 1.83071 | 222 | (0.20, 5.00) | (0.20, 5.00) |
| | | | | | | (0.40, 5.00) | (0.42, 5.00) |
| <i>res.per.nr</i> | 1.76 | 4.21 | 0.85 | 1.82709 | 242 | (1.00, 2.60) | (1.00, 2.60) |
| | 1.51 | 4.15 | 0.85 | 1.99313 | 189 | (1.00, 5.00) | (1.00, 5.00) |
| | | | | | | (1.40, 1.50) | (1.40, 1.40) |
| <i>res.per.ps</i> | 1.61 | 4.65 | 0.86 | 1.99313 | 187 | (0.20, 1.10) | (0.20, 1.10) |
| | 0.93 | 3.27 | 0.84 | 2.01985 | 154 | (0.20, 4.89) | (0.20, 4.88) |
| | | | | | | (0.80, 1.16) | (0.80, 1.16) |

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, 2019.

Table D.6b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 6: East South Central)

| Statistics | <i>sel.sdu.des</i> ¹ | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 316 | 1.00 | 360 | 0.12 | 77 | 1.01 | 98 | 0.15 | 29 | 0.44 | 34 | 0.11 | 7 |
| 1% | 345 | 1.03 | 406 | 0.34 | 248 | 1.01 | 296 | 0.39 | 215 | 1.00 | 249 | 0.20 | 121 |
| 5% | 349 | 1.07 | 438 | 0.72 | 443 | 1.01 | 551 | 0.64 | 500 | 1.01 | 637 | 0.58 | 488 |
| 10% | 392 | 1.10 | 481 | 0.86 | 511 | 1.01 | 688 | 0.76 | 665 | 1.06 | 896 | 0.87 | 806 |
| 25% | 561 | 1.15 | 661 | 1.00 | 668 | 1.25 | 1,137 | 0.88 | 1,096 | 1.23 | 1,481 | 0.97 | 1,475 |
| Median | 672 | 1.20 | 826 | 1.08 | 880 | 2.38 | 1,940 | 0.99 | 1,949 | 1.39 | 2,690 | 1.01 | 2,722 |
| 75% | 896 | 1.30 | 1,026 | 1.17 | 1,148 | 3.32 | 3,437 | 1.12 | 3,491 | 1.58 | 5,064 | 1.07 | 5,065 |
| 90% | 1,000 | 1.39 | 1,334 | 1.31 | 1,494 | 6.81 | 6,246 | 1.26 | 6,276 | 1.83 | 9,123 | 1.13 | 9,153 |
| 95% | 1,036 | 1.46 | 1,501 | 1.45 | 1,707 | 7.09 | 8,008 | 1.40 | 8,037 | 2.06 | 12,068 | 1.23 | 12,177 |
| 99% | 1,329 | 1.61 | 1,697 | 2.06 | 2,244 | 8.56 | 11,261 | 2.02 | 11,634 | 3.41 | 19,407 | 2.33 | 19,789 |
| Maximum | 1,352 | 4.12 | 3,938 | 5.00 | 7,381 | 16.86 | 29,245 | 7.55 | 27,328 | 5.00 | 37,775 | 4.88 | 45,901 |
| n | 10,030 | 8,109 | 8,109 | 8,109 | 8,109 | 5,795 | 5,795 | 5,795 | 5,795 | 3,984 | 3,984 | 3,984 | 3,984 |
| Max/Mean | 1.91 | - | 4.49 | - | 7.74 | - | 10.56 | - | 9.89 | - | 9.40 | - | 11.42 |

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, 2019.

Model Group 6 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable dropping was present in the percent Owner-Occupied \times percent Hispanic or Latino, percent Owner-Occupied \times Rent/Housing, Rent/Housing \times percent Hispanic or Latino, State \times Group Quarter, and State \times percent Hispanic or Latino interactions. Out of 86 proposed variables, 73 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 96 proposed variables, 39 were included in the model.

In the final model, a total of 134 variables were included; see [Exhibit D6.1](#).

Dwelling Unit Poststratification

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

For the two-factor effects, variable collapsing was present in the State \times Race interaction. Out of 60 proposed variables, 59 were included in the model.

For the three-factor effects, variable collapsing was present in the State \times Race \times Hispanicity interaction. Out of 85 proposed variables, 82 were included in the model.

In the final model, a total of 158 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 \times percent Hispanic or Latino, percent Owner-Occupied \times Rent/Housing, Rent/Housing \times percent Hispanic or Latino, State \times Race, and State \times percent Hispanic or Latino interactions. Out of 122 proposed variables, 112 were included in the model.

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

In the final model, a total of 222 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 \times percent Black or African American, percent Owner-Occupied \times percent Hispanic or Latino, percent Owner-Occupied \times Rent/Housing, Rent/Housing \times percent Hispanic or Latino, State \times Race, and State \times percent Hispanic or Latino interactions. Out of 122 proposed variables, 107 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age \times Hispanicity \times Gender and State \times Age \times Gender interactions. Out of 85 proposed variables, 47 were included in the model.

In the final model, a total of 189 variables were included; see [Exhibit D6.4](#).

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.

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

In the final model, a total of 154 variables were included; see [Exhibit D6.5](#).

**Exhibit D6.1 Covariates for 2019 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 | 73 | |
| % 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); zero. |
| % Owner-Occupied × Rent/Housing | 3 × 5 | 8 | 6 | Drop (3,1), (3,2); zero. |
| Rent/Housing × % Black or African American | 3 × 5 | 8 | 8 | All levels present. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 5 | Drop (1,1); zero. Drop (3,1), (4,1); 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 | 2 | Keep (1,1), (1,2). Drop all others; zero/sing. |
| State × % Black or African American | 4 × 3 | 6 | 6 | All levels present. |
| State × % Hispanic or Latino | 4 × 3 | 6 | 3 | Drop (1,1), (2,1); sing. Drop (3,1); 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 | 39 | |
| State × % Owner-Occupied × % Black or African American | 4 × 3 × 3 | 12 | 6 | Keep (1,2,1), (1,2,2), (1,3,1), (1,3,2), (2,2,2), (3,2,1). Drop all others; zero/sing. |
| State × % Owner-Occupied × % Hispanic or Latino | 4 × 3 × 3 | 12 | 3 | Keep (1,2,2), (2,2,2), (3,2,2). Drop all others; hier./zero/sing. |
| State × % Owner-Occupied × Rent/Housing | 4 × 3 × 5 | 24 | 13 | Keep (1,2,1), (1,2,2), (1,2,3), (1,2,4), (1,3,4), (2,2,1), (2,2,2), (2,2,3), (2,2,4), (3,2,1), (3,2,2), (3,2,3), (3,2,4). Drop all others; hier./sing. |
| State × Rent/Housing × % Black or African American | 4 × 3 × 5 | 24 | 13 | 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); conv. Keep (2,1,2), (2,2,2), (2,3,2), (3,1,1), (3,2,1), (3,2,2), (3,3,1), (3,3,2), (3,4,2). Drop all others; zero/sing. |
| State × Rent/Housing × % Hispanic or Latino | 4 × 3 × 5 | 24 | 4 | Keep (1,1,2), (1,2,2), (3,2,2), (3,4,2). Drop all others; hier./zero/sing. |
| Total | | 204 | 134 | |

**Exhibit D6.2 Covariates for 2019 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 | 59 | |
| 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 | 11 | Coll. (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 | | 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. (1,2,1) & (1,3,1), 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 | | 162 | 158 | |

**Exhibit D6.3 Covariates for 2019 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 | 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. |
| % 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); zero. |
| % Owner-Occupied × Rent/Housing | 3 × 5 | 8 | 6 | Drop (3,1), (3,2); zero. |
| Rent/Housing × % Black or African American | 3 × 5 | 8 | 8 | All levels present. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 5 | Drop (1,1); zero. Drop (3,1), (4,1); 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 | 11 | Coll. (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 | 6 | All levels present. |
| State × % Hispanic or Latino | 4 × 3 | 6 | 3 | Drop (3,1); zero. Drop (1,1), (2,1); sing. |
| State × % Owner-Occupied | 4 × 3 | 6 | 6 | All levels present. |
| State × Rent/Housing | 4 × 5 | 12 | 12 | All levels present. |
| Three-Factor Effects | | 85 | 75 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 4 | Coll. (4,2,1) & (4,3,1); sing. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv. |
| Age × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 8 | All levels present. |
| Age × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| State × Age × Race (3 levels) | 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 | 0 | Coll. (2,2,1) & (2,3,1); zero. Coll. (1,2,1) & (1,3,1), (3,2,1) & (3,3,1); conv. 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 | 222 | |

**Exhibit D6.4 Covariates for 2019 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 | 107 | |
| 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 | 3 | Coll. (3,1) & (3,2); conv. |
| % Owner-Occupied × % Hispanic or Latino | 3 × 3 | 4 | 2 | Drop (2,1); zero. Coll. (3,1) & (3,2); conv. |
| % Owner-Occupied × Rent/Housing | 3 × 5 | 8 | 5 | Drop (3,1), (3,2); zero. Coll. (3,3) & (3,4); conv. |
| Rent/Housing × % Black or African American | 3 × 5 | 8 | 8 | All levels present. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 5 | Drop (1,1); zero. Drop (3,1), (4,1); 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 | 9 | Coll. (1,3) & (1,4), repeat for all states; 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 | 6 | All levels present. |
| State × % Hispanic or Latino | 4 × 3 | 6 | 3 | Drop (3,1); zero. Coll. (2,1) & (2,2); sing. Coll. (1,1) & (1,2); conv. |
| State × % Owner-Occupied | 4 × 3 | 6 | 6 | All levels present. |
| State × Rent/Housing | 4 × 5 | 12 | 12 | All levels present. |
| Three-Factor Effects | | 85 | 47 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 2 | Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1); conv. Drop all others. |
| Age × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 6 | Coll. (3,2,1) & (3,3,1), (4,2,1) & (4,3,1); conv. |
| Age × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 0 | Drop all levels; conv. |
| State × Age × Race (3 levels) | 4 × 5 × 3 | 24 | 12 | Coll. (1,1,2) & (1,1,3), repeat for all age groups and all states; conv. |
| State × Age × Hispanicity | 4 × 5 × 2 | 12 | 7 | Drop (1,2,1), (1,3,1), (1,4,1), (2,4,1), (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; conv. |
| State × Race (3 levels) × Gender | 4 × 3 × 2 | 6 | 3 | Coll. (1,2,1) & (1,3,1), repeat for all states; conv. |
| State × Hispanicity × Gender | 4 × 2 × 2 | 3 | 1 | Drop (1,1,1), (3,1,1); conv. |
| Total | | 242 | 189 | |

**Exhibit D6.5 Covariates for 2019 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 | 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 | 69 | |
| Age × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 5 | Coll. (5,2,1) & (5,3,1); zero. Coll. (4,2,1) & (4,3,1); sing. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv. |
| Age × Race (3 levels) × Gender | 6 × 3 × 2 | 10 | 10 | All levels present. |
| Age × Hispanicity × Gender | 6 × 2 × 2 | 5 | 3 | Drop (4,1,1), (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) | 4 × 6 × 3 | 30 | 15 | Coll. (3,5,2) & (3,5,3), sing. Coll. (1,1,2) & (1,1,3), repeat for all remaining states and age groups; conv. |
| State × Age × Hispanicity | 4 × 6 × 2 | 15 | 9 | Drop (1,5,1), (2,5,1); sing. Drop (1,3,1), (1,4,1), (2,4,1), (3,5,1); conv. |
| State × Age × Gender | 4 × 6 × 2 | 15 | 15 | All levels present. |
| State × Race (3 levels) × Hispanicity | 4 × 3 × 2 | 6 | 3 | Coll. (1,2,1) & (1,3,1), 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 | 2 | Drop (1,1,1); conv. |
| Total | | 187 | 154 | |

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

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Table D.7a 2019 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 | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 0.11 | 0.10 | 0.01 | 1.13662 | 204 | (1.13, 1.30) | (1.13, 1.14) |
| | 2.52 | 6.41 | 0.77 | 1.26437 | 129 | (1.00, 3.72) | (1.00, 3.72) |
| | | | | | | (1.00, 5.00) | (1.00, 1.00) |
| <i>res.sdu.ps</i> | 2.52 | 6.41 | 0.77 | 1.26437 | 162 | (0.20, 1.80) | (0.20, 1.79) |
| | 0.83 | 1.84 | 0.50 | 1.31464 | 161 | (0.20, 5.00) | (0.20, 5.00) |
| | | | | | | (N/A, N/A) | (N/A, N/A) |
| <i>sel.per.ps</i> | 1.74 | 4.76 | 1.20 | 1.86464 | 242 | (0.51, 2.30) | (0.53, 2.30) |
| | 0.88 | 2.27 | 0.33 | 1.78588 | 239 | (0.32, 4.99) | (0.34, 4.99) |
| | | | | | | (0.90, 4.19) | (0.90, 4.19) |
| <i>res.per.nr</i> | 1.15 | 2.83 | 0.42 | 1.77381 | 242 | (1.00, 1.80) | (1.00, 1.80) |
| | 1.22 | 3.31 | 0.46 | 1.94933 | 217 | (1.00, 3.95) | (1.00, 3.93) |
| | | | | | | (1.40, 2.04) | (1.40, 2.04) |
| <i>res.per.ps</i> | 1.11 | 3.00 | 0.45 | 1.94933 | 187 | (0.20, 1.10) | (0.20, 1.10) |
| | 0.38 | 0.65 | 0.08 | 1.96397 | 174 | (0.20, 2.61) | (0.20, 2.59) |
| | | | | | | (0.90, 1.04) | (0.90, 1.03) |

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, 2019.

Table D.7b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 7: West South Central)

| Statistics | <i>sel.sdu.des</i> ¹ | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 373 | 0.99 | 377 | 0.18 | 114 | 1.01 | 140 | 0.23 | 77 | 0.66 | 96 | 0.10 | 19 |
| 1% | 379 | 1.00 | 396 | 0.48 | 348 | 1.01 | 433 | 0.54 | 403 | 1.00 | 496 | 0.22 | 292 |
| 5% | 413 | 1.00 | 447 | 0.78 | 477 | 1.01 | 678 | 0.76 | 659 | 1.06 | 845 | 0.56 | 735 |
| 10% | 502 | 1.00 | 520 | 0.90 | 546 | 1.01 | 896 | 0.82 | 903 | 1.11 | 1,151 | 0.82 | 1,055 |
| 25% | 628 | 1.07 | 701 | 1.04 | 775 | 1.35 | 1,518 | 0.91 | 1,501 | 1.23 | 1,931 | 0.96 | 1,878 |
| Median | 991 | 1.17 | 1,061 | 1.13 | 1,184 | 2.36 | 2,645 | 1.00 | 2,732 | 1.38 | 3,655 | 1.04 | 3,689 |
| 75% | 1,181 | 1.39 | 1,451 | 1.25 | 1,734 | 2.96 | 5,011 | 1.10 | 5,052 | 1.54 | 7,122 | 1.09 | 7,069 |
| 90% | 1,324 | 1.65 | 1,832 | 1.41 | 2,238 | 6.23 | 8,511 | 1.22 | 8,180 | 1.77 | 12,326 | 1.17 | 12,369 |
| 95% | 1,344 | 1.75 | 2,093 | 1.54 | 2,569 | 7.36 | 11,189 | 1.29 | 11,066 | 1.96 | 16,495 | 1.20 | 17,011 |
| 99% | 1,821 | 2.68 | 3,319 | 2.01 | 3,730 | 8.16 | 16,249 | 1.62 | 15,684 | 2.55 | 25,443 | 1.54 | 25,695 |
| Maximum | 1,917 | 3.72 | 4,899 | 5.00 | 10,643 | 14.86 | 61,707 | 8.05 | 37,233 | 3.93 | 57,006 | 2.59 | 41,792 |
| n | 14,514 | 11,421 | 11,421 | 11,420 | 11,420 | 8,661 | 8,661 | 8,661 | 8,661 | 6,062 | 6,062 | 6,062 | 6,062 |
| Max/Mean | 2.11 | - | 4.25 | - | 8.02 | - | 15.90 | - | 9.72 | - | 10.41 | - | 7.63 |

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, 2019.

Model Group 7 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable dropping was present in the percent Owner-Occupied \times Rent/Housing and State \times Group Quarter interactions. Out of 86 proposed variables, 83 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 129 variables were included; see [Exhibit D7.1](#).

Dwelling Unit Poststratification

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

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

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

In the final model, a total of 161 variables were included; see [Exhibit D7.2](#).

Selected Person-Level Poststratification

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

For the two-factor effects, variable dropping was present in the percent Owner-Occupied \times Rent/Housing interaction. Out of 122 proposed variables, 121 were included in the model.

For the three-factor effects, variable collapsing was present in the State \times Race \times Hispanicity interaction. Out of 85 proposed variables, 83 were included in the model.

In the final model, a total of 239 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 percent Owner-Occupied × Rent/Housing 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 × Race, and State × Race × Hispanicity interactions. Out of 85 proposed variables, 61 were included in the model.

In the final model, a total of 217 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 × Hispanicity, and State × Race × Hispanicity interactions. Out of 102 proposed variables, 89 were included in the model.

In the final model, a total of 174 variables were included; see [Exhibit D7.5](#).

Exhibit D7.1 Covariates for 2019 NSDUH Person Weights (res.sdu.nr), Model Group 7: West 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 | 83 | |
| % 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 | 7 | Drop (3,2); zero. |
| 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 | 4 | Drop (2,2), (3,2); zero. |
| State × % Black or African American | 4 × 3 | 6 | 6 | All levels present. |
| State × % Hispanic or Latino | 4 × 3 | 6 | 6 | All levels present. |
| State × % Owner-Occupied | 4 × 3 | 6 | 6 | All levels present. |
| 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 | 7 | Coll. (4,3,1) & (4,3,2); conv. Keep (4,2,1/2), (2,2,1/2), (3,2,1/2), drop all others; conv./sing./zero. |
| State × % Owner-Occupied × % Hispanic or Latino | 4 × 3 × 3 | 12 | 1 | Keep (4,2,2), drop all others; conv./sing./zero. |
| State × % Owner-Occupied × Rent/Housing | 4 × 3 × 5 | 24 | 5 | Keep (2,2,1/2/3), (3,2,1/2), drop all others; conv./sing./zero. |
| State × Rent/Housing × % Black or African American | 4 × 3 × 5 | 24 | 9 | Coll. (2,2,1) & (2,2,2), (2,4,1) & (2,4,2); sing. Keep (4,2,2), (4,3,1/2), (2,3,2), (2,1,1/2), (3,2,2), drop all others; conv./sing./zero. |
| State × Rent/Housing × % Hispanic or Latino | 4 × 3 × 5 | 24 | 2 | Keep (2,2,2), (3,2,2), drop all others; conv./sing./zero. |
| Total | | 204 | 129 | |

**Exhibit D7.2 Covariates for 2019 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 | 84 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 8 | All levels present. |
| Age × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 8 | All levels present. |
| Age × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| State × Age × Race (3 levels) | 4 × 5 × 3 | 24 | 24 | All levels present. |
| State × Age × Hispanicity | 4 × 5 × 2 | 12 | 12 | All levels present. |
| State × Age × Gender | 4 × 5 × 2 | 12 | 12 | All levels present. |
| State × Race (3 levels) × Hispanicity | 4 × 3 × 2 | 6 | 5 | Coll. (2,2,1) & (2,3,1); conv. |
| State × Race (3 levels) × Gender | 4 × 3 × 2 | 6 | 6 | All levels present. |
| State × Hispanicity × Gender | 4 × 2 × 2 | 3 | 3 | All levels present. |
| Total | | 162 | 161 | |

**Exhibit D7.3 Covariates for 2019 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 | 7 | Drop (3,2); zero. |
| 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 | 6 | All levels present. |
| State × % Owner-Occupied | 4 × 3 | 6 | 6 | All levels present. |
| State × Rent/Housing | 4 × 5 | 12 | 12 | All levels present. |
| Three-Factor Effects | | 85 | 83 | |
| 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 | 4 | Coll. (2,2,1) & (2,3,1), (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 | | 242 | 239 | |

Exhibit D7.4 Covariates for 2019 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 | 7 | Drop (3,2); zero. |
| 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 | 6 | All levels present. |
| State × % Owner-Occupied | 4 × 3 | 6 | 6 | All levels present. |
| State × Rent/Housing | 4 × 5 | 12 | 12 | All levels present. |
| Three-Factor Effects | | | | |
| | | 85 | 61 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 0 | Coll. (1,2,1) & (1,3,1), repeat for all age groups, drop all; 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 | 16 | Coll. (2,1,2) & (2,1,3), repeat for all age groups; conv. Do the same for OK; conv. |
| 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 | 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 | 217 | |

**Exhibit D7.5 Covariates for 2019 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 | 89 | |
| Age × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 8 | Coll. (4,2,1) & (4,3,1), (5,2,1) & (5,3,1); 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) | 4 × 6 × 3 | 30 | 30 | All levels present. |
| State × Age × Hispanicity | 4 × 6 × 2 | 15 | 5 | Drop (3,5,1); sing. Drop all for LA & OK; conv. |
| State × Age × Gender | 4 × 6 × 2 | 15 | 15 | All levels present. |
| State × Race (3 levels) × Hispanicity | 4 × 3 × 2 | 6 | 5 | Coll. (2,2,1) & (2,3,1); conv. |
| State × Race (3 levels) × Gender | 4 × 3 × 2 | 6 | 6 | All levels present. |
| State × Hispanicity × Gender | 4 × 2 × 2 | 3 | 3 | All levels present. |
| Total | | 187 | 174 | |

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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 2019 NSDUH Person Weight GEM Modeling Summary (Model Group 8: Mountain)

| Modeling Step ¹ | Extreme Weight Proportions | | | UWE ² | # XVAR ³ | Bounds ⁴ | |
|----------------------------|----------------------------|------------|------------|------------------|---------------------|---------------------|--------------|
| | % Unweighted | % Weighted | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 6.90 | 8.26 | 1.03 | 1.60441 | 408 | (1.14, 1.97) | (1.18, 1.97) |
| | 2.75 | 3.28 | 0.53 | 1.66741 | 203 | (1.00, 5.00) | (1.00, 5.00) |
| | | | | | | (1.20, 1.90) | (1.21, 1.87) |
| <i>res.sdu.ps</i> | 2.75 | 3.28 | 0.53 | 1.66741 | 302 | (0.57, 1.10) | (0.57, 1.10) |
| | 1.66 | 3.36 | 0.93 | 1.71088 | 298 | (0.20, 5.00) | (0.20, 5.00) |
| | | | | | | (0.90, 1.89) | (0.90, 1.89) |
| <i>sel.per.ps</i> | 2.60 | 6.13 | 1.81 | 2.58074 | 422 | (0.34, 2.80) | (0.34, 2.80) |
| | 1.56 | 4.15 | 0.88 | 2.72227 | 389 | (0.20, 4.45) | (0.20, 4.44) |
| | | | | | | (0.90, 2.01) | (0.90, 2.01) |
| <i>res.per.nr</i> | 1.72 | 5.05 | 0.95 | 2.75871 | 422 | (1.00, 2.60) | (1.00, 2.60) |
| | 1.39 | 3.10 | 0.51 | 2.96827 | 377 | (1.00, 5.00) | (1.00, 5.00) |
| | | | | | | (1.40, 5.00) | (1.40, 5.00) |
| <i>res.per.ps</i> | 1.49 | 3.35 | 0.55 | 2.96827 | 347 | (0.20, 1.70) | (0.20, 1.70) |
| | 0.78 | 2.01 | 0.26 | 3.09554 | 304 | (0.20, 4.56) | (0.20, 4.56) |
| | | | | | | (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, 2019.

Table D.8b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 8: Mountain)

| Statistics | <i>sel.sdu.des</i> ¹ | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 83 | 0.44 | 99 | 0.17 | 29 | 1.01 | 30 | 0.16 | 14 | 0.47 | 19 | 0.11 | 5 |
| 1% | 84 | 1.04 | 105 | 0.41 | 86 | 1.01 | 109 | 0.51 | 96 | 1.00 | 114 | 0.22 | 86 |
| 5% | 88 | 1.14 | 114 | 0.72 | 121 | 1.01 | 173 | 0.72 | 168 | 1.04 | 230 | 0.40 | 206 |
| 10% | 99 | 1.18 | 122 | 0.84 | 136 | 1.01 | 235 | 0.79 | 236 | 1.10 | 321 | 0.76 | 298 |
| 25% | 147 | 1.24 | 184 | 0.97 | 206 | 1.24 | 474 | 0.89 | 461 | 1.21 | 621 | 0.95 | 574 |
| Median | 331 | 1.32 | 437 | 1.07 | 461 | 2.21 | 1,049 | 1.00 | 1,053 | 1.39 | 1,426 | 1.01 | 1,404 |
| 75% | 689 | 1.46 | 892 | 1.18 | 961 | 3.26 | 2,334 | 1.12 | 2,386 | 1.60 | 3,346 | 1.10 | 3,285 |
| 90% | 868 | 1.66 | 1,244 | 1.33 | 1,325 | 7.06 | 4,239 | 1.25 | 4,312 | 1.88 | 6,424 | 1.27 | 6,531 |
| 95% | 905 | 1.95 | 1,483 | 1.49 | 1,598 | 7.61 | 6,042 | 1.37 | 6,095 | 2.09 | 9,216 | 1.38 | 9,470 |
| 99% | 1,065 | 2.28 | 2,151 | 2.20 | 2,279 | 10.41 | 11,422 | 1.81 | 12,135 | 2.96 | 19,063 | 1.75 | 19,850 |
| Maximum | 4,059 | 5.00 | 3,982 | 5.00 | 9,472 | 17.53 | 43,980 | 4.44 | 37,416 | 5.27 | 44,796 | 4.56 | 61,338 |
| n | 20,883 | 15,103 | 15,103 | 15,103 | 15,103 | 11,005 | 11,005 | 11,005 | 11,005 | 7,559 | 7,559 | 7,559 | 7,559 |
| Max/Mean | 9.46 | - | 6.71 | - | 14.93 | - | 23.84 | - | 19.89 | - | 16.36 | - | 22.40 |

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, 2019.

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 \times percent Hispanic or Latino, percent Owner-Occupied \times Rent/Housing, State \times Quarter, and State \times Rent/Housing interactions. Out of 158 proposed variables, 117 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 224 proposed variables, 60 were included in the model.

In the final model, a total of 203 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 State \times Race \times Hispanicity interaction. Out of 169 proposed variables, 165 were included in the model.

In the final model, a total of 298 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 dropping was present in the percent Owner-Occupied \times percent Black or African American, Rent/Housing \times percent Black or African American, Rent/Housing \times percent Hispanic or Latino, State \times percent Black or African American, State \times percent Hispanic or Latino, and State \times percent Owner-Occupied interactions. Out of 214 proposed variables, 193 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the Age \times Race \times Hispanicity, State \times Age \times Race, State \times Race \times Hispanicity, and State \times Race \times Gender interactions. Out of 169 proposed variables, 157 were included in the model.

In the final model, a total of 389 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 collapsing or dropping was present in the percent Owner-Occupied \times percent Black or African American, Rent/Housing \times percent Black or African American, Rent/Housing \times percent Hispanic or Latino, State \times Race, State \times percent Black or African American, State \times percent Hispanic or Latino, and State \times percent Owner-Occupied interactions. Out of 214 proposed variables, 191 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State \times Age \times Race, State \times Race \times Hispanicity, State \times Race \times Gender, and State \times Hispanicity \times Gender interactions. Out of 169 proposed variables, 147 were included in the model.

In the final model, a total of 377 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 \times Race \times Hispanicity, State \times Age \times Race, State \times Race \times Hispanicity, and State \times Race \times Gender interactions. Out of 202 proposed variables, 159 were included in the model.

In the final model, a total of 304 variables were included; see [Exhibit D8.5](#).

Exhibit D8.1 Covariates for 2019 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 | 117 | |
| % Owner-Occupied × % Black or African American | 3 × 3 | 4 | 2 | Drop (*,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 (1/2/3/4,1); zero/sing. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 7 | Drop (4,1); sing. |
| State × Quarter | 8 × 4 | 21 | 21 | All levels present. |
| State × Population Density | 8 × 4 | 21 | 14 | Drop (2/3/5/7,1), (5,2), (5/7,3). |
| State × Group Quarter | 8 × 3 | 14 | 1 | Coll. (3,1) & (3,2), drop all others; sing./zero/conv. |
| State × % Black or African American | 8 × 3 | 14 | 2 | Keep (1,2), (4,2), drop the rest; zero/sing. |
| State × % Hispanic or Latino | 8 × 3 | 14 | 13 | Drop (3,1); zero. |
| State × % Owner-Occupied | 8 × 3 | 14 | 13 | Coll. (7,2) & (7,3); conv. |
| State × Rent/Housing | 8 × 5 | 28 | 28 | All levels present. |
| Three-Factor Effects | | 224 | 60 | |
| State × % Owner-Occupied × % Black or African American | 8 × 3 × 3 | 28 | 3 | Keep (4,*2). Coll. (1,2,2) & (1,3,2), drop all others, sing./zero/hier./conv. |
| State × % Owner-Occupied × % Hispanic or Latino | 8 × 3 × 3 | 28 | 9 | Coll. (1,2,1) & (1,3,1), (1,2,2) & (1,3,2), (2,*2) & (3,*2), keep (4,2,1), (4,3,*), (5,*1), (6,2,2), drop all others, sing./zero/hier./conv. |
| State × % Owner-Occupied × Rent/Housing | 8 × 3 × 5 | 56 | 19 | Keep (1,2,2/4), (2,2,1/2), (3,3,1), (3,2,1/2/3), (4,*2/3/4), (5,2,1/2), (6,2,1), (6,2,3). Coll. (6,2,2) & (6,3,2); conv. Drop all others, sing., zero, hier., conv. |
| State × Rent/Housing × % Black or African American | 8 × 3 × 5 | 56 | 3 | Keep (1,2,2), (4,2,2), (4,3,2), drop all others, sing./zero/hier./conv. |
| State × Rent/Housing × % Hispanic or Latino | 8 × 3 × 5 | 56 | 26 | Keep (1,1,1), (1,2,*), (1,3,*), (1,4,2), (2,*2), (4,1,2), (4,2,1), (4,3,*), (4,4,2), (5,1,1), (5,2,1), (5,3,1), (6,1,*), (6,2,*), (6,3,2), (6,4,2), (7,1,2), (7,2,2), drop all others; sing./zero/hier./conv. |
| Total | | 408 | 203 | |

Exhibit D8.2 Covariates for 2019 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 | 165 | |
| 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) | 8 × 5 × 3 | 56 | 56 | All levels present. |
| 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 | 10 | Coll. (2,2,1) & (2,3,1); zero. |
| State × Race (3 levels) × Gender | 8 × 3 × 2 | 14 | 14 | Coll. (1/6/7,2,1) & (1/6/7,3,1); conv. |
| State × Hispanicity × Gender | 8 × 2 × 2 | 7 | 7 | All levels present. |
| Total | | 302 | 298 | |

Exhibit D8.3 Covariates for 2019 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 | 193 | |
| 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 (*,1); sing. |
| % Owner-Occupied × % Hispanic | 3 × 3 | 4 | 4 | All levels present. |
| % Owner-Occupied × Rent/Housing | 3 × 5 | 8 | 8 | All levels present. |
| Rent/Housing × % Black or African American | 3 × 5 | 8 | 4 | Drop (*,1); sing./zero. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 7 | Drop (4,1); sing. |
| 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 | 2 | Drop (*,1), (2,2), (3,2), (4,2), (6,2), (7,2); sing. |
| State × % Hispanic or Latino | 8 × 3 | 14 | 13 | Drop (3,1); sing. |
| State × % Owner-Occupied | 8 × 3 | 14 | 13 | Drop (7,3); sing. |
| State × Rent/Housing | 8 × 5 | 28 | 28 | All levels present. |
| Three-Factor Effects | | 169 | 157 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 6 | Coll. (3,2,1) & (3,3,1); conv. (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 | 51 | Coll. (2,1,2) & (2,1,3), (2,2,2) & (2,2,3), (3,4,2) & (3,4,3), (6,4,2) & (6,4,3), (7,3,2) & (7,3,3); 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 | 11 | Coll. (3,2,1) & (3,3,1), (6,2,1) & (6,3,1); conv. Drop (2,2,1); zero. |
| State × Race (3 levels) × Gender | 8 × 3 × 2 | 14 | 12 | Coll. (3,2,1) & (3,3,1), (7,2,1) & (7,3,1); conv. |
| State × Hispanicity × Gender | 8 × 2 × 2 | 7 | 7 | All levels present. |
| Total | | 422 | 389 | |

Exhibit D8.4 Covariates for 2019 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 | 191 | |
| 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 (*,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 | 4 | Drop (*,1); sing./zero. |
| Rent/Housing × % Hispanic or Latino | 3 × 5 | 8 | 7 | Drop (4,1); sing. |
| 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 | 26 | Coll. (2,3), (2,4), (2,5); conv. |
| 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 | 2 | Keep (1,2), (5,2), drop the rest; sing./zero. |
| State × % Hispanic or Latino | 8 × 3 | 14 | 13 | Drop (3,1); sing./zero. |
| State × % Owner-Occupied | 8 × 3 | 14 | 13 | Drop (7,3); sing. |
| State × Rent/Housing | 8 × 5 | 28 | 28 | All levels present. |
| Three-Factor Effects | | 169 | 147 | |
| 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) | 8 × 5 × 3 | 56 | 42 | Coll. (1,3,2) & (1,3,3), (1,4,2) & (1,4,3), (2,2,2) & (2,2,3), (2,2,2) & (2,2,3), (2,3,2), (2,3,3), (2,4,2) & (2,4,3), (4,3,2) & (4,3,3), (4,4,2) & (4,4,3), (6,1,2) & (6,1,3), (6,4,2) & (6,3,3), (7,4,2) & (7,4,3); conv. Drop (3,4,2) & (7,3,2); conv./sing./zero. |
| 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 | 9 | Coll. (2,3,1) & (3,3,1), (4,2,1) & (4,3,1), (7,2,1) & (7,3,1); conv. Drop (2,2,1), (6,2,1); sing. |
| State × Race (3 levels) × Gender | 8 × 3 × 2 | 14 | 12 | Coll. (4,2,1) & (4,3,1), (6,2,1) & (6,3,1); conv. |
| State × Hispanicity × Gender | 8 × 2 × 2 | 7 | 6 | Coll. (2,1,1) & (3,1,1); conv. |
| Total | | 422 | 377 | |

Exhibit D8.5 Covariates for 2019 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 | 159 | |
| Age × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 8 | Coll. (5,2,1) & (5,3,1); zero. Coll. (4,2,1) & (4,3,1); sing. |
| 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 | 34 | Coll. (1,1,2) & (1,1,3), repeat for all states and all age groups; zero/sing./conv. Drop (5,5,*); conv. |
| State × Age × Hispanicity | 8 × 6 × 2 | 35 | 35 | All levels present. |
| State × Age × Gender | 8 × 6 × 2 | 35 | 35 | All levels present. |
| State × Race (3 levels) × Hispanicity | 8 × 3 × 2 | 14 | 10 | Coll. (4,2,1) & (4,3,1), (5,2,1) & (5,3,1), (6,2,1) & (6,3,1), (7,2,1) & (7,3,1); conv. |
| State × Race (3 levels) × Gender | 8 × 3 × 2 | 14 | 13 | Coll. (7,2,1) & (7,3,1); conv. |
| State × Hispanicity × Gender | 8 × 2 × 2 | 7 | 7 | All levels present. |
| Total | | 347 | 304 | |

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

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Table D.9a 2019 NSDUH Person Weight GEM Modeling Summary (Model Group 9: Pacific)

| Modeling Step ¹ | Extreme Weight Proportions | | | UWE ² | # XVAR ³ | Bounds ⁴ | |
|----------------------------|----------------------------|------------|------------|------------------|---------------------|---------------------|--------------|
| | % Unweighted | % Weighted | % Outwisor | | | Nominal | Realized |
| <i>res.sdu.nr</i> | 1.53 | 3.01 | 0.83 | 1.29236 | 255 | (1.36, 1.60) | (1.36, 1.60) |
| | 2.35 | 5.24 | 0.89 | 1.34700 | 130 | (1.00, 5.00) | (1.00, 5.00) |
| | | | | | | (1.50, 1.55) | (1.50, 1.50) |
| <i>res.sdu.ps</i> | 2.35 | 5.24 | 0.89 | 1.34707 | 197 | (0.72, 1.10) | (0.72, 1.10) |
| | 1.42 | 3.48 | 1.07 | 1.39674 | 193 | (0.32, 4.99) | (0.34, 4.99) |
| | | | | | | (0.77, 3.60) | (0.80, 3.58) |
| <i>sel.per.ps</i> | 2.53 | 5.34 | 1.40 | 2.02153 | 287 | (0.64, 2.99) | (0.66, 2.99) |
| | 1.17 | 2.98 | 0.73 | 2.01436 | 259 | (0.20, 4.16) | (0.20, 4.15) |
| | | | | | | (0.94, 1.76) | (0.95, 1.76) |
| <i>res.per.nr</i> | 1.42 | 3.89 | 0.85 | 2.04129 | 287 | (1.00, 2.50) | (1.00, 2.50) |
| | 1.39 | 3.45 | 0.43 | 2.28736 | 251 | (1.00, 4.58) | (1.00, 4.57) |
| | | | | | | (1.60, 1.74) | (1.60, 1.74) |
| <i>res.per.ps</i> | 1.45 | 3.31 | 0.47 | 2.28736 | 227 | (0.20, 2.30) | (0.20, 2.30) |
| | 0.85 | 2.81 | 0.41 | 2.39684 | 218 | (0.20, 3.57) | (0.20, 3.57) |
| | | | | | | (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, 2019.

Table D.9b Distribution of Weight Adjustment Factors and Weight Products for the 2019 NSDUH Person Weight (Model Group 9: Pacific)

| Statistics | <i>sel.sdu.des</i> ¹ | | <i>res.sdu.nr</i> ¹ | | <i>res.sdu.ps</i> ¹ | | <i>sel.per.des</i> ¹ | | <i>sel.per.ps</i> ¹ | | <i>res.per.nr</i> ¹ | | <i>res.per.ps</i> 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 | 0.64 | 85 | 0.34 | 43 | 1.01 | 44 | 0.20 | 20 | 0.47 | 20 | 0.12 | 20 | |
| 1% | 73 | 1.10 | 96 | 0.65 | 93 | 1.01 | 114 | 0.58 | 105 | 1.03 | 138 | 0.21 | 122 | |
| 5% | 79 | 1.16 | 109 | 0.80 | 117 | 1.01 | 196 | 0.77 | 201 | 1.11 | 269 | 0.23 | 254 | |
| 10% | 101 | 1.20 | 141 | 0.88 | 152 | 1.01 | 322 | 0.85 | 319 | 1.17 | 436 | 0.52 | 399 | |
| 25% | 428 | 1.31 | 508 | 0.98 | 532 | 1.32 | 1,072 | 0.94 | 1,058 | 1.28 | 1,407 | 0.94 | 1,031 | |
| Median | 806 | 1.46 | 1,162 | 1.06 | 1,180 | 2.75 | 2,144 | 1.02 | 2,197 | 1.46 | 3,069 | 1.04 | 3,116 | |
| 75% | 919 | 1.62 | 1,424 | 1.15 | 1,526 | 3.51 | 4,540 | 1.09 | 4,601 | 1.72 | 6,942 | 1.16 | 7,129 | |
| 90% | 955 | 1.80 | 1,615 | 1.30 | 1,797 | 6.81 | 8,480 | 1.18 | 8,498 | 2.03 | 12,800 | 1.35 | 12,724 | |
| 95% | 1,142 | 1.93 | 1,743 | 1.46 | 2,011 | 8.31 | 10,554 | 1.27 | 10,761 | 2.27 | 17,951 | 1.48 | 17,900 | |
| 99% | 1,414 | 2.77 | 2,460 | 2.10 | 2,656 | 10.19 | 14,543 | 1.63 | 15,212 | 2.83 | 28,346 | 1.59 | 28,897 | |
| Maximum | 2,620 | 5.00 | 3,897 | 4.99 | 7,845 | 23.07 | 54,364 | 4.15 | 31,474 | 4.57 | 60,206 | 3.57 | 60,461 | |
| n | 26,341 | 17,760 | 17,760 | 17,756 | 17,756 | 13,174 | 13,174 | 13,174 | 13,174 | 8,571 | 8,571 | 8,571 | 8,571 | |
| Max/Mean | 3.88 | - | 3.89 | - | 7.27 | - | 16.21 | - | 9.24 | - | 11.50 | - | 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, 2019.

Model Group 9 Overview

Dwelling Unit Nonresponse

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

Variable collapsing or dropping was present in all two-factor effects except the percent Owner-Occupied \times percent Hispanic or Latino, percent Owner-Occupied \times Rent/Housing, and State \times Quarter interactions. Out of 104 proposed variables, 71 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 128 proposed variables, 37 were included in the model.

In the final model, a total of 130 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 was present in the Age \times Race \times Hispanicity, State \times Age \times Race, and State \times Race \times 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

For the one-factor effects, College Dorm was collapsed with Other Group Quarter. Out of 36 proposed variables, 35 were included in the model.

For the two-factor effects, variable dropping was present in the percent Owner-Occupied \times percent Black or African American, Rent/Housing \times percent Black or African American, Rent/Housing \times percent Hispanic or Latino, State \times percent Black or African American, State \times percent Hispanic or Latino, and State \times Rent/Housing interactions. Out of 145 proposed variables, 129 were included in the model.

For the three-factor effects, variable collapsing was present in the Age \times Race \times Hispanicity, State \times Age \times Race, State \times Race \times Hispanicity, and State \times Race \times Gender interactions. Out of 106 proposed variables, 95 were included in the model.

In the final model, a total of 259 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 collapsing or dropping was present in the Race × Hispanicity, 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, State × percent Hispanic or Latino, and State × Rent/Housing interactions. Out of 145 proposed variables, 129 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 106 proposed variables, 86 were included in the model.

In the final model, a total of 251 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 was present in the Age × Race × Hispanicity, State × Age × Race, State × Race × Hispanicity, and State × Race × Gender interactions. Out of 127 proposed variables, 118 were included in the model.

In the final model, a total of 218 variables were included; see [Exhibit D9.5](#).

Exhibit D9.1 Covariates for 2019 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 | 71 | |
| % 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), (2,1), (4,1); zero. Drop (3,1); 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 | 5 | Keep (1,2), (3,1), (3,2), (5,1), (5,2), drop all others; zero/sing./conv. |
| State × Group Quarter | 5 × 3 | 8 | 0 | Drop all levels; hier./conv. |
| State × % Black or African American | 5 × 3 | 8 | 3 | Keep (1,2), (3,2), (5,2), drop all others; zero/sing./conv. |
| State × % Hispanic or Latino | 5 × 3 | 8 | 6 | Drop (1,1), (2,1); zero. |
| State × % Owner-Occupied | 5 × 3 | 8 | 7 | Coll. (1,3) & (1,2); conv. |
| State × Rent/Housing | 5 × 5 | 16 | 13 | Drop (2,4), (3,4); sing. Drop (1,4); conv. |
| Three-Factor Effects | | 128 | 37 | |
| State × % Owner-Occupied × % Black or African American | 5 × 3 × 3 | 16 | 3 | Coll. (1,3,2) & (1,2,2), keep (5,3,2), (5,2,2), drop all others; hier./zero. |
| State × % Owner-Occupied × % Hispanic | 5 × 3 × 3 | 16 | 8 | Coll. (1,3,2) & (1,2,2), keep (2,3,2), (2,2,2), (3,3,2), (3,2,2), (5,3,1), (5,2,1), (5,2,2), drop all others; hier., sing. |
| State × % Owner-Occupied × Rent/Housing | 5 × 3 × 5 | 32 | 17 | 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); hier. Keep (2,2,2), (2,2,3), (3,3,1), (3,2,1), (3,2,2), (5,3,1), (5,3,2), (5,3,3), (5,3,4), (5,2,1), (5,2,2), (5,2,3), (5,2,4), drop all others; hier./zero/sing. |
| State × Rent/Housing × % Black or African American | 5 × 3 × 5 | 32 | 3 | Keep (1,2,2), (5,2,2), (5,3,2), drop all others; hier./zero/sing. |
| State × Rent/Housing × % Hispanic or Latino | 5 × 3 × 5 | 32 | 6 | Keep (1,2,2), (2,2,2), (3,1,2), (5,2,2), (5,3,2), (5,4,2), drop all others; hier./zero/sing. |
| Total | | 255 | 130 | |

Exhibit D9.2 Covariates for 2019 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 | 31 | Coll. (2,1,2) & (2,1,3); conv. |
| State × Age × Hispanicity | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Age × Gender | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 7 | Coll. (2,2,1) & (2,3,1); conv. |
| State × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 8 | All levels present. |
| State × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Total | | 197 | 193 | |

Exhibit D9.3 Covariates for 2019 NSDUH Person Weights (sel.per.ps), Model Group 9: Pacific

| 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 | 129 | |
| 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), (2,1), (4,1); zero. Drop (3,1); 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 | 3 | Drop (1,1), (2,1), (3,1); zero. Drop (5,1); sing. Drop (2,2); conv. |
| State × % Hispanic or Latino | 5 × 3 | 8 | 6 | Drop (1,1), (2,1); zero. |
| State × % Owner-Occupied | 5 × 3 | 8 | 8 | All levels present. |
| State × Rent/Housing | 5 × 5 | 16 | 14 | Drop (2,4), (3,4); sing. |
| Three-Factor Effects | | 106 | 95 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 4 | Coll. (4,2,1) & (4,3,1); sing. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv. |
| Age × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 8 | All levels present. |
| Age × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 2 | All levels present. |
| State × Age × Race (3 levels) | 5 × 5 × 3 | 32 | 29 | Coll. (2,1,2) & (2,1,3); zero. Coll. (2,4,2) & (2,4,3), (3,3,2) & (3,3,3); conv. |
| State × Age × Hispanicity | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Age × Gender | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 5 | Coll. (2,2,1) & (2,3,1); zero. Coll. (3,2,1) & (3,3,1), (5,2,1) & (5,3,1); conv. |
| State × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 7 | Coll (2,2,1) & (2,3,1); conv. |
| State × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Total | | 287 | 259 | |

Exhibit D9.4 Covariates for 2019 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 | 129 | |
| Age × Race (3 levels) | 5 × 3 | 8 | 8 | All levels present. |
| Age × Hispanicity | 5 × 2 | 4 | 4 | All levels present. |
| Age × Gender | 5 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity | 3 × 2 | 2 | 1 | Coll. (2,1) & (3,1); conv. |
| Race (3 levels) × Gender | 3 × 2 | 2 | 2 | All levels present. |
| Hispanicity × Gender | 2 × 2 | 1 | 1 | All levels present. |
| % Owner-Occupied × % Black 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), (2,1), (4,1); zero. Drop (3,1); 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 | 6 | Drop (1,1), (2,1); zero. |
| State × % Owner-Occupied | 5 × 3 | 8 | 8 | All levels present. |
| State × Rent/Housing | 5 × 5 | 16 | 14 | Drop (2,4), (3,4); sing. |
| Three-Factor Effects | | 106 | 86 | |
| Age × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 4 | Coll. (4,2,1) & (4,3,1); zero. Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv. |
| Age × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 4 | Coll. (1,2,1) & (1,3,1), repeat for all age groups; conv. |
| Age × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Race (3 levels) × Hispanicity × Gender | 3 × 2 × 2 | 2 | 1 | Coll. (2,1,1) & (3,1,1); conv. |
| State × Age × Race (3 levels) | 5 × 5 × 3 | 32 | 26 | Drop (2,1,2); zero. Coll. (3,3,2) & (3,3,3); zero. Coll. (3,4,2) & (3,4,3); sing. Coll. (2,2,2) & (2,2,3), (3,1,2) & (3,1,3), (3,2,2) & (3,2,3); conv. |
| State × Age × Hispanicity | 5 × 5 × 2 | 16 | 15 | Drop (3,4,1); conv. |
| State × Age × Gender | 5 × 5 × 2 | 16 | 16 | All levels present. |
| State × Race (3 levels) × Hispanicity | 5 × 3 × 2 | 8 | 5 | Drop (2,2,1); zero. Coll. (3,2,1) & (3,3,1), (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 | 251 | |

Exhibit D9.5 Covariates for 2019 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 | 118 | |
| Age × Race (3 levels) × Hispanicity | 6 × 3 × 2 | 10 | 8 | Coll. (5,2,1) & (5,3,1); sing. Coll. (4,2,1) & (4,3,1); 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. (2,1,2) & (2,1,3), (3,3,2) & (3,3,3); zero. Coll. (2,5,2) & (2,5,3), (3,5,2) & (3,5,3); sing. |
| State × Age × Hispanicity | 5 × 6 × 2 | 20 | 20 | All levels present. |
| 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); zero. Coll. (3,2,1) & (3,3,1); conv. |
| State × Race (3 levels) × Gender | 5 × 3 × 2 | 8 | 7 | Coll. (2,2,1) & (2,3,1); conv. |
| State × Hispanicity × Gender | 5 × 2 × 2 | 4 | 4 | All levels present. |
| Total | | 227 | 218 | |

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Appendix E
Evaluation of Calibration Weights: Response Rates

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Table E.1 2019 NSDUH Weighted Response Rates: United States, District of Columbia, and the 50 States

| 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 |
| United States | 245,763 | 210,244 | 148,023 | 85.46% | 70.50% | 101,509 | 67,625 | 64.92% | 64.90% |
| Alabama | 3,287 | 2,616 | 2,213 | 79.23% | 84.87% | 1,424 | 978 | 66.95% | 67.25% |
| Alaska | 3,622 | 2,858 | 2,066 | 78.15% | 72.18% | 1,468 | 988 | 66.36% | 66.73% |
| Arizona | 3,474 | 2,943 | 1,978 | 80.40% | 67.41% | 1,408 | 932 | 65.42% | 65.81% |
| Arkansas | 3,031 | 2,374 | 2,001 | 77.97% | 83.99% | 1,273 | 936 | 71.78% | 72.29% |
| California | 15,105 | 14,044 | 8,774 | 92.85% | 61.66% | 7,274 | 4,677 | 60.87% | 60.81% |
| Colorado | 3,417 | 2,905 | 1,995 | 81.02% | 68.81% | 1,450 | 932 | 64.29% | 63.87% |
| Connecticut | 3,401 | 3,087 | 2,080 | 90.89% | 67.13% | 1,580 | 985 | 59.36% | 59.61% |
| Delaware | 5,039 | 4,227 | 2,619 | 75.30% | 61.54% | 1,560 | 935 | 59.35% | 58.86% |
| District of Columbia | 7,768 | 6,704 | 3,400 | 87.10% | 48.17% | 1,244 | 961 | 74.87% | 74.81% |
| Florida | 11,805 | 9,736 | 7,032 | 78.23% | 70.76% | 4,696 | 3,331 | 67.05% | 67.31% |
| Georgia | 4,370 | 3,759 | 2,947 | 85.92% | 78.40% | 2,062 | 1,519 | 72.28% | 72.39% |
| Hawaii | 3,708 | 3,190 | 2,076 | 85.38% | 65.02% | 1,540 | 1,007 | 65.07% | 64.15% |
| Idaho | 2,635 | 2,258 | 1,774 | 83.70% | 78.86% | 1,350 | 960 | 70.54% | 69.12% |
| Illinois | 10,625 | 9,412 | 5,602 | 88.78% | 58.84% | 4,157 | 2,361 | 54.31% | 54.03% |
| Indiana | 3,503 | 2,972 | 2,060 | 84.96% | 69.26% | 1,445 | 974 | 66.00% | 66.24% |
| Iowa | 3,423 | 2,943 | 2,286 | 86.07% | 77.44% | 1,422 | 968 | 68.30% | 68.22% |
| Kansas | 3,011 | 2,500 | 1,947 | 82.55% | 77.84% | 1,403 | 951 | 67.44% | 67.66% |
| Kentucky | 3,070 | 2,570 | 2,005 | 83.42% | 78.07% | 1,438 | 978 | 66.96% | 67.17% |
| Louisiana | 2,849 | 2,292 | 1,967 | 80.30% | 85.79% | 1,329 | 936 | 67.54% | 68.08% |
| Maine | 4,465 | 3,455 | 2,723 | 75.95% | 78.51% | 1,487 | 961 | 63.23% | 63.15% |
| Maryland | 3,328 | 2,991 | 2,000 | 89.78% | 67.01% | 1,362 | 959 | 69.88% | 70.12% |
| Massachusetts | 4,191 | 3,825 | 2,434 | 90.94% | 64.04% | 1,633 | 955 | 55.84% | 56.19% |
| Michigan | 7,940 | 6,736 | 5,231 | 84.31% | 77.62% | 3,496 | 2,497 | 70.19% | 70.12% |
| Minnesota | 3,518 | 3,117 | 2,299 | 88.78% | 73.14% | 1,410 | 962 | 68.88% | 68.18% |
| Mississippi | 2,884 | 2,393 | 1,976 | 82.38% | 83.25% | 1,514 | 1,041 | 67.39% | 67.65% |

(continued)

Table E.1 2019 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 | 3,357 | 2,768 | 2,184 | 80.07% | 78.81% | 1,422 | 968 | 66.50% | 66.26% |
| Montana | 3,747 | 3,117 | 2,437 | 82.00% | 78.35% | 1,501 | 963 | 65.51% | 65.64% |
| Nebraska | 3,086 | 2,654 | 2,013 | 86.34% | 75.75% | 1,371 | 999 | 73.34% | 72.92% |
| Nevada | 3,376 | 3,094 | 1,967 | 91.62% | 63.68% | 1,401 | 978 | 66.40% | 66.74% |
| New Hampshire | 3,977 | 3,324 | 2,422 | 81.72% | 72.61% | 1,537 | 961 | 63.83% | 63.35% |
| New Jersey | 5,317 | 4,802 | 3,227 | 90.24% | 67.46% | 2,461 | 1,490 | 59.57% | 58.99% |
| New Mexico | 2,954 | 2,380 | 1,758 | 80.44% | 73.95% | 1,309 | 917 | 68.44% | 70.04% |
| New York | 14,394 | 12,697 | 7,419 | 87.92% | 57.76% | 5,485 | 3,260 | 56.12% | 56.36% |
| North Carolina | 5,701 | 4,794 | 3,234 | 83.73% | 67.54% | 2,181 | 1,572 | 70.71% | 70.15% |
| North Dakota | 3,911 | 3,200 | 2,391 | 81.84% | 75.04% | 1,544 | 938 | 59.30% | 59.32% |
| Ohio | 8,295 | 7,188 | 5,206 | 86.21% | 72.53% | 3,626 | 2,446 | 66.82% | 66.86% |
| Oklahoma | 2,729 | 2,325 | 1,801 | 85.10% | 77.40% | 1,393 | 952 | 68.31% | 68.14% |
| Oregon | 3,250 | 2,943 | 2,286 | 90.32% | 77.34% | 1,417 | 954 | 66.80% | 66.45% |
| Pennsylvania | 9,375 | 8,287 | 5,684 | 88.29% | 68.75% | 3,627 | 2,386 | 65.37% | 64.99% |
| Rhode Island | 4,226 | 3,613 | 2,317 | 81.63% | 64.01% | 1,432 | 930 | 62.09% | 62.52% |
| South Carolina | 3,475 | 2,796 | 1,996 | 80.02% | 71.48% | 1,257 | 901 | 71.55% | 71.27% |
| South Dakota | 3,437 | 2,747 | 2,182 | 79.30% | 79.51% | 1,376 | 935 | 69.51% | 68.69% |
| Tennessee | 2,915 | 2,451 | 1,915 | 84.29% | 78.21% | 1,419 | 987 | 67.93% | 67.88% |
| Texas | 8,916 | 7,523 | 5,652 | 84.33% | 74.87% | 4,666 | 3,238 | 66.61% | 66.80% |
| Utah | 1,972 | 1,710 | 1,271 | 86.71% | 74.58% | 1,335 | 947 | 70.23% | 70.00% |
| Vermont | 4,052 | 3,172 | 2,445 | 77.79% | 77.01% | 1,461 | 944 | 64.36% | 65.46% |
| Virginia | 5,295 | 4,531 | 3,269 | 85.58% | 71.44% | 2,127 | 1,474 | 67.04% | 67.00% |
| Washington | 3,782 | 3,306 | 2,558 | 87.05% | 77.58% | 1,475 | 945 | 63.17% | 62.14% |
| West Virginia | 4,457 | 3,671 | 2,785 | 82.39% | 75.87% | 1,610 | 968 | 58.99% | 59.30% |
| Wisconsin | 3,250 | 2,768 | 2,196 | 83.66% | 79.19% | 1,400 | 958 | 68.06% | 67.82% |
| Wyoming | 3,048 | 2,476 | 1,923 | 81.26% | 78.11% | 1,251 | 930 | 76.14% | 75.93% |

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, 2019.

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

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Table F.1 2019 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 | 148,023 | 3.24% | 4.65% | 0.72% | 2.14% | 3.86% | 0.65% | 1.42% | 2.97% | 0.75% |
| Alabama | 2,213 | 0.00% | 0.00% | 0.00% | 1.31% | 2.11% | 0.16% | 0.90% | 1.69% | 0.38% |
| Alaska | 2,066 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.82% | 1.88% | 0.34% |
| Arizona | 1,978 | 10.01% | 12.37% | 2.38% | 1.42% | 2.22% | 0.07% | 0.76% | 2.07% | 0.68% |
| Arkansas | 2,001 | 0.60% | 1.07% | 0.08% | 0.60% | 1.18% | 0.08% | 0.85% | 1.78% | 0.39% |
| California | 8,774 | 2.02% | 3.77% | 1.17% | 4.24% | 6.84% | 1.24% | 1.54% | 3.67% | 1.25% |
| Colorado | 1,995 | 1.50% | 3.11% | 1.41% | 1.65% | 3.01% | 1.02% | 2.21% | 3.68% | 0.84% |
| Connecticut | 2,080 | 0.00% | 0.00% | 0.00% | 0.14% | 0.56% | 0.22% | 0.82% | 2.33% | 0.44% |
| Delaware | 2,619 | 0.46% | 1.78% | 0.41% | 1.76% | 5.27% | 1.33% | 0.80% | 1.91% | 0.29% |
| District of Columbia | 3,400 | 2.26% | 5.33% | 1.36% | 1.76% | 7.03% | 0.19% | 1.24% | 3.10% | 0.43% |
| Florida | 7,032 | 3.87% | 9.17% | 3.03% | 3.40% | 6.36% | 0.93% | 0.53% | 1.12% | 0.13% |
| Georgia | 2,947 | 10.65% | 11.09% | 1.26% | 0.34% | 0.42% | 0.05% | 1.56% | 3.63% | 0.84% |
| Hawaii | 2,076 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 1.97% | 4.61% | 1.01% |
| Idaho | 1,774 | 13.59% | 18.47% | 1.34% | 5.47% | 7.60% | 1.20% | 1.24% | 3.08% | 0.82% |
| Illinois | 5,602 | 14.51% | 19.55% | 1.86% | 3.27% | 5.13% | 1.14% | 0.55% | 1.32% | 0.20% |
| Indiana | 2,060 | 4.08% | 4.47% | 0.15% | 2.23% | 2.59% | 0.05% | 3.79% | 5.77% | 0.93% |
| Iowa | 2,286 | 1.22% | 1.74% | 0.05% | 2.62% | 4.97% | 1.37% | 0.31% | 0.71% | 0.16% |
| Kansas | 1,947 | 0.00% | 0.00% | 0.00% | 0.46% | 0.87% | 0.07% | 1.64% | 3.16% | 0.58% |
| Kentucky | 2,005 | 0.00% | 0.00% | 0.00% | 1.35% | 1.46% | 0.02% | 1.45% | 2.99% | 0.64% |
| Louisiana | 1,967 | 0.00% | 0.00% | 0.00% | 3.10% | 3.94% | 0.25% | 1.32% | 1.01% | 0.29% |
| Maine | 2,723 | 13.26% | 16.72% | 0.82% | 5.18% | 7.15% | 0.39% | 1.07% | 2.28% | 0.28% |
| Maryland | 2,000 | 0.00% | 0.00% | 0.00% | 1.00% | 1.77% | 0.22% | 0.80% | 1.95% | 0.27% |
| Massachusetts | 2,434 | 13.56% | 17.28% | 2.58% | 0.00% | 0.00% | 0.00% | 0.99% | 2.43% | 0.66% |
| Michigan | 5,231 | 0.25% | 0.39% | 0.04% | 1.57% | 2.57% | 0.56% | 1.22% | 2.36% | 0.42% |
| Minnesota | 2,299 | 4.39% | 5.43% | 0.16% | 3.52% | 6.79% | 1.43% | 1.96% | 4.17% | 0.65% |
| Mississippi | 1,976 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 1.52% | 3.77% | 1.11% |

(continued)

Table F.1 2019 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 | 2,184 | 16.16% | 21.48% | 1.62% | 1.74% | 2.43% | 0.26% | 1.69% | 3.15% | 0.44% |
| Montana | 2,437 | 1.56% | 2.51% | 0.45% | 1.19% | 1.63% | 0.10% | 0.37% | 0.52% | 0.07% |
| Nebraska | 2,013 | 0.00% | 0.00% | 0.00% | 1.79% | 2.69% | 0.26% | 1.59% | 3.75% | 1.01% |
| Nevada | 1,967 | 7.22% | 7.16% | 0.83% | 4.22% | 6.03% | 1.24% | 0.92% | 2.65% | 0.94% |
| New Hampshire | 2,422 | 2.39% | 3.69% | 0.17% | 0.70% | 1.91% | 0.73% | 0.66% | 1.40% | 0.23% |
| New Jersey | 3,227 | 1.77% | 2.12% | 0.04% | 1.02% | 2.23% | 0.27% | 2.42% | 5.54% | 1.62% |
| New Mexico | 1,758 | 4.66% | 4.71% | 0.15% | 4.44% | 5.04% | 0.18% | 5.06% | 10.22% | 3.13% |
| New York | 7,419 | 2.02% | 3.21% | 0.17% | 1.42% | 2.87% | 0.38% | 1.93% | 5.95% | 2.08% |
| North Carolina | 3,234 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 1.21% | 2.09% | 0.33% |
| North Dakota | 2,391 | 0.00% | 0.00% | 0.00% | 0.92% | 1.70% | 0.20% | 1.09% | 2.38% | 0.44% |
| Ohio | 5,206 | 0.00% | 0.00% | 0.00% | 4.17% | 5.96% | 1.63% | 0.40% | 0.53% | 0.07% |
| Oklahoma | 1,801 | 0.00% | 0.00% | 0.00% | 0.56% | 1.48% | 0.54% | 0.61% | 1.16% | 0.13% |
| Oregon | 2,286 | 4.11% | 4.47% | 0.67% | 1.14% | 1.49% | 0.02% | 1.49% | 3.14% | 0.67% |
| Pennsylvania | 5,684 | 0.93% | 2.36% | 0.78% | 2.80% | 4.38% | 0.97% | 1.28% | 2.66% | 0.65% |
| Rhode Island | 2,317 | 0.26% | 1.00% | 0.68% | 1.08% | 3.44% | 1.29% | 2.85% | 6.10% | 1.16% |
| South Carolina | 1,996 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 1.55% | 3.09% | 0.73% |
| South Dakota | 2,182 | 0.00% | 0.00% | 0.00% | 0.60% | 1.17% | 0.14% | 2.93% | 6.59% | 1.57% |
| Tennessee | 1,915 | 13.68% | 17.43% | 1.26% | 1.36% | 2.74% | 0.72% | 1.93% | 3.78% | 1.17% |
| Texas | 5,652 | 0.00% | 0.00% | 0.00% | 3.63% | 8.33% | 1.00% | 0.74% | 2.10% | 0.63% |
| Utah | 1,271 | 8.34% | 6.65% | 1.16% | 0.00% | 0.00% | 0.00% | 1.10% | 3.13% | 0.99% |
| Vermont | 2,445 | 2.04% | 1.95% | 0.23% | 2.41% | 4.86% | 1.39% | 3.15% | 5.03% | 0.87% |
| Virginia | 3,269 | 0.43% | 0.25% | 0.01% | 2.57% | 3.07% | 0.45% | 0.61% | 1.39% | 0.22% |
| Washington | 2,558 | 0.00% | 0.00% | 0.00% | 0.74% | 1.15% | 0.01% | 1.13% | 2.72% | 0.60% |
| West Virginia | 2,785 | 0.00% | 0.00% | 0.00% | 4.63% | 4.65% | 0.45% | 1.80% | 2.88% | 0.55% |
| Wisconsin | 2,196 | 2.82% | 3.82% | 0.68% | 2.14% | 3.70% | 1.33% | 5.46% | 8.64% | 1.54% |
| Wyoming | 1,923 | 10.66% | 13.00% | 1.97% | 3.48% | 3.86% | 0.17% | 2.08% | 2.24% | 0.65% |

¹ nr = nonresponse adjustment.

² ps = poststratification adjustment.

³ Weighted extreme value percentage = $100 * \frac{\sum_k w_{ek}}{\sum_k w_k}$, 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 = $100 * \frac{\sum_k (w_{ek} - b_k)}{\sum_k w_k}$, 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, 2019.

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

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Table G.1 2019 NSDUH Selected Person-Level Percentages of Extreme Weights and Outwinors: 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 | % Outwinor ³ | % Unweighted | % Weighted ² | % Outwinor ³ |
| United States | 101,509 | 2.54% | 5.99% | 1.51% | 1.66% | 4.09% | 0.78% |
| Alabama | 1,424 | 1.76% | 4.28% | 1.17% | 1.62% | 3.85% | 0.67% |
| Alaska | 1,468 | 1.57% | 4.24% | 0.79% | 0.75% | 1.67% | 0.31% |
| Arizona | 1,408 | 2.13% | 5.91% | 1.74% | 2.56% | 6.52% | 1.30% |
| Arkansas | 1,273 | 1.26% | 2.56% | 0.47% | 0.55% | 0.78% | 0.12% |
| California | 7,274 | 2.64% | 5.78% | 1.55% | 1.54% | 3.87% | 0.88% |
| Colorado | 1,450 | 2.00% | 4.31% | 1.07% | 0.97% | 2.56% | 0.23% |
| Connecticut | 1,580 | 1.84% | 4.82% | 0.93% | 1.46% | 5.75% | 1.12% |
| Delaware | 1,560 | 2.69% | 6.19% | 0.73% | 1.35% | 2.54% | 0.30% |
| District of Columbia | 1,244 | 2.49% | 9.65% | 2.17% | 0.88% | 3.11% | 0.55% |
| Florida | 4,696 | 2.30% | 6.44% | 1.12% | 1.94% | 5.77% | 0.85% |
| Georgia | 2,062 | 2.57% | 6.80% | 2.17% | 1.31% | 2.96% | 0.48% |
| Hawaii | 1,540 | 4.68% | 11.16% | 3.46% | 1.75% | 4.36% | 1.27% |
| Idaho | 1,350 | 3.11% | 7.54% | 1.52% | 2.00% | 5.45% | 1.45% |
| Illinois | 4,157 | 4.14% | 12.11% | 2.84% | 2.77% | 6.65% | 0.84% |
| Indiana | 1,445 | 3.81% | 9.68% | 2.43% | 2.35% | 6.41% | 0.97% |
| Iowa | 1,422 | 1.13% | 2.50% | 0.33% | 0.70% | 1.92% | 0.43% |
| Kansas | 1,403 | 2.49% | 6.31% | 2.02% | 1.50% | 2.77% | 0.49% |
| Kentucky | 1,438 | 2.85% | 6.40% | 1.74% | 1.46% | 3.00% | 0.45% |
| Louisiana | 1,329 | 1.50% | 3.25% | 0.46% | 1.50% | 4.84% | 0.78% |
| Maine | 1,487 | 1.75% | 3.30% | 0.38% | 3.43% | 7.43% | 2.47% |
| Maryland | 1,362 | 1.84% | 4.71% | 1.04% | 1.25% | 2.12% | 0.27% |
| Massachusetts | 1,633 | 1.84% | 5.14% | 1.33% | 1.78% | 5.38% | 1.26% |
| Michigan | 3,496 | 2.55% | 4.68% | 0.83% | 1.12% | 2.51% | 0.26% |
| Minnesota | 1,410 | 2.20% | 5.40% | 2.25% | 1.28% | 2.39% | 0.60% |
| Mississippi | 1,514 | 3.37% | 6.80% | 1.43% | 1.59% | 3.49% | 0.93% |

(continued)

Table G.1 2019 NSDUH Selected Person-Level Percentages of Extreme Weights and Outwinors: 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 | % Outwinor ³ | % Unweighted | % Weighted ² | % Outwinor ³ |
| Missouri | 1,422 | 2.60% | 4.00% | 0.69% | 1.34% | 3.10% | 0.74% |
| Montana | 1,501 | 1.80% | 2.41% | 0.45% | 0.53% | 0.93% | 0.07% |
| Nebraska | 1,371 | 1.97% | 5.64% | 1.77% | 2.84% | 7.54% | 2.31% |
| Nevada | 1,401 | 1.57% | 4.47% | 1.45% | 1.21% | 4.07% | 1.00% |
| New Hampshire | 1,537 | 2.28% | 4.41% | 1.41% | 1.24% | 2.49% | 0.57% |
| New Jersey | 2,461 | 3.37% | 9.27% | 3.08% | 1.63% | 3.80% | 0.78% |
| New Mexico | 1,309 | 5.35% | 12.85% | 3.83% | 3.59% | 7.06% | 1.62% |
| New York | 5,485 | 3.08% | 8.90% | 2.91% | 2.26% | 6.46% | 1.72% |
| North Carolina | 2,181 | 2.15% | 4.23% | 0.82% | 2.02% | 3.33% | 0.45% |
| North Dakota | 1,544 | 1.75% | 4.11% | 0.71% | 0.91% | 1.76% | 0.26% |
| Ohio | 3,626 | 1.77% | 2.48% | 0.39% | 0.97% | 1.31% | 0.13% |
| Oklahoma | 1,393 | 1.22% | 4.93% | 1.34% | 0.79% | 1.79% | 0.14% |
| Oregon | 1,417 | 1.76% | 3.61% | 1.09% | 1.55% | 3.42% | 0.85% |
| Pennsylvania | 3,627 | 2.73% | 4.93% | 0.99% | 2.26% | 5.33% | 0.96% |
| Rhode Island | 1,432 | 3.07% | 6.76% | 1.59% | 3.28% | 7.98% | 2.09% |
| South Carolina | 1,257 | 2.63% | 4.04% | 0.63% | 1.19% | 1.71% | 0.34% |
| South Dakota | 1,376 | 4.43% | 10.14% | 2.24% | 1.74% | 3.39% | 0.79% |
| Tennessee | 1,419 | 2.47% | 5.44% | 1.36% | 1.90% | 5.90% | 1.21% |
| Texas | 4,666 | 2.01% | 5.77% | 1.45% | 1.41% | 3.64% | 0.55% |
| Utah | 1,335 | 3.15% | 8.35% | 2.64% | 1.12% | 2.62% | 0.33% |
| Vermont | 1,461 | 3.70% | 6.64% | 2.06% | 3.01% | 5.14% | 1.32% |
| Virginia | 2,127 | 1.55% | 4.20% | 0.85% | 1.60% | 3.81% | 0.53% |
| Washington | 1,475 | 1.56% | 3.59% | 0.85% | 1.42% | 2.79% | 0.43% |
| West Virginia | 1,610 | 2.86% | 4.98% | 1.03% | 0.56% | 1.09% | 0.43% |
| Wisconsin | 1,400 | 4.14% | 8.60% | 1.96% | 1.43% | 3.19% | 0.79% |
| Wyoming | 1,251 | 1.92% | 3.55% | 0.80% | 1.20% | 2.55% | 0.53% |

G-4

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 = $100 * \frac{\sum_k w_{ek}}{\sum_k w_k}$, where w_{ek} denotes the weight for extreme weights and w_k denotes the weight for both extreme weights and nonextreme weights.

³ Outwinor weight percentage = $100 * \frac{\sum_k (w_{ek} - b_k)}{\sum_k w_k}$, 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, 2019.

Table G.2 2019 NSDUH Respondent Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States

G-5

| 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 | 67,625 | 1.70% | 4.15% | 0.78% | 1.56% | 4.19% | 0.68% | 1.60% | 4.24% | 0.71% | 0.87% | 2.60% | 0.49% |
| Alabama | 978 | 1.12% | 2.37% | 0.39% | 1.23% | 2.77% | 0.50% | 1.23% | 2.77% | 0.50% | 0.82% | 2.79% | 0.86% |
| Alaska | 988 | 1.21% | 2.68% | 0.44% | 0.91% | 2.80% | 0.67% | 1.11% | 3.18% | 0.76% | 1.42% | 4.88% | 0.99% |
| Arizona | 932 | 3.00% | 8.32% | 1.58% | 0.86% | 1.48% | 0.22% | 1.18% | 2.12% | 0.33% | 0.97% | 2.56% | 0.15% |
| Arkansas | 936 | 0.75% | 1.04% | 0.20% | 1.39% | 3.32% | 0.48% | 1.28% | 2.82% | 0.48% | 0.43% | 1.36% | 0.28% |
| California | 4,677 | 1.62% | 4.24% | 0.90% | 1.75% | 3.67% | 0.38% | 1.75% | 3.39% | 0.41% | 0.77% | 2.89% | 0.39% |
| Colorado | 932 | 1.07% | 2.94% | 0.22% | 1.07% | 2.97% | 0.25% | 1.07% | 2.97% | 0.22% | 0.43% | 1.09% | 0.14% |
| Connecticut | 985 | 1.32% | 6.27% | 1.42% | 1.93% | 10.78% | 2.30% | 2.23% | 11.33% | 2.40% | 1.22% | 7.66% | 2.52% |
| Delaware | 935 | 1.50% | 3.17% | 0.40% | 0.86% | 2.52% | 0.30% | 0.75% | 2.26% | 0.26% | 0.43% | 0.65% | 0.14% |
| District of Columbia | 961 | 1.14% | 3.37% | 0.58% | 1.46% | 5.60% | 0.52% | 1.56% | 6.01% | 0.53% | 0.94% | 3.21% | 0.26% |
| Florida | 3,331 | 1.83% | 5.63% | 0.90% | 1.44% | 4.71% | 1.03% | 1.56% | 4.95% | 1.06% | 0.42% | 1.36% | 0.12% |
| Georgia | 1,519 | 1.51% | 3.15% | 0.56% | 1.71% | 4.52% | 0.76% | 1.78% | 4.72% | 0.78% | 1.18% | 3.46% | 0.66% |
| Hawaii | 1,007 | 1.69% | 4.80% | 1.49% | 2.09% | 4.89% | 0.48% | 1.99% | 4.70% | 0.50% | 0.99% | 1.87% | 0.25% |
| Idaho | 960 | 2.19% | 4.82% | 0.91% | 1.88% | 4.71% | 1.26% | 1.77% | 4.51% | 1.24% | 1.35% | 3.57% | 0.65% |
| Illinois | 2,361 | 2.46% | 6.27% | 0.66% | 2.80% | 6.48% | 0.74% | 2.58% | 6.13% | 0.84% | 1.06% | 4.16% | 0.57% |
| Indiana | 974 | 2.36% | 6.59% | 0.98% | 1.44% | 5.54% | 0.99% | 1.54% | 5.69% | 1.00% | 0.72% | 3.33% | 1.14% |
| Iowa | 968 | 0.83% | 1.52% | 0.27% | 2.38% | 7.24% | 1.31% | 2.38% | 7.24% | 1.25% | 0.93% | 3.19% | 0.67% |
| Kansas | 951 | 1.47% | 2.93% | 0.56% | 1.16% | 2.67% | 0.48% | 1.05% | 2.49% | 0.48% | 0.95% | 6.35% | 3.22% |
| Kentucky | 978 | 1.84% | 2.91% | 0.39% | 1.64% | 4.37% | 0.61% | 1.74% | 4.49% | 0.63% | 0.72% | 2.29% | 0.57% |
| Louisiana | 936 | 1.50% | 4.54% | 0.56% | 0.75% | 1.84% | 0.17% | 0.75% | 1.68% | 0.12% | 0.85% | 1.43% | 0.33% |
| Maine | 961 | 3.75% | 8.11% | 2.22% | 3.85% | 9.02% | 1.55% | 3.75% | 8.90% | 1.49% | 1.66% | 4.82% | 1.55% |
| Maryland | 959 | 1.36% | 2.79% | 0.32% | 1.15% | 3.40% | 0.55% | 1.46% | 3.84% | 0.59% | 0.21% | 0.27% | 0.05% |
| Massachusetts | 955 | 1.68% | 4.63% | 1.11% | 2.62% | 8.81% | 1.25% | 2.41% | 8.45% | 1.25% | 1.78% | 5.02% | 0.88% |
| Michigan | 2,497 | 1.00% | 2.28% | 0.23% | 0.64% | 1.75% | 0.20% | 0.92% | 2.35% | 0.28% | 0.52% | 1.90% | 0.39% |
| Minnesota | 962 | 1.46% | 2.87% | 0.68% | 1.35% | 4.18% | 0.99% | 1.35% | 4.18% | 1.26% | 0.73% | 3.34% | 0.73% |
| Mississippi | 1,041 | 1.73% | 4.27% | 1.10% | 0.77% | 2.89% | 0.70% | 0.77% | 2.89% | 0.70% | 0.48% | 1.78% | 0.31% |

(continued)

Table G.2 2019 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 | 968 | 1.86% | 3.20% | 0.67% | 1.45% | 3.94% | 0.71% | 1.45% | 3.94% | 0.71% | 0.62% | 1.49% | 0.36% |
| Montana | 963 | 0.62% | 1.08% | 0.09% | 0.73% | 1.21% | 0.23% | 0.73% | 1.45% | 0.45% | 0.52% | 1.02% | 0.26% |
| Nebraska | 999 | 2.50% | 6.52% | 2.23% | 2.70% | 7.11% | 2.08% | 2.50% | 6.65% | 1.97% | 2.20% | 7.46% | 2.62% |
| Nevada | 978 | 1.53% | 4.99% | 1.22% | 1.84% | 5.06% | 0.70% | 1.94% | 5.19% | 0.68% | 0.20% | 1.21% | 0.02% |
| New Hampshire | 961 | 1.66% | 3.68% | 0.60% | 1.25% | 4.10% | 0.85% | 1.35% | 4.33% | 0.88% | 0.94% | 3.70% | 1.11% |
| New Jersey | 1,490 | 1.95% | 5.24% | 1.18% | 1.28% | 2.96% | 0.43% | 1.34% | 3.03% | 0.52% | 0.81% | 2.62% | 0.25% |
| New Mexico | 917 | 3.38% | 6.77% | 1.88% | 3.16% | 8.04% | 1.83% | 3.49% | 8.32% | 1.89% | 1.85% | 4.11% | 1.00% |
| New York | 3,260 | 2.39% | 7.41% | 2.19% | 2.42% | 7.03% | 0.81% | 2.36% | 6.97% | 0.79% | 0.71% | 2.13% | 0.31% |
| North Carolina | 1,572 | 1.65% | 2.84% | 0.40% | 1.59% | 2.62% | 0.47% | 1.59% | 2.67% | 0.51% | 1.27% | 2.71% | 0.38% |
| North Dakota | 938 | 0.85% | 1.66% | 0.24% | 0.75% | 2.36% | 0.48% | 0.75% | 2.36% | 0.48% | 0.64% | 2.70% | 0.50% |
| Ohio | 2,446 | 1.31% | 1.96% | 0.16% | 0.61% | 1.51% | 0.23% | 0.61% | 1.51% | 0.22% | 0.41% | 0.77% | 0.04% |
| Oklahoma | 952 | 0.74% | 1.46% | 0.12% | 0.11% | 0.39% | 0.11% | 0.11% | 0.39% | 0.11% | 0.32% | 0.75% | 0.04% |
| Oregon | 954 | 1.47% | 2.95% | 0.74% | 1.57% | 4.68% | 1.06% | 1.47% | 4.28% | 1.00% | 0.42% | 1.73% | 0.60% |
| Pennsylvania | 2,386 | 1.84% | 5.30% | 0.84% | 1.63% | 4.94% | 1.00% | 1.68% | 5.19% | 1.09% | 1.17% | 3.52% | 0.58% |
| Rhode Island | 930 | 3.55% | 7.64% | 1.98% | 3.76% | 14.25% | 3.01% | 3.87% | 14.52% | 3.25% | 2.37% | 6.89% | 2.13% |
| South Carolina | 901 | 1.22% | 1.86% | 0.32% | 1.33% | 3.83% | 1.01% | 1.44% | 4.15% | 1.03% | 1.00% | 2.83% | 0.74% |
| South Dakota | 935 | 2.03% | 3.49% | 0.48% | 1.71% | 4.86% | 1.16% | 1.82% | 5.44% | 1.11% | 0.64% | 2.15% | 0.91% |
| Tennessee | 987 | 2.03% | 6.12% | 1.30% | 2.03% | 5.25% | 1.18% | 2.33% | 6.55% | 1.25% | 1.72% | 4.88% | 1.10% |
| Texas | 3,238 | 1.33% | 3.02% | 0.47% | 1.54% | 4.03% | 0.59% | 1.36% | 3.68% | 0.58% | 0.34% | 0.71% | 0.06% |
| Utah | 947 | 0.63% | 1.56% | 0.21% | 0.53% | 1.51% | 0.23% | 0.53% | 1.51% | 0.20% | 0.42% | 1.24% | 0.19% |
| Vermont | 944 | 3.50% | 5.59% | 1.28% | 1.91% | 4.55% | 0.63% | 1.91% | 4.54% | 0.65% | 1.17% | 2.44% | 0.79% |
| Virginia | 1,474 | 1.76% | 4.63% | 0.56% | 0.75% | 2.03% | 0.22% | 1.09% | 2.63% | 0.32% | 1.42% | 5.29% | 1.03% |
| Washington | 945 | 1.69% | 3.28% | 0.53% | 0.85% | 2.58% | 0.44% | 1.06% | 3.14% | 0.53% | 0.95% | 2.68% | 0.31% |
| West Virginia | 968 | 0.72% | 1.23% | 0.46% | 1.14% | 2.18% | 0.30% | 1.34% | 2.65% | 0.39% | 0.41% | 0.97% | 0.18% |
| Wisconsin | 958 | 1.36% | 2.04% | 0.41% | 1.77% | 4.81% | 1.04% | 1.77% | 4.99% | 1.20% | 1.98% | 4.66% | 0.78% |
| Wyoming | 930 | 1.40% | 2.99% | 0.67% | 1.18% | 3.41% | 0.90% | 1.29% | 3.57% | 0.97% | 0.65% | 2.74% | 0.91% |

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, 2019.

Appendix H
Evaluation of Calibration Weights: Slippage Rates

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Table H.1 2019 NSDUH Slippage Rates: United States

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 67,625 | 275,221,248 | 275,221,248 | 275,221,248 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 15,069 | 68,624,229 | 68,624,229 | 68,624,229 | 0.00 | 0.00 |
| | Quarter 2 | 18,398 | 68,733,580 | 68,733,580 | 68,733,580 | 0.00 | 0.00 |
| | Quarter 3 | 17,731 | 68,867,186 | 68,867,186 | 68,867,186 | 0.00 | 0.00 |
| | Quarter 4 | 16,427 | 68,996,253 | 68,996,253 | 68,996,253 | 0.00 | 0.00 |
| Age Group | 12-17 | 16,858 | 24,882,482 | 24,905,038 | 24,905,038 | -0.09 | 0.00 |
| | 18-25 | 16,516 | 33,664,029 | 33,732,492 | 33,732,492 | -0.20 | 0.00 |
| | 26-34 | 10,207 | 40,359,133 | 40,322,988 | 40,322,988 | 0.09 | 0.00 |
| | 35-49 | 13,535 | 60,876,354 | 60,959,883 | 60,959,883 | -0.14 | 0.00 |
| | 50-64 | 5,741 | 64,209,625 | 62,460,070 | 62,460,070 | 2.80 | 0.00 |
| | 65+ | 4,768 | 51,229,626 | 52,840,776 | 52,840,776 | -3.05 | 0.00 |
| Race | White | 48,511 | 201,801,501 | 212,599,175 | 212,599,175 | -5.08 | 0.00 |
| | Black or African American | 9,179 | 36,853,572 | 35,474,918 | 35,474,918 | 3.89 | 0.00 |
| | American Indian/Alaska Native | 2,669 | 9,105,512 | 3,349,366 | 3,349,366 | 171.86 | 0.00 |
| | Asian | 3,898 | 18,928,015 | 17,526,738 | 17,526,738 | 8.00 | 0.00 |
| | Two or More Races | 3,368 | 8,532,648 | 6,271,052 | 6,271,052 | 36.06 | 0.00 |
| Hispanicity | Hispanic or Latino | 12,716 | 48,134,741 | 47,466,163 | 47,466,163 | 1.41 | 0.00 |
| | Non-Hispanic or Latino | 54,909 | 227,086,508 | 227,755,085 | 227,755,085 | -0.29 | 0.00 |
| Gender | Male | 32,496 | 133,531,309 | 133,543,663 | 133,543,663 | -0.01 | 0.00 |
| | Female | 35,129 | 141,689,940 | 141,677,585 | 141,677,585 | 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, 2019.

Table H.2 2019 NSDUH Slippage Rates: Alabama

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 978 | 4,110,042 | 4,110,042 | 4,110,042 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 221 | 1,025,746 | 1,025,746 | 1,025,746 | 0.00 | 0.00 |
| | Quarter 2 | 257 | 1,026,763 | 1,026,763 | 1,026,763 | -0.00 | 0.00 |
| | Quarter 3 | 232 | 1,028,123 | 1,028,123 | 1,028,123 | 0.00 | 0.00 |
| | Quarter 4 | 268 | 1,029,410 | 1,029,410 | 1,029,410 | 0.00 | 0.00 |
| Age Group | 12-17 | 235 | 371,722 | 370,567 | 370,567 | 0.31 | 0.00 |
| | 18-25 | 249 | 498,444 | 503,390 | 503,390 | -0.98 | 0.00 |
| | 26-34 | 134 | 564,493 | 565,244 | 565,244 | -0.13 | 0.00 |
| | 35-49 | 187 | 879,852 | 883,166 | 883,166 | -0.38 | 0.00 |
| | 50-64 | 88 | 930,300 | 957,440 | 957,440 | -2.83 | 0.00 |
| | 65+ | 85 | 865,231 | 830,235 | 830,235 | 4.22 | 0.00 |
| Race | White | 584 | 2,822,387 | 2,883,364 | 2,883,364 | -2.11 | -0.00 |
| | Black or African American | 326 | 1,059,610 | 1,073,194 | 1,073,194 | -1.27 | 0.00 |
| | American Indian/Alaska Native | 18 | 72,606 | 29,946 | 29,946 | 142.46 | 0.00 |
| | Asian | 12 | 70,621 | 66,857 | 66,857 | 5.63 | 0.00 |
| | Two or More Races | 38 | 84,818 | 56,680 | 56,680 | 49.64 | 0.00 |
| Hispanicity | Hispanic or Latino | 55 | 152,425 | 157,745 | 157,745 | -3.37 | 0.00 |
| | Non-Hispanic or Latino | 923 | 3,957,617 | 3,952,297 | 3,952,297 | 0.13 | 0.00 |
| Gender | Male | 431 | 1,951,710 | 1,951,710 | 1,951,710 | 0.00 | 0.00 |
| | Female | 547 | 2,158,332 | 2,158,332 | 2,158,332 | 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, 2019.

Table H.3 2019 NSDUH Slippage Rates: Alaska

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 988 | 583,114 | 583,114 | 583,114 | 0.00 | -0.00 |
| Quarter | Quarter 1 | 194 | 145,901 | 145,901 | 145,901 | 0.00 | 0.00 |
| | Quarter 2 | 293 | 145,808 | 145,808 | 145,808 | 0.00 | -0.00 |
| | Quarter 3 | 293 | 145,744 | 145,744 | 145,744 | -0.00 | 0.00 |
| | Quarter 4 | 208 | 145,661 | 145,661 | 145,661 | 0.00 | -0.00 |
| Age Group | 12-17 | 253 | 57,659 | 56,959 | 56,959 | 1.23 | -0.00 |
| | 18-25 | 228 | 69,620 | 69,918 | 69,918 | -0.43 | 0.00 |
| | 26-34 | 145 | 97,846 | 97,670 | 97,670 | 0.18 | -0.00 |
| | 35-49 | 205 | 133,329 | 132,640 | 132,640 | 0.52 | 0.00 |
| | 50-64 | 98 | 141,632 | 135,272 | 135,272 | 4.70 | 0.00 |
| | 65+ | 59 | 83,028 | 90,655 | 90,655 | -8.41 | -0.00 |
| Race | White | 619 | 389,741 | 392,220 | 392,220 | -0.63 | 0.00 |
| | Black or African American | 37 | 19,044 | 19,648 | 19,648 | -3.08 | -0.00 |
| | American Indian/Alaska Native | 133 | 78,538 | 85,842 | 85,842 | -8.51 | -0.00 |
| | Asian | 84 | 48,859 | 48,554 | 48,554 | 0.63 | -0.00 |
| | Two or More Races | 115 | 46,932 | 36,849 | 36,849 | 27.36 | -0.00 |
| Hispanicity | Hispanic or Latino | 71 | 44,341 | 37,883 | 37,883 | 17.05 | -0.00 |
| | Non-Hispanic or Latino | 917 | 538,772 | 545,230 | 545,230 | -1.18 | -0.00 |
| Gender | Male | 493 | 297,959 | 297,375 | 297,375 | 0.20 | 0.00 |
| | Female | 495 | 285,154 | 285,738 | 285,738 | -0.20 | -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, 2019.

Table H.4 2019 NSDUH Slippage Rates: Arizona

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 932 | 6,099,230 | 6,099,230 | 6,099,230 | -0.00 | -0.00 |
| Quarter | Quarter 1 | 255 | 1,513,157 | 1,513,157 | 1,513,157 | -0.00 | -0.00 |
| | Quarter 2 | 270 | 1,520,646 | 1,520,646 | 1,520,646 | 0.00 | -0.00 |
| | Quarter 3 | 198 | 1,528,726 | 1,528,726 | 1,528,726 | -0.00 | -0.00 |
| | Quarter 4 | 209 | 1,536,701 | 1,536,701 | 1,536,701 | -0.00 | -0.00 |
| Age Group | 12-17 | 216 | 565,121 | 565,121 | 565,121 | -0.00 | -0.00 |
| | 18-25 | 248 | 779,897 | 767,322 | 767,322 | 1.64 | 0.00 |
| | 26-34 | 156 | 874,006 | 876,319 | 876,319 | -0.26 | 0.00 |
| | 35-49 | 188 | 1,289,680 | 1,302,569 | 1,302,570 | -0.99 | -0.00 |
| | 50-64 | 70 | 1,448,571 | 1,290,468 | 1,290,468 | 12.25 | -0.00 |
| | 65+ | 54 | 1,141,955 | 1,297,431 | 1,297,431 | -11.98 | -0.00 |
| Race | White | 679 | 4,761,530 | 5,107,492 | 5,107,493 | -6.77 | -0.00 |
| | Black or African American | 66 | 323,706 | 298,709 | 298,709 | 8.37 | 0.00 |
| | American Indian/Alaska Native | 92 | 499,822 | 296,675 | 296,676 | 68.47 | -0.00 |
| | Asian | 53 | 258,129 | 248,779 | 248,779 | 3.76 | 0.00 |
| | Two or More Races | 42 | 256,042 | 147,574 | 147,574 | 73.50 | 0.00 |
| Hispanicity | Hispanic or Latino | 346 | 1,768,263 | 1,796,406 | 1,796,406 | -1.57 | 0.00 |
| | Non-Hispanic or Latino | 586 | 4,330,967 | 4,302,824 | 4,302,824 | 0.65 | -0.00 |
| Gender | Male | 459 | 2,997,648 | 2,982,648 | 2,982,648 | 0.50 | -0.00 |
| | Female | 473 | 3,101,581 | 3,116,582 | 3,116,582 | -0.48 | -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, 2019.

Table H.5 2019 NSDUH Slippage Rates: Arkansas

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 936 | 2,503,376 | 2,503,376 | 2,503,376 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 188 | 624,685 | 624,685 | 624,685 | 0.00 | 0.00 |
| | Quarter 2 | 254 | 625,378 | 625,378 | 625,378 | 0.00 | 0.00 |
| | Quarter 3 | 258 | 626,258 | 626,258 | 626,258 | 0.00 | 0.00 |
| | Quarter 4 | 236 | 627,055 | 627,055 | 627,055 | 0.00 | 0.00 |
| Age Group | 12-17 | 256 | 239,544 | 237,969 | 237,969 | 0.66 | 0.00 |
| | 18-25 | 173 | 308,716 | 311,355 | 311,355 | -0.85 | 0.00 |
| | 26-34 | 154 | 343,630 | 346,095 | 346,095 | -0.71 | 0.00 |
| | 35-49 | 194 | 544,119 | 540,307 | 540,307 | 0.71 | 0.00 |
| | 50-64 | 85 | 554,775 | 559,594 | 559,594 | -0.86 | 0.00 |
| | 65+ | 74 | 512,592 | 508,057 | 508,057 | 0.89 | -0.00 |
| Race | White | 681 | 1,967,014 | 2,010,198 | 2,010,199 | -2.15 | -0.00 |
| | Black or African American | 175 | 387,444 | 372,692 | 372,692 | 3.96 | -0.00 |
| | American Indian/Alaska Native | 7 | 22,263 | 25,286 | 25,286 | -11.96 | 0.00 |
| | Asian | 29 | 52,749 | 51,277 | 51,277 | 2.87 | 0.00 |
| | Two or More Races | 44 | 73,905 | 43,923 | 43,923 | 68.26 | 0.00 |
| Hispanicity | Hispanic or Latino | 84 | 160,875 | 175,180 | 175,180 | -8.17 | 0.00 |
| | Non-Hispanic or Latino | 852 | 2,342,501 | 2,328,196 | 2,328,196 | 0.61 | -0.00 |
| Gender | Male | 438 | 1,210,212 | 1,208,534 | 1,208,534 | 0.14 | 0.00 |
| | Female | 498 | 1,293,163 | 1,294,841 | 1,294,841 | -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, 2019.

Table H.6 2019 NSDUH Slippage Rates: California

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 4,677 | 33,135,280 | 33,135,280 | 33,135,280 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 1,142 | 8,271,705 | 8,271,706 | 8,271,706 | -0.00 | 0.00 |
| | Quarter 2 | 1,127 | 8,278,449 | 8,278,449 | 8,278,449 | -0.00 | 0.00 |
| | Quarter 3 | 1,308 | 8,287,964 | 8,287,964 | 8,287,964 | -0.00 | 0.00 |
| | Quarter 4 | 1,100 | 8,297,161 | 8,297,162 | 8,297,162 | -0.00 | 0.00 |
| Age Group | 12-17 | 1,181 | 3,019,081 | 3,016,255 | 3,016,255 | 0.09 | 0.00 |
| | 18-25 | 1,154 | 4,152,508 | 4,136,298 | 4,136,298 | 0.39 | 0.00 |
| | 26-34 | 693 | 5,348,539 | 5,349,876 | 5,349,876 | -0.02 | 0.00 |
| | 35-49 | 960 | 7,646,311 | 7,680,702 | 7,680,703 | -0.45 | -0.00 |
| | 50-64 | 403 | 7,593,119 | 7,201,369 | 7,201,369 | 5.44 | -0.00 |
| | 65+ | 286 | 5,375,721 | 5,750,778 | 5,750,778 | -6.52 | -0.00 |
| Race | White | 2,915 | 20,986,745 | 23,831,775 | 23,831,775 | -11.94 | -0.00 |
| | Black or African American | 303 | 2,285,999 | 2,093,325 | 2,093,325 | 9.20 | 0.00 |
| | American Indian/Alaska Native | 442 | 2,459,654 | 545,188 | 545,188 | 351.16 | 0.00 |
| | Asian | 694 | 5,876,065 | 5,538,081 | 5,538,081 | 6.10 | 0.00 |
| | Two or More Races | 323 | 1,526,818 | 1,126,911 | 1,126,911 | 35.49 | -0.00 |
| Hispanicity | Hispanic or Latino | 2,263 | 12,482,355 | 12,374,008 | 12,374,008 | 0.88 | 0.00 |
| | Non-Hispanic or Latino | 2,414 | 20,652,924 | 20,761,271 | 20,761,271 | -0.52 | -0.00 |
| Gender | Male | 2,339 | 16,218,847 | 16,250,235 | 16,250,235 | -0.19 | 0.00 |
| | Female | 2,338 | 16,916,433 | 16,885,045 | 16,885,045 | 0.19 | -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, 2019.

Table H.7 2019 NSDUH Slippage Rates: Colorado

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 932 | 4,840,463 | 4,840,463 | 4,840,463 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 209 | 1,203,082 | 1,203,082 | 1,203,082 | 0.00 | -0.00 |
| | Quarter 2 | 249 | 1,207,629 | 1,207,629 | 1,207,629 | 0.00 | -0.00 |
| | Quarter 3 | 205 | 1,212,519 | 1,212,519 | 1,212,519 | 0.00 | 0.00 |
| | Quarter 4 | 269 | 1,217,233 | 1,217,233 | 1,217,233 | 0.00 | -0.00 |
| Age Group | 12-17 | 221 | 434,953 | 434,837 | 434,837 | 0.03 | 0.00 |
| | 18-25 | 247 | 579,469 | 588,550 | 588,550 | -1.54 | -0.00 |
| | 26-34 | 142 | 810,166 | 801,201 | 801,201 | 1.12 | -0.00 |
| | 35-49 | 152 | 1,135,913 | 1,140,753 | 1,140,753 | -0.42 | 0.00 |
| | 50-64 | 96 | 1,068,952 | 1,046,969 | 1,046,969 | 2.10 | -0.00 |
| | 65+ | 74 | 811,009 | 828,153 | 828,153 | -2.07 | -0.00 |
| Race | White | 763 | 4,062,893 | 4,248,706 | 4,248,706 | -4.37 | -0.00 |
| | Black or African American | 48 | 202,198 | 206,789 | 206,789 | -2.22 | -0.00 |
| | American Indian/Alaska Native | 46 | 203,842 | 73,618 | 73,618 | 176.89 | -0.00 |
| | Asian | 21 | 181,838 | 182,573 | 182,573 | -0.40 | -0.00 |
| | Two or More Races | 54 | 189,692 | 128,777 | 128,777 | 47.30 | 0.00 |
| Hispanicity | Hispanic or Latino | 234 | 1,003,940 | 978,051 | 978,051 | 2.65 | -0.00 |
| | Non-Hispanic or Latino | 698 | 3,836,523 | 3,862,412 | 3,862,412 | -0.67 | 0.00 |
| Gender | Male | 449 | 2,412,367 | 2,407,437 | 2,407,437 | 0.20 | -0.00 |
| | Female | 483 | 2,428,096 | 2,433,026 | 2,433,026 | -0.20 | 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, 2019.

Table H.8 2019 NSDUH Slippage Rates: Connecticut

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 985 | 3,060,096 | 3,060,096 | 3,060,096 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 165 | 765,025 | 765,025 | 765,025 | 0.00 | -0.00 |
| | Quarter 2 | 281 | 764,852 | 764,852 | 764,852 | 0.00 | 0.00 |
| | Quarter 3 | 347 | 765,026 | 765,026 | 765,026 | 0.00 | 0.00 |
| | Quarter 4 | 192 | 765,193 | 765,193 | 765,193 | 0.00 | 0.00 |
| Age Group | 12-17 | 199 | 265,674 | 267,351 | 267,351 | -0.63 | 0.00 |
| | 18-25 | 275 | 381,748 | 380,961 | 380,961 | 0.21 | 0.00 |
| | 26-34 | 161 | 386,228 | 394,677 | 394,677 | -2.14 | 0.00 |
| | 35-49 | 192 | 648,871 | 644,981 | 644,981 | 0.60 | 0.00 |
| | 50-64 | 79 | 787,133 | 760,489 | 760,489 | 3.50 | 0.00 |
| | 65+ | 79 | 590,442 | 611,638 | 611,639 | -3.47 | -0.00 |
| Race | White | 759 | 2,389,662 | 2,469,874 | 2,469,874 | -3.25 | 0.00 |
| | Black or African American | 115 | 364,942 | 358,398 | 358,398 | 1.83 | 0.00 |
| | American Indian/Alaska Native | 34 | 58,304 | 16,612 | 16,612 | 250.98 | 0.00 |
| | Asian | 44 | 178,860 | 154,375 | 154,375 | 15.86 | -0.00 |
| | Two or More Races | 33 | 68,328 | 60,839 | 60,839 | 12.31 | 0.00 |
| Hispanicity | Hispanic or Latino | 221 | 456,787 | 472,805 | 472,805 | -3.39 | 0.00 |
| | Non-Hispanic or Latino | 764 | 2,603,309 | 2,587,291 | 2,587,291 | 0.62 | -0.00 |
| Gender | Male | 463 | 1,477,043 | 1,477,043 | 1,477,043 | 0.00 | 0.00 |
| | Female | 522 | 1,583,053 | 1,583,053 | 1,583,053 | 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, 2019.

Table H.9 2019 NSDUH Slippage Rates: Delaware

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 935 | 825,113 | 825,113 | 825,113 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 201 | 205,450 | 205,450 | 205,450 | -0.00 | 0.00 |
| | Quarter 2 | 287 | 205,960 | 205,961 | 205,961 | -0.00 | 0.00 |
| | Quarter 3 | 245 | 206,553 | 206,553 | 206,553 | -0.00 | 0.00 |
| | Quarter 4 | 202 | 207,150 | 207,150 | 207,150 | 0.00 | 0.00 |
| Age Group | 12-17 | 249 | 68,719 | 69,355 | 69,355 | -0.92 | 0.00 |
| | 18-25 | 226 | 90,909 | 91,748 | 91,749 | -0.91 | -0.00 |
| | 26-34 | 136 | 117,041 | 113,379 | 113,379 | 3.23 | 0.00 |
| | 35-49 | 178 | 163,950 | 166,721 | 166,721 | -1.66 | -0.00 |
| | 50-64 | 74 | 189,086 | 198,539 | 198,539 | -4.76 | 0.00 |
| | 65+ | 72 | 195,407 | 185,372 | 185,372 | 5.41 | 0.00 |
| Race | White | 575 | 556,404 | 583,364 | 583,364 | -4.62 | 0.00 |
| | Black or African American | 220 | 183,468 | 183,635 | 183,635 | -0.09 | 0.00 |
| | American Indian/Alaska Native | 35 | 15,406 | 4,225 | 5,524 | 178.89 | -23.52 |
| | Asian | 51 | 36,207 | 36,067 | 34,768 | 4.14 | 3.74 |
| | Two or More Races | 54 | 33,627 | 17,823 | 17,823 | 88.67 | 0.00 |
| Hispanicity | Hispanic or Latino | 160 | 73,389 | 70,304 | 70,304 | 4.39 | 0.00 |
| | Non-Hispanic or Latino | 775 | 751,724 | 754,810 | 754,810 | -0.41 | 0.00 |
| Gender | Male | 446 | 392,055 | 392,200 | 392,200 | -0.04 | 0.00 |
| | Female | 489 | 433,058 | 432,913 | 432,913 | 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, 2019.

Table H.10 2019 NSDUH Slippage Rates: District of Columbia

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 961 | 599,449 | 599,449 | 599,449 | 0.00 | -0.00 |
| Quarter | Quarter 1 | 204 | 149,515 | 149,515 | 149,515 | 0.00 | -0.00 |
| | Quarter 2 | 241 | 149,729 | 149,729 | 149,729 | -0.00 | 0.00 |
| | Quarter 3 | 289 | 149,977 | 149,977 | 149,977 | 0.00 | 0.00 |
| | Quarter 4 | 227 | 150,228 | 150,228 | 150,228 | 0.00 | 0.00 |
| Age Group | 12-17 | 289 | 31,818 | 32,068 | 32,068 | -0.78 | 0.00 |
| | 18-25 | 214 | 85,900 | 85,763 | 85,763 | 0.16 | 0.00 |
| | 26-34 | 118 | 146,479 | 147,190 | 147,190 | -0.48 | 0.00 |
| | 35-49 | 182 | 145,585 | 144,660 | 144,660 | 0.64 | 0.00 |
| | 50-64 | 92 | 112,565 | 104,731 | 104,731 | 7.48 | 0.00 |
| | 65+ | 66 | 77,101 | 85,039 | 85,039 | -9.33 | -0.00 |
| Race | White | 437 | 265,060 | 284,094 | 284,094 | -6.70 | -0.00 |
| | Black or African American | 410 | 260,631 | 268,378 | 268,378 | -2.89 | -0.00 |
| | American Indian/Alaska Native | 25 | 15,924 | 4,379 | 3,305 | 381.88 | 32.52 |
| | Asian | 38 | 29,920 | 28,124 | 29,199 | 2.47 | -3.68 |
| | Two or More Races | 51 | 27,914 | 14,474 | 14,474 | 92.85 | 0.00 |
| Hispanicity | Hispanic or Latino | 115 | 63,865 | 61,962 | 61,962 | 3.07 | 0.00 |
| | Non-Hispanic or Latino | 846 | 535,584 | 537,487 | 537,487 | -0.35 | 0.00 |
| Gender | Male | 473 | 281,522 | 278,613 | 278,613 | 1.04 | -0.00 |
| | Female | 488 | 317,928 | 320,837 | 320,837 | -0.91 | -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, 2019.

Table H.11 2019 NSDUH Slippage Rates: Florida

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 3,331 | 18,387,793 | 18,387,793 | 18,387,793 | -0.00 | -0.00 |
| Quarter | Quarter 1 | 817 | 4,573,600 | 4,573,600 | 4,573,600 | -0.00 | 0.00 |
| | Quarter 2 | 879 | 4,587,494 | 4,587,494 | 4,587,494 | -0.00 | -0.00 |
| | Quarter 3 | 890 | 4,604,425 | 4,604,425 | 4,604,425 | -0.00 | 0.00 |
| | Quarter 4 | 745 | 4,622,274 | 4,622,274 | 4,622,274 | -0.00 | 0.00 |
| Age Group | 12-17 | 824 | 1,436,479 | 1,441,990 | 1,441,990 | -0.38 | 0.00 |
| | 18-25 | 884 | 1,950,335 | 1,948,866 | 1,948,866 | 0.08 | 0.00 |
| | 26-34 | 487 | 2,484,717 | 2,458,185 | 2,458,186 | 1.08 | -0.00 |
| | 35-49 | 655 | 3,807,981 | 3,864,994 | 3,864,994 | -1.48 | -0.00 |
| | 50-64 | 255 | 4,388,493 | 4,236,889 | 4,236,889 | 3.58 | 0.00 |
| | 65+ | 226 | 4,319,789 | 4,436,869 | 4,436,869 | -2.64 | -0.00 |
| Race | White | 2,223 | 13,645,038 | 14,474,997 | 14,474,997 | -5.73 | 0.00 |
| | Black or African American | 741 | 3,147,522 | 2,913,380 | 2,913,380 | 8.04 | -0.00 |
| | American Indian/Alaska Native | 98 | 321,920 | 86,834 | 93,128 | 245.68 | -6.76 |
| | Asian | 116 | 784,688 | 584,075 | 577,781 | 35.81 | 1.09 |
| | Two or More Races | 153 | 488,625 | 328,507 | 328,507 | 48.74 | 0.00 |
| Hispanicity | Hispanic or Latino | 1,189 | 4,812,122 | 4,726,238 | 4,726,238 | 1.82 | 0.00 |
| | Non-Hispanic or Latino | 2,142 | 13,575,671 | 13,661,556 | 13,661,556 | -0.63 | -0.00 |
| Gender | Male | 1,633 | 8,811,270 | 8,843,352 | 8,843,352 | -0.36 | 0.00 |
| | Female | 1,698 | 9,576,523 | 9,544,441 | 9,544,441 | 0.34 | 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, 2019.

Table H.12 2019 NSDUH Slippage Rates: Georgia

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 1,519 | 8,784,039 | 8,784,039 | 8,784,039 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 364 | 2,185,446 | 2,185,446 | 2,185,446 | 0.00 | -0.00 |
| | Quarter 2 | 388 | 2,192,242 | 2,192,242 | 2,192,242 | -0.00 | 0.00 |
| | Quarter 3 | 432 | 2,199,613 | 2,199,613 | 2,199,613 | 0.00 | 0.00 |
| | Quarter 4 | 335 | 2,206,738 | 2,206,738 | 2,206,738 | 0.00 | 0.00 |
| Age Group | 12-17 | 425 | 865,190 | 871,169 | 871,169 | -0.69 | 0.00 |
| | 18-25 | 331 | 1,094,488 | 1,108,561 | 1,108,561 | -1.27 | -0.00 |
| | 26-34 | 245 | 1,340,711 | 1,293,355 | 1,293,355 | 3.66 | -0.00 |
| | 35-49 | 296 | 1,997,961 | 2,044,126 | 2,044,126 | -2.26 | -0.00 |
| | 50-64 | 135 | 2,134,473 | 1,977,794 | 1,977,794 | 7.92 | -0.00 |
| | 65+ | 87 | 1,351,216 | 1,489,034 | 1,489,034 | -9.26 | 0.00 |
| Race | White | 792 | 5,042,431 | 5,381,971 | 5,381,971 | -6.31 | 0.00 |
| | Black or African American | 574 | 2,801,117 | 2,799,281 | 2,799,281 | 0.07 | -0.00 |
| | American Indian/Alaska Native | 49 | 200,551 | 50,299 | 45,047 | 345.21 | 11.66 |
| | Asian | 55 | 423,940 | 397,861 | 403,114 | 5.17 | -1.30 |
| | Two or More Races | 49 | 316,000 | 154,626 | 154,626 | 104.36 | 0.00 |
| Hispanicity | Hispanic or Latino | 186 | 778,564 | 779,494 | 779,494 | -0.12 | 0.00 |
| | Non-Hispanic or Latino | 1,333 | 8,005,475 | 8,004,545 | 8,004,545 | 0.01 | -0.00 |
| Gender | Male | 739 | 4,183,486 | 4,168,276 | 4,168,276 | 0.36 | 0.00 |
| | Female | 780 | 4,600,553 | 4,615,763 | 4,615,763 | -0.33 | 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, 2019.

Table H.13 2019 NSDUH Slippage Rates: Hawaii

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 1,007 | 1,155,277 | 1,155,277 | 1,155,278 | -0.00 | -0.00 |
| Quarter | Quarter 1 | 248 | 289,032 | 289,032 | 289,032 | 0.00 | 0.00 |
| | Quarter 2 | 232 | 288,845 | 288,845 | 288,845 | 0.00 | 0.00 |
| | Quarter 3 | 228 | 288,751 | 288,751 | 288,751 | -0.00 | 0.00 |
| | Quarter 4 | 299 | 288,650 | 288,650 | 288,650 | 0.00 | -0.00 |
| Age Group | 12-17 | 241 | 94,975 | 94,975 | 94,975 | 0.00 | 0.00 |
| | 18-25 | 259 | 115,900 | 119,336 | 119,336 | -2.88 | 0.00 |
| | 26-34 | 170 | 165,631 | 162,431 | 162,431 | 1.97 | 0.00 |
| | 35-49 | 187 | 257,345 | 252,930 | 252,930 | 1.75 | 0.00 |
| | 50-64 | 76 | 258,784 | 260,826 | 260,826 | -0.78 | -0.00 |
| | 65+ | 74 | 262,641 | 264,780 | 264,780 | -0.81 | -0.00 |
| Race | White | 215 | 277,401 | 286,477 | 286,477 | -3.17 | -0.00 |
| | Black or African American | 9 | 15,661 | 17,746 | 17,746 | -11.75 | -0.00 |
| | American Indian/Alaska Native | 4 | 3,151 | 4,238 | 4,238 | -25.66 | -0.00 |
| | Asian | 453 | 591,915 | 592,749 | 592,749 | -0.14 | -0.00 |
| | Two or More Races | 326 | 267,150 | 254,067 | 254,067 | 5.15 | 0.00 |
| Hispanicity | Hispanic or Latino | 159 | 133,168 | 102,365 | 102,365 | 30.09 | 0.00 |
| | Non-Hispanic or Latino | 848 | 1,022,109 | 1,052,913 | 1,052,913 | -2.93 | -0.00 |
| Gender | Male | 470 | 557,408 | 558,598 | 558,598 | -0.21 | 0.00 |
| | Female | 537 | 597,870 | 596,679 | 596,680 | 0.20 | -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, 2019.

Table H.14 2019 NSDUH Slippage Rates: Idaho

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 960 | 1,474,464 | 1,474,464 | 1,474,464 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 235 | 365,205 | 365,205 | 365,205 | 0.00 | 0.00 |
| | Quarter 2 | 259 | 367,416 | 367,416 | 367,416 | 0.00 | 0.00 |
| | Quarter 3 | 177 | 369,761 | 369,761 | 369,761 | 0.00 | -0.00 |
| | Quarter 4 | 289 | 372,082 | 372,082 | 372,082 | 0.00 | -0.00 |
| Age Group | 12-17 | 228 | 153,757 | 155,795 | 155,795 | -1.31 | 0.00 |
| | 18-25 | 248 | 185,227 | 184,392 | 184,392 | 0.45 | 0.00 |
| | 26-34 | 161 | 207,590 | 207,359 | 207,359 | 0.11 | 0.00 |
| | 35-49 | 180 | 325,827 | 324,854 | 324,854 | 0.30 | 0.00 |
| | 50-64 | 66 | 272,653 | 315,306 | 315,306 | -13.53 | 0.00 |
| | 65+ | 77 | 329,410 | 286,757 | 286,757 | 14.87 | 0.00 |
| Race | White | 887 | 1,333,895 | 1,379,833 | 1,379,833 | -3.33 | -0.00 |
| | Black or African American | 12 | 16,684 | 12,121 | 12,121 | 37.65 | 0.00 |
| | American Indian/Alaska Native | 18 | 46,090 | 23,760 | 23,760 | 93.98 | 0.00 |
| | Asian | 11 | 33,054 | 27,105 | 27,105 | 21.95 | 0.00 |
| | Two or More Races | 32 | 44,742 | 31,647 | 31,647 | 41.38 | 0.00 |
| Hispanicity | Hispanic or Latino | 130 | 179,129 | 172,513 | 172,513 | 3.84 | 0.00 |
| | Non-Hispanic or Latino | 830 | 1,295,336 | 1,301,952 | 1,301,952 | -0.51 | -0.00 |
| Gender | Male | 458 | 735,508 | 731,619 | 731,619 | 0.53 | -0.00 |
| | Female | 502 | 738,957 | 742,845 | 742,845 | -0.52 | 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, 2019.

Table H.15 2019 NSDUH Slippage Rates: Illinois

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 2,361 | 10,652,731 | 10,652,731 | 10,652,731 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 486 | 2,665,250 | 2,665,250 | 2,665,250 | 0.00 | 0.00 |
| | Quarter 2 | 564 | 2,663,537 | 2,663,537 | 2,663,537 | -0.00 | 0.00 |
| | Quarter 3 | 644 | 2,662,607 | 2,662,607 | 2,662,607 | -0.00 | 0.00 |
| | Quarter 4 | 667 | 2,661,336 | 2,661,336 | 2,661,336 | 0.00 | 0.00 |
| Age Group | 12-17 | 557 | 981,377 | 980,223 | 980,223 | 0.12 | 0.00 |
| | 18-25 | 576 | 1,288,368 | 1,297,477 | 1,297,477 | -0.70 | 0.00 |
| | 26-34 | 342 | 1,580,990 | 1,553,360 | 1,553,360 | 1.78 | 0.00 |
| | 35-49 | 486 | 2,398,785 | 2,402,155 | 2,402,155 | -0.14 | 0.00 |
| | 50-64 | 210 | 2,410,502 | 2,436,799 | 2,436,799 | -1.08 | 0.00 |
| | 65+ | 190 | 1,992,709 | 1,982,717 | 1,982,717 | 0.50 | -0.00 |
| Race | White | 1,689 | 7,779,925 | 8,262,696 | 8,262,696 | -5.84 | -0.00 |
| | Black or African American | 327 | 1,533,855 | 1,495,787 | 1,495,787 | 2.55 | 0.00 |
| | American Indian/Alaska Native | 124 | 472,210 | 96,478 | 64,729 | 629.52 | 49.05 |
| | Asian | 153 | 667,422 | 621,347 | 653,096 | 2.19 | -4.86 |
| | Two or More Races | 68 | 199,318 | 176,424 | 176,424 | 12.98 | 0.00 |
| Hispanicity | Hispanic or Latino | 472 | 1,778,252 | 1,751,298 | 1,751,298 | 1.54 | 0.00 |
| | Non-Hispanic or Latino | 1,889 | 8,874,478 | 8,901,433 | 8,901,433 | -0.30 | 0.00 |
| Gender | Male | 1,168 | 5,190,268 | 5,169,833 | 5,169,833 | 0.40 | 0.00 |
| | Female | 1,193 | 5,462,463 | 5,482,898 | 5,482,898 | -0.37 | 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, 2019.

Table H.16 2019 NSDUH Slippage Rates: Indiana

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 974 | 5,607,015 | 5,607,015 | 5,607,015 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 230 | 1,397,952 | 1,397,952 | 1,397,952 | 0.00 | 0.00 |
| | Quarter 2 | 246 | 1,400,323 | 1,400,323 | 1,400,323 | 0.00 | 0.00 |
| | Quarter 3 | 245 | 1,403,094 | 1,403,094 | 1,403,094 | 0.00 | 0.00 |
| | Quarter 4 | 253 | 1,405,646 | 1,405,646 | 1,405,646 | 0.00 | 0.00 |
| Age Group | 12-17 | 244 | 542,001 | 537,808 | 537,808 | 0.78 | 0.00 |
| | 18-25 | 227 | 741,264 | 738,146 | 738,146 | 0.42 | 0.00 |
| | 26-34 | 144 | 774,687 | 781,998 | 781,998 | -0.93 | 0.00 |
| | 35-49 | 197 | 1,218,552 | 1,223,007 | 1,223,007 | -0.36 | -0.00 |
| | 50-64 | 100 | 1,462,959 | 1,275,469 | 1,275,469 | 14.70 | 0.00 |
| | 65+ | 62 | 867,552 | 1,050,586 | 1,050,586 | -17.42 | -0.00 |
| Race | White | 804 | 4,750,553 | 4,813,203 | 4,813,203 | -1.30 | -0.00 |
| | Black or African American | 80 | 526,291 | 524,815 | 524,815 | 0.28 | -0.00 |
| | American Indian/Alaska Native | 14 | 50,006 | 11,726 | 23,685 | 111.13 | -50.49 |
| | Asian | 41 | 187,099 | 163,202 | 151,243 | 23.71 | 7.91 |
| | Two or More Races | 35 | 93,067 | 94,069 | 94,069 | -1.06 | 0.00 |
| Hispanicity | Hispanic or Latino | 98 | 367,029 | 367,964 | 367,964 | -0.25 | 0.00 |
| | Non-Hispanic or Latino | 876 | 5,239,986 | 5,239,051 | 5,239,051 | 0.02 | 0.00 |
| Gender | Male | 465 | 2,732,272 | 2,732,272 | 2,732,272 | 0.00 | 0.00 |
| | Female | 509 | 2,874,743 | 2,874,743 | 2,874,743 | 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, 2019.

Table H.17 2019 NSDUH Slippage Rates: Iowa

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 968 | 2,633,615 | 2,633,615 | 2,633,615 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 200 | 657,382 | 657,382 | 657,382 | 0.00 | 0.00 |
| | Quarter 2 | 310 | 657,980 | 657,980 | 657,980 | 0.00 | 0.00 |
| | Quarter 3 | 258 | 658,781 | 658,781 | 658,781 | 0.00 | 0.00 |
| | Quarter 4 | 200 | 659,472 | 659,472 | 659,472 | 0.00 | 0.00 |
| Age Group | 12-17 | 261 | 245,722 | 246,264 | 246,264 | -0.22 | 0.00 |
| | 18-25 | 244 | 348,996 | 350,923 | 350,923 | -0.55 | 0.00 |
| | 26-34 | 150 | 350,062 | 351,782 | 351,782 | -0.49 | 0.00 |
| | 35-49 | 196 | 559,239 | 557,461 | 557,461 | 0.32 | 0.00 |
| | 50-64 | 65 | 624,812 | 596,050 | 596,050 | 4.83 | 0.00 |
| | 65+ | 52 | 504,785 | 531,135 | 531,135 | -4.96 | 0.00 |
| Race | White | 845 | 2,390,238 | 2,412,297 | 2,412,297 | -0.91 | 0.00 |
| | Black or African American | 54 | 97,919 | 95,196 | 95,196 | 2.86 | 0.00 |
| | American Indian/Alaska Native | 10 | 20,614 | 12,484 | 12,484 | 65.12 | 0.00 |
| | Asian | 31 | 73,702 | 74,565 | 74,565 | -1.16 | 0.00 |
| | Two or More Races | 28 | 51,143 | 39,074 | 39,074 | 30.89 | 0.00 |
| Hispanicity | Hispanic or Latino | 77 | 162,826 | 146,052 | 146,052 | 11.49 | 0.00 |
| | Non-Hispanic or Latino | 891 | 2,470,789 | 2,487,563 | 2,487,563 | -0.67 | -0.00 |
| Gender | Male | 464 | 1,303,270 | 1,303,270 | 1,303,270 | 0.00 | 0.00 |
| | Female | 504 | 1,330,345 | 1,330,345 | 1,330,345 | 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, 2019.

Table H.18 2019 NSDUH Slippage Rates: Kansas

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 951 | 2,388,519 | 2,388,520 | 2,388,520 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 185 | 596,370 | 596,370 | 596,370 | 0.00 | 0.00 |
| | Quarter 2 | 294 | 596,794 | 596,794 | 596,794 | -0.00 | 0.00 |
| | Quarter 3 | 256 | 597,412 | 597,412 | 597,412 | 0.00 | 0.00 |
| | Quarter 4 | 216 | 597,943 | 597,943 | 597,943 | -0.00 | 0.00 |
| Age Group | 12-17 | 229 | 240,432 | 237,371 | 237,371 | 1.29 | 0.00 |
| | 18-25 | 204 | 318,385 | 319,625 | 319,625 | -0.39 | 0.00 |
| | 26-34 | 172 | 333,862 | 330,071 | 330,071 | 1.15 | 0.00 |
| | 35-49 | 188 | 503,415 | 512,901 | 512,901 | -1.85 | 0.00 |
| | 50-64 | 87 | 558,509 | 531,007 | 531,007 | 5.18 | 0.00 |
| | 65+ | 71 | 433,916 | 457,545 | 457,545 | -5.16 | -0.00 |
| Race | White | 785 | 2,005,634 | 2,082,981 | 2,082,981 | -3.71 | 0.00 |
| | Black or African American | 53 | 138,558 | 135,712 | 135,712 | 2.10 | -0.00 |
| | American Indian/Alaska Native | 24 | 56,895 | 28,422 | 28,422 | 100.18 | 0.00 |
| | Asian | 37 | 93,847 | 81,276 | 81,276 | 15.47 | 0.00 |
| | Two or More Races | 52 | 93,584 | 60,129 | 60,129 | 55.64 | 0.00 |
| Hispanicity | Hispanic or Latino | 158 | 264,951 | 263,666 | 263,666 | 0.49 | 0.00 |
| | Non-Hispanic or Latino | 793 | 2,123,569 | 2,124,854 | 2,124,854 | -0.06 | 0.00 |
| Gender | Male | 459 | 1,171,210 | 1,171,804 | 1,171,804 | -0.05 | 0.00 |
| | Female | 492 | 1,217,309 | 1,216,716 | 1,216,716 | 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, 2019.

Table H.19 2019 NSDUH Slippage Rates: Kentucky

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 978 | 3,721,359 | 3,721,359 | 3,721,359 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 223 | 929,268 | 929,268 | 929,268 | 0.00 | 0.00 |
| | Quarter 2 | 301 | 929,909 | 929,909 | 929,909 | 0.00 | 0.00 |
| | Quarter 3 | 193 | 930,762 | 930,762 | 930,762 | 0.00 | 0.00 |
| | Quarter 4 | 261 | 931,422 | 931,422 | 931,422 | 0.00 | 0.00 |
| Age Group | 12-17 | 225 | 339,302 | 339,302 | 339,302 | 0.00 | 0.00 |
| | 18-25 | 237 | 463,889 | 459,407 | 459,407 | 0.98 | 0.00 |
| | 26-34 | 152 | 502,753 | 508,016 | 508,016 | -1.04 | 0.00 |
| | 35-49 | 191 | 809,767 | 812,549 | 812,549 | -0.34 | 0.00 |
| | 50-64 | 97 | 947,090 | 873,597 | 873,597 | 8.41 | 0.00 |
| | 65+ | 76 | 658,559 | 728,489 | 728,489 | -9.60 | 0.00 |
| Race | White | 825 | 3,243,682 | 3,293,526 | 3,293,526 | -1.51 | 0.00 |
| | Black or African American | 85 | 309,240 | 297,191 | 297,191 | 4.05 | 0.00 |
| | American Indian/Alaska Native | 11 | 21,775 | 11,014 | 11,014 | 97.69 | 0.00 |
| | Asian | 17 | 58,706 | 62,053 | 62,053 | -5.39 | 0.00 |
| | Two or More Races | 40 | 87,957 | 57,575 | 57,575 | 52.77 | 0.00 |
| Hispanicity | Hispanic or Latino | 32 | 118,667 | 125,404 | 125,404 | -5.37 | 0.00 |
| | Non-Hispanic or Latino | 946 | 3,602,693 | 3,595,955 | 3,595,955 | 0.19 | 0.00 |
| Gender | Male | 475 | 1,819,216 | 1,803,597 | 1,803,597 | 0.87 | 0.00 |
| | Female | 503 | 1,902,143 | 1,917,762 | 1,917,762 | -0.81 | 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, 2019.

Table H.20 2019 NSDUH Slippage Rates: Louisiana

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 936 | 3,819,636 | 3,819,636 | 3,819,636 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 255 | 955,025 | 955,025 | 955,025 | 0.00 | 0.00 |
| | Quarter 2 | 225 | 954,829 | 954,829 | 954,829 | 0.00 | 0.00 |
| | Quarter 3 | 225 | 954,905 | 954,905 | 954,905 | -0.00 | 0.00 |
| | Quarter 4 | 231 | 954,877 | 954,878 | 954,878 | -0.00 | 0.00 |
| Age Group | 12-17 | 240 | 355,893 | 360,544 | 360,544 | -1.29 | 0.00 |
| | 18-25 | 235 | 462,011 | 464,078 | 464,078 | -0.45 | 0.00 |
| | 26-34 | 134 | 572,293 | 568,896 | 568,896 | 0.60 | 0.00 |
| | 35-49 | 176 | 823,202 | 832,891 | 832,891 | -1.16 | 0.00 |
| | 50-64 | 81 | 876,440 | 871,848 | 871,848 | 0.53 | 0.00 |
| | 65+ | 70 | 729,797 | 721,380 | 721,380 | 1.17 | -0.00 |
| Race | White | 486 | 2,336,316 | 2,460,047 | 2,460,047 | -5.03 | -0.00 |
| | Black or African American | 360 | 1,208,543 | 1,204,829 | 1,204,829 | 0.31 | 0.00 |
| | American Indian/Alaska Native | 42 | 104,281 | 30,028 | 30,028 | 247.28 | 0.00 |
| | Asian | 24 | 103,279 | 73,411 | 73,411 | 40.69 | 0.00 |
| | Two or More Races | 24 | 67,217 | 51,322 | 51,322 | 30.97 | 0.00 |
| Hispanicity | Hispanic or Latino | 72 | 186,288 | 184,298 | 184,298 | 1.08 | 0.00 |
| | Non-Hispanic or Latino | 864 | 3,633,348 | 3,635,339 | 3,635,339 | -0.05 | 0.00 |
| Gender | Male | 438 | 1,812,890 | 1,816,812 | 1,816,812 | -0.22 | 0.00 |
| | Female | 498 | 2,006,746 | 2,002,824 | 2,002,824 | 0.20 | 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, 2019.

Table H.21 2019 NSDUH Slippage Rates: Maine

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 961 | 1,169,503 | 1,169,503 | 1,169,503 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 198 | 291,768 | 291,768 | 291,768 | 0.00 | 0.00 |
| | Quarter 2 | 250 | 292,139 | 292,139 | 292,139 | 0.00 | 0.00 |
| | Quarter 3 | 279 | 292,595 | 292,595 | 292,595 | -0.00 | 0.00 |
| | Quarter 4 | 234 | 293,002 | 293,002 | 293,002 | -0.00 | 0.00 |
| Age Group | 12-17 | 246 | 89,075 | 89,075 | 89,075 | -0.00 | 0.00 |
| | 18-25 | 227 | 120,476 | 120,997 | 120,997 | -0.43 | 0.00 |
| | 26-34 | 164 | 145,807 | 145,286 | 145,286 | 0.36 | 0.00 |
| | 35-49 | 172 | 234,004 | 235,431 | 235,431 | -0.61 | 0.00 |
| | 50-64 | 77 | 307,112 | 301,648 | 301,648 | 1.81 | 0.00 |
| | 65+ | 75 | 273,029 | 277,066 | 277,066 | -1.46 | 0.00 |
| Race | White | 900 | 1,115,853 | 1,111,212 | 1,111,212 | 0.42 | 0.00 |
| | Black or African American | 20 | 17,354 | 17,104 | 17,104 | 1.46 | 0.00 |
| | American Indian/Alaska Native | 6 | 5,899 | 2,295 | 8,011 | -26.36 | -71.36 |
| | Asian | 10 | 8,490 | 21,518 | 15,801 | -46.27 | 36.18 |
| | Two or More Races | 25 | 21,907 | 17,375 | 17,375 | 26.09 | 0.00 |
| Hispanicity | Hispanic or Latino | 23 | 12,043 | 18,831 | 18,831 | -36.05 | 0.00 |
| | Non-Hispanic or Latino | 938 | 1,157,460 | 1,150,672 | 1,150,672 | 0.59 | 0.00 |
| Gender | Male | 460 | 568,014 | 568,374 | 568,374 | -0.06 | 0.00 |
| | Female | 501 | 601,489 | 601,129 | 601,129 | 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, 2019.

Table H.22 2019 NSDUH Slippage Rates: Maryland

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 959 | 5,063,134 | 5,063,134 | 5,063,134 | -0.00 | -0.00 |
| Quarter | Quarter 1 | 197 | 1,264,350 | 1,264,351 | 1,264,351 | -0.00 | -0.00 |
| | Quarter 2 | 224 | 1,265,102 | 1,265,102 | 1,265,102 | -0.00 | 0.00 |
| | Quarter 3 | 314 | 1,266,287 | 1,266,287 | 1,266,287 | -0.00 | 0.00 |
| | Quarter 4 | 224 | 1,267,395 | 1,267,395 | 1,267,395 | -0.00 | -0.00 |
| Age Group | 12-17 | 235 | 441,446 | 450,438 | 450,438 | -2.00 | 0.00 |
| | 18-25 | 222 | 597,958 | 586,965 | 586,965 | 1.87 | 0.00 |
| | 26-34 | 133 | 703,489 | 728,295 | 728,295 | -3.41 | -0.00 |
| | 35-49 | 204 | 1,155,338 | 1,141,134 | 1,141,134 | 1.24 | 0.00 |
| | 50-64 | 91 | 1,242,869 | 1,218,949 | 1,218,949 | 1.96 | 0.00 |
| | 65+ | 74 | 922,034 | 937,353 | 937,354 | -1.63 | -0.00 |
| Race | White | 491 | 2,761,518 | 3,008,256 | 3,008,256 | -8.20 | -0.00 |
| | Black or African American | 294 | 1,539,990 | 1,552,357 | 1,552,358 | -0.80 | -0.00 |
| | American Indian/Alaska Native | 48 | 163,769 | 38,012 | 29,117 | 462.46 | 30.55 |
| | Asian | 75 | 399,515 | 345,402 | 354,297 | 12.76 | -2.51 |
| | Two or More Races | 51 | 198,341 | 119,107 | 119,107 | 66.52 | 0.00 |
| Hispanicity | Hispanic or Latino | 156 | 498,285 | 482,421 | 482,421 | 3.29 | 0.00 |
| | Non-Hispanic or Latino | 803 | 4,564,849 | 4,580,713 | 4,580,713 | -0.35 | -0.00 |
| Gender | Male | 473 | 2,402,845 | 2,406,960 | 2,406,960 | -0.17 | 0.00 |
| | Female | 486 | 2,660,289 | 2,656,174 | 2,656,174 | 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, 2019.

Table H.23 2019 NSDUH Slippage Rates: Massachusetts

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 955 | 5,947,410 | 5,947,410 | 5,947,410 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 193 | 1,485,007 | 1,485,007 | 1,485,007 | 0.00 | 0.00 |
| | Quarter 2 | 247 | 1,485,956 | 1,485,956 | 1,485,956 | 0.00 | 0.00 |
| | Quarter 3 | 281 | 1,487,481 | 1,487,481 | 1,487,481 | 0.00 | 0.00 |
| | Quarter 4 | 234 | 1,488,967 | 1,488,967 | 1,488,967 | -0.00 | 0.00 |
| Age Group | 12-17 | 265 | 476,025 | 474,535 | 474,535 | 0.31 | 0.00 |
| | 18-25 | 200 | 791,083 | 782,914 | 782,914 | 1.04 | 0.00 |
| | 26-34 | 134 | 863,502 | 886,620 | 886,620 | -2.61 | 0.00 |
| | 35-49 | 198 | 1,268,286 | 1,267,948 | 1,267,948 | 0.03 | 0.00 |
| | 50-64 | 81 | 1,399,303 | 1,400,270 | 1,400,270 | -0.07 | 0.00 |
| | 65+ | 77 | 1,149,211 | 1,135,124 | 1,135,124 | 1.24 | -0.00 |
| Race | White | 697 | 4,528,352 | 4,847,189 | 4,847,190 | -6.58 | -0.00 |
| | Black or African American | 98 | 596,722 | 508,985 | 508,985 | 17.24 | 0.00 |
| | American Indian/Alaska Native | 44 | 180,837 | 35,090 | 29,089 | 521.68 | 20.63 |
| | Asian | 82 | 467,490 | 431,723 | 437,725 | 6.80 | -1.37 |
| | Two or More Races | 34 | 174,009 | 124,423 | 124,423 | 39.85 | 0.00 |
| Hispanicity | Hispanic or Latino | 193 | 693,934 | 671,776 | 671,776 | 3.30 | 0.00 |
| | Non-Hispanic or Latino | 762 | 5,253,476 | 5,275,634 | 5,275,634 | -0.42 | 0.00 |
| Gender | Male | 459 | 2,838,831 | 2,859,638 | 2,859,638 | -0.73 | 0.00 |
| | Female | 496 | 3,108,579 | 3,087,772 | 3,087,772 | 0.67 | 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, 2019.

Table H.24 2019 NSDUH Slippage Rates: Michigan

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 2,497 | 8,490,080 | 8,490,080 | 8,490,080 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 518 | 2,121,123 | 2,121,123 | 2,121,123 | 0.00 | 0.00 |
| | Quarter 2 | 773 | 2,121,770 | 2,121,770 | 2,121,770 | 0.00 | 0.00 |
| | Quarter 3 | 616 | 2,123,075 | 2,123,075 | 2,123,075 | 0.00 | 0.00 |
| | Quarter 4 | 590 | 2,124,112 | 2,124,112 | 2,124,112 | 0.00 | 0.00 |
| Age Group | 12-17 | 588 | 752,322 | 748,985 | 748,985 | 0.45 | 0.00 |
| | 18-25 | 619 | 1,065,567 | 1,067,946 | 1,067,946 | -0.22 | 0.00 |
| | 26-34 | 392 | 1,154,745 | 1,157,323 | 1,157,323 | -0.22 | 0.00 |
| | 35-49 | 500 | 1,783,465 | 1,756,759 | 1,756,759 | 1.52 | 0.00 |
| | 50-64 | 196 | 1,867,864 | 2,029,647 | 2,029,647 | -7.97 | 0.00 |
| | 65+ | 202 | 1,866,116 | 1,729,420 | 1,729,420 | 7.90 | 0.00 |
| Race | White | 1,932 | 6,698,990 | 6,827,847 | 6,827,847 | -1.89 | 0.00 |
| | Black or African American | 333 | 1,124,889 | 1,133,267 | 1,133,267 | -0.74 | 0.00 |
| | American Indian/Alaska Native | 32 | 116,771 | 60,972 | 60,972 | 91.52 | 0.00 |
| | Asian | 84 | 288,120 | 293,554 | 293,554 | -1.85 | 0.00 |
| | Two or More Races | 116 | 261,310 | 174,440 | 174,440 | 49.80 | 0.00 |
| Hispanicity | Hispanic or Latino | 179 | 409,624 | 405,980 | 405,980 | 0.90 | 0.00 |
| | Non-Hispanic or Latino | 2,318 | 8,080,456 | 8,084,100 | 8,084,100 | -0.05 | 0.00 |
| Gender | Male | 1,217 | 4,144,307 | 4,134,497 | 4,134,497 | 0.24 | 0.00 |
| | Female | 1,280 | 4,345,772 | 4,355,582 | 4,355,582 | -0.23 | 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, 2019.

Table H.25 2019 NSDUH Slippage Rates: Minnesota

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 962 | 4,721,395 | 4,721,395 | 4,721,395 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 175 | 1,176,853 | 1,176,853 | 1,176,853 | 0.00 | 0.00 |
| | Quarter 2 | 279 | 1,179,044 | 1,179,044 | 1,179,044 | -0.00 | 0.00 |
| | Quarter 3 | 277 | 1,181,577 | 1,181,577 | 1,181,577 | 0.00 | 0.00 |
| | Quarter 4 | 231 | 1,183,921 | 1,183,921 | 1,183,921 | 0.00 | 0.00 |
| Age Group | 12-17 | 212 | 433,470 | 439,866 | 439,866 | -1.45 | 0.00 |
| | 18-25 | 244 | 569,121 | 566,538 | 566,538 | 0.46 | 0.00 |
| | 26-34 | 143 | 695,908 | 680,969 | 680,969 | 2.19 | 0.00 |
| | 35-49 | 191 | 1,059,626 | 1,046,325 | 1,046,325 | 1.27 | 0.00 |
| | 50-64 | 93 | 1,082,284 | 1,096,343 | 1,096,343 | -1.28 | 0.00 |
| | 65+ | 79 | 880,986 | 891,354 | 891,355 | -1.16 | -0.00 |
| Race | White | 772 | 3,979,373 | 4,034,515 | 4,034,515 | -1.37 | 0.00 |
| | Black or African American | 90 | 316,367 | 294,014 | 294,014 | 7.60 | 0.00 |
| | American Indian/Alaska Native | 22 | 74,225 | 55,840 | 55,840 | 32.92 | 0.00 |
| | Asian | 43 | 244,687 | 241,332 | 241,332 | 1.39 | 0.00 |
| | Two or More Races | 35 | 106,742 | 95,694 | 95,694 | 11.55 | 0.00 |
| Hispanicity | Hispanic or Latino | 83 | 242,876 | 234,045 | 234,045 | 3.77 | 0.00 |
| | Non-Hispanic or Latino | 879 | 4,478,519 | 4,487,350 | 4,487,350 | -0.20 | 0.00 |
| Gender | Male | 465 | 2,338,019 | 2,338,019 | 2,338,019 | 0.00 | 0.00 |
| | Female | 497 | 2,383,375 | 2,383,375 | 2,383,375 | -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, 2019.

Table H.26 2019 NSDUH Slippage Rates: Mississippi

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 1,041 | 2,450,969 | 2,450,969 | 2,450,969 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 185 | 612,309 | 612,309 | 612,309 | 0.00 | 0.00 |
| | Quarter 2 | 231 | 612,520 | 612,520 | 612,520 | 0.00 | 0.00 |
| | Quarter 3 | 296 | 612,908 | 612,908 | 612,908 | -0.00 | 0.00 |
| | Quarter 4 | 329 | 613,231 | 613,232 | 613,232 | -0.00 | 0.00 |
| Age Group | 12-17 | 216 | 239,988 | 241,997 | 241,997 | -0.83 | 0.00 |
| | 18-25 | 307 | 304,239 | 310,924 | 310,924 | -2.15 | 0.00 |
| | 26-34 | 141 | 342,737 | 335,262 | 335,262 | 2.23 | 0.00 |
| | 35-49 | 202 | 530,974 | 529,755 | 529,755 | 0.23 | 0.00 |
| | 50-64 | 86 | 523,969 | 559,566 | 559,566 | -6.36 | 0.00 |
| | 65+ | 89 | 509,063 | 473,466 | 473,466 | 7.52 | 0.00 |
| Race | White | 548 | 1,450,956 | 1,479,356 | 1,479,356 | -1.92 | 0.00 |
| | Black or African American | 436 | 906,026 | 902,845 | 902,845 | 0.35 | 0.00 |
| | American Indian/Alaska Native | 9 | 18,990 | 14,430 | 14,430 | 31.60 | -0.00 |
| | Asian | 21 | 45,344 | 29,270 | 29,270 | 54.91 | 0.00 |
| | Two or More Races | 27 | 29,653 | 25,068 | 25,068 | 18.29 | 0.00 |
| Hispanicity | Hispanic or Latino | 38 | 87,896 | 69,730 | 69,730 | 26.05 | 0.00 |
| | Non-Hispanic or Latino | 1,003 | 2,363,073 | 2,381,239 | 2,381,239 | -0.76 | 0.00 |
| Gender | Male | 465 | 1,150,488 | 1,157,406 | 1,157,406 | -0.60 | 0.00 |
| | Female | 576 | 1,300,481 | 1,293,563 | 1,293,563 | 0.53 | 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, 2019.

Table H.27 2019 NSDUH Slippage Rates: Missouri

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 968 | 5,124,454 | 5,124,454 | 5,124,454 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 165 | 1,278,922 | 1,278,922 | 1,278,922 | 0.00 | 0.00 |
| | Quarter 2 | 280 | 1,280,217 | 1,280,217 | 1,280,217 | 0.00 | 0.00 |
| | Quarter 3 | 276 | 1,281,902 | 1,281,902 | 1,281,902 | 0.00 | 0.00 |
| | Quarter 4 | 247 | 1,283,413 | 1,283,413 | 1,283,413 | 0.00 | 0.00 |
| Age Group | 12-17 | 217 | 465,228 | 465,893 | 465,893 | -0.14 | 0.00 |
| | 18-25 | 232 | 616,871 | 623,753 | 623,753 | -1.10 | 0.00 |
| | 26-34 | 154 | 736,362 | 724,461 | 724,461 | 1.64 | 0.00 |
| | 35-49 | 210 | 1,104,594 | 1,096,018 | 1,096,018 | 0.78 | 0.00 |
| | 50-64 | 88 | 1,188,745 | 1,188,620 | 1,188,620 | 0.01 | 0.00 |
| | 65+ | 67 | 1,012,653 | 1,025,710 | 1,025,710 | -1.27 | 0.00 |
| Race | White | 752 | 4,196,044 | 4,303,194 | 4,303,194 | -2.49 | 0.00 |
| | Black or African American | 115 | 615,842 | 572,792 | 572,792 | 7.52 | 0.00 |
| | American Indian/Alaska Native | 16 | 71,649 | 29,200 | 29,200 | 145.38 | 0.00 |
| | Asian | 49 | 131,009 | 121,663 | 121,663 | 7.68 | 0.00 |
| | Two or More Races | 36 | 109,910 | 97,604 | 97,604 | 12.61 | 0.00 |
| Hispanicity | Hispanic or Latino | 54 | 226,496 | 200,001 | 200,001 | 13.25 | 0.00 |
| | Non-Hispanic or Latino | 914 | 4,897,958 | 4,924,453 | 4,924,453 | -0.54 | 0.00 |
| Gender | Male | 482 | 2,470,747 | 2,479,126 | 2,479,126 | -0.34 | 0.00 |
| | Female | 486 | 2,653,707 | 2,645,327 | 2,645,327 | 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, 2019.

Table H.28 2019 NSDUH Slippage Rates: Montana

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 963 | 902,279 | 902,279 | 902,279 | 0.00 | -0.00 |
| Quarter | Quarter 1 | 186 | 224,707 | 224,707 | 224,707 | 0.00 | -0.00 |
| | Quarter 2 | 315 | 225,248 | 225,248 | 225,248 | 0.00 | 0.00 |
| | Quarter 3 | 246 | 225,869 | 225,869 | 225,869 | 0.00 | 0.00 |
| | Quarter 4 | 216 | 226,456 | 226,456 | 226,456 | 0.00 | 0.00 |
| Age Group | 12-17 | 233 | 76,595 | 76,595 | 76,595 | 0.00 | -0.00 |
| | 18-25 | 257 | 108,461 | 109,033 | 109,033 | -0.52 | -0.00 |
| | 26-34 | 131 | 122,774 | 121,368 | 121,368 | 1.16 | 0.00 |
| | 35-49 | 213 | 188,910 | 185,370 | 185,370 | 1.91 | -0.00 |
| | 50-64 | 74 | 239,077 | 207,969 | 207,969 | 14.96 | 0.00 |
| | 65+ | 55 | 166,463 | 201,945 | 201,945 | -17.57 | 0.00 |
| Race | White | 825 | 813,258 | 814,678 | 814,678 | -0.17 | -0.00 |
| | Black or African American | 11 | 4,632 | 4,698 | 4,698 | -1.40 | 0.00 |
| | American Indian/Alaska Native | 82 | 48,615 | 51,827 | 51,827 | -6.20 | -0.00 |
| | Asian | 13 | 10,860 | 9,419 | 9,419 | 15.30 | 0.00 |
| | Two or More Races | 32 | 24,914 | 21,657 | 21,657 | 15.04 | 0.00 |
| Hispanicity | Hispanic or Latino | 51 | 28,479 | 31,928 | 31,928 | -10.80 | 0.00 |
| | Non-Hispanic or Latino | 912 | 873,800 | 870,351 | 870,351 | 0.40 | -0.00 |
| Gender | Male | 479 | 450,280 | 450,280 | 450,280 | 0.00 | -0.00 |
| | Female | 484 | 451,998 | 451,998 | 451,998 | 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, 2019.

Table H.29 2019 NSDUH Slippage Rates: Nebraska

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 999 | 1,587,451 | 1,587,451 | 1,587,451 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 212 | 395,876 | 395,875 | 395,876 | 0.00 | -0.00 |
| | Quarter 2 | 261 | 396,477 | 396,477 | 396,477 | 0.00 | 0.00 |
| | Quarter 3 | 292 | 397,206 | 397,206 | 397,206 | 0.00 | -0.00 |
| | Quarter 4 | 234 | 397,893 | 397,893 | 397,893 | 0.00 | 0.00 |
| Age Group | 12-17 | 267 | 157,233 | 157,904 | 157,904 | -0.43 | 0.00 |
| | 18-25 | 290 | 206,689 | 210,672 | 210,672 | -1.89 | 0.00 |
| | 26-34 | 114 | 222,572 | 223,624 | 223,624 | -0.47 | 0.00 |
| | 35-49 | 207 | 352,258 | 346,552 | 346,552 | 1.65 | -0.00 |
| | 50-64 | 56 | 320,678 | 347,149 | 347,149 | -7.63 | -0.00 |
| | 65+ | 65 | 328,021 | 301,550 | 301,550 | 8.78 | -0.00 |
| Race | White | 870 | 1,388,999 | 1,417,672 | 1,417,672 | -2.02 | -0.00 |
| | Black or African American | 53 | 72,692 | 75,943 | 75,943 | -4.28 | 0.00 |
| | American Indian/Alaska Native | 24 | 34,460 | 19,957 | 19,957 | 72.67 | 0.00 |
| | Asian | 17 | 47,730 | 45,400 | 45,400 | 5.13 | 0.00 |
| | Two or More Races | 35 | 43,571 | 28,479 | 28,479 | 52.99 | 0.00 |
| Hispanicity | Hispanic or Latino | 114 | 155,991 | 158,291 | 158,291 | -1.45 | 0.00 |
| | Non-Hispanic or Latino | 885 | 1,431,460 | 1,429,160 | 1,429,160 | 0.16 | 0.00 |
| Gender | Male | 471 | 784,847 | 784,847 | 784,847 | -0.00 | 0.00 |
| | Female | 528 | 802,604 | 802,604 | 802,604 | 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, 2019.

Table H.30 2019 NSDUH Slippage Rates: Nevada

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 978 | 2,584,115 | 2,584,115 | 2,584,115 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 236 | 641,097 | 641,097 | 641,097 | 0.00 | -0.00 |
| | Quarter 2 | 238 | 644,261 | 644,261 | 644,261 | 0.00 | -0.00 |
| | Quarter 3 | 203 | 647,677 | 647,677 | 647,677 | 0.00 | -0.00 |
| | Quarter 4 | 301 | 651,080 | 651,080 | 651,080 | 0.00 | 0.00 |
| Age Group | 12-17 | 262 | 233,449 | 233,449 | 233,449 | 0.00 | -0.00 |
| | 18-25 | 252 | 288,187 | 283,997 | 283,997 | 1.48 | 0.00 |
| | 26-34 | 128 | 403,093 | 399,559 | 399,559 | 0.88 | -0.00 |
| | 35-49 | 202 | 591,026 | 600,736 | 600,736 | -1.62 | -0.00 |
| | 50-64 | 64 | 467,678 | 574,162 | 574,162 | -18.55 | -0.00 |
| | 65+ | 70 | 600,681 | 492,212 | 492,212 | 22.04 | 0.00 |
| Race | White | 612 | 1,775,620 | 1,932,735 | 1,932,735 | -8.13 | 0.00 |
| | Black or African American | 145 | 272,386 | 251,078 | 251,078 | 8.49 | -0.00 |
| | American Indian/Alaska Native | 68 | 121,115 | 41,983 | 41,983 | 188.49 | 0.00 |
| | Asian | 79 | 290,980 | 261,095 | 261,095 | 11.45 | 0.00 |
| | Two or More Races | 74 | 124,015 | 97,225 | 97,225 | 27.55 | 0.00 |
| Hispanicity | Hispanic or Latino | 434 | 721,301 | 706,280 | 706,280 | 2.13 | -0.00 |
| | Non-Hispanic or Latino | 544 | 1,862,814 | 1,877,835 | 1,877,835 | -0.80 | -0.00 |
| Gender | Male | 474 | 1,280,718 | 1,280,035 | 1,280,035 | 0.05 | -0.00 |
| | Female | 504 | 1,303,398 | 1,304,081 | 1,304,081 | -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, 2019.

Table H.31 2019 NSDUH Slippage Rates: New Hampshire

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 961 | 1,182,918 | 1,182,918 | 1,182,918 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 154 | 294,976 | 294,976 | 294,976 | 0.00 | 0.00 |
| | Quarter 2 | 262 | 295,452 | 295,452 | 295,452 | 0.00 | 0.00 |
| | Quarter 3 | 321 | 295,994 | 295,994 | 295,994 | 0.00 | 0.00 |
| | Quarter 4 | 224 | 296,497 | 296,497 | 296,497 | 0.00 | 0.00 |
| Age Group | 12-17 | 240 | 93,711 | 93,711 | 93,711 | 0.00 | 0.00 |
| | 18-25 | 213 | 134,730 | 139,066 | 139,066 | -3.12 | 0.00 |
| | 26-34 | 158 | 159,279 | 153,525 | 153,525 | 3.75 | 0.00 |
| | 35-49 | 201 | 235,779 | 240,537 | 240,537 | -1.98 | 0.00 |
| | 50-64 | 76 | 283,610 | 309,936 | 309,936 | -8.49 | 0.00 |
| | 65+ | 73 | 275,810 | 246,143 | 246,143 | 12.05 | 0.00 |
| Race | White | 839 | 1,071,496 | 1,107,092 | 1,107,093 | -3.22 | -0.00 |
| | Black or African American | 22 | 23,345 | 19,583 | 19,583 | 19.21 | 0.00 |
| | American Indian/Alaska Native | 20 | 22,594 | 4,965 | 3,507 | 544.20 | 41.56 |
| | Asian | 37 | 29,801 | 33,881 | 35,339 | -15.67 | -4.13 |
| | Two or More Races | 43 | 35,683 | 17,397 | 17,397 | 105.11 | 0.00 |
| Hispanicity | Hispanic or Latino | 67 | 44,879 | 42,940 | 42,940 | 4.52 | 0.00 |
| | Non-Hispanic or Latino | 894 | 1,138,039 | 1,139,978 | 1,139,978 | -0.17 | 0.00 |
| Gender | Male | 467 | 584,623 | 582,348 | 582,348 | 0.39 | 0.00 |
| | Female | 494 | 598,295 | 600,570 | 600,570 | -0.38 | 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, 2019.

Table H.32 2019 NSDUH Slippage Rates: New Jersey

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 1,490 | 7,518,524 | 7,518,524 | 7,518,524 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 368 | 1,878,935 | 1,878,935 | 1,878,935 | 0.00 | 0.00 |
| | Quarter 2 | 437 | 1,879,092 | 1,879,092 | 1,879,092 | 0.00 | 0.00 |
| | Quarter 3 | 377 | 1,879,902 | 1,879,902 | 1,879,902 | -0.00 | 0.00 |
| | Quarter 4 | 308 | 1,880,595 | 1,880,595 | 1,880,595 | -0.00 | 0.00 |
| Age Group | 12-17 | 364 | 677,612 | 672,884 | 672,884 | 0.70 | 0.00 |
| | 18-25 | 358 | 851,219 | 853,383 | 853,383 | -0.25 | 0.00 |
| | 26-34 | 221 | 1,011,577 | 1,022,799 | 1,022,799 | -1.10 | 0.00 |
| | 35-49 | 310 | 1,699,739 | 1,703,125 | 1,703,125 | -0.20 | 0.00 |
| | 50-64 | 143 | 2,032,018 | 1,827,906 | 1,827,906 | 11.17 | 0.00 |
| | 65+ | 94 | 1,246,358 | 1,438,428 | 1,438,428 | -13.35 | -0.00 |
| Race | White | 935 | 5,086,029 | 5,471,821 | 5,471,821 | -7.05 | 0.00 |
| | Black or African American | 234 | 1,154,167 | 1,091,838 | 1,091,838 | 5.71 | 0.00 |
| | American Indian/Alaska Native | 70 | 258,528 | 55,246 | 46,642 | 454.28 | 18.45 |
| | Asian | 197 | 832,808 | 759,872 | 768,476 | 8.37 | -1.12 |
| | Two or More Races | 54 | 186,993 | 139,748 | 139,748 | 33.81 | 0.00 |
| Hispanicity | Hispanic or Latino | 373 | 1,539,167 | 1,475,848 | 1,475,848 | 4.29 | 0.00 |
| | Non-Hispanic or Latino | 1,117 | 5,979,357 | 6,042,676 | 6,042,676 | -1.05 | 0.00 |
| Gender | Male | 714 | 3,631,237 | 3,630,092 | 3,630,092 | 0.03 | 0.00 |
| | Female | 776 | 3,887,287 | 3,888,432 | 3,888,432 | -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, 2019.

Table H.33 2019 NSDUH Slippage Rates: New Mexico

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 917 | 1,751,010 | 1,751,010 | 1,751,010 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 239 | 436,819 | 436,819 | 436,819 | -0.00 | 0.00 |
| | Quarter 2 | 246 | 437,362 | 437,362 | 437,362 | 0.00 | -0.00 |
| | Quarter 3 | 215 | 438,068 | 438,068 | 438,068 | 0.00 | 0.00 |
| | Quarter 4 | 217 | 438,762 | 438,762 | 438,762 | 0.00 | -0.00 |
| Age Group | 12-17 | 230 | 164,396 | 165,666 | 165,666 | -0.77 | -0.00 |
| | 18-25 | 219 | 218,976 | 215,352 | 215,352 | 1.68 | 0.00 |
| | 26-34 | 146 | 243,862 | 244,896 | 244,896 | -0.42 | 0.00 |
| | 35-49 | 184 | 356,396 | 363,459 | 363,459 | -1.94 | 0.00 |
| | 50-64 | 76 | 434,212 | 388,803 | 388,803 | 11.68 | 0.00 |
| | 65+ | 62 | 333,168 | 372,834 | 372,834 | -10.64 | -0.00 |
| Race | White | 732 | 1,347,145 | 1,452,355 | 1,452,355 | -7.24 | 0.00 |
| | Black or African American | 25 | 45,609 | 42,986 | 42,986 | 6.10 | 0.00 |
| | American Indian/Alaska Native | 98 | 242,585 | 180,907 | 180,907 | 34.09 | 0.00 |
| | Asian | 24 | 58,836 | 35,509 | 35,509 | 65.69 | 0.00 |
| | Two or More Races | 38 | 56,835 | 39,254 | 39,254 | 44.79 | 0.00 |
| Hispanicity | Hispanic or Latino | 490 | 836,783 | 833,648 | 833,648 | 0.38 | -0.00 |
| | Non-Hispanic or Latino | 427 | 914,227 | 917,362 | 917,362 | -0.34 | 0.00 |
| Gender | Male | 422 | 851,004 | 851,004 | 851,004 | 0.00 | 0.00 |
| | Female | 495 | 900,006 | 900,006 | 900,006 | 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, 2019.

Table H.34 2019 NSDUH Slippage Rates: New York

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 3,260 | 16,541,989 | 16,541,989 | 16,541,989 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 740 | 4,139,733 | 4,139,733 | 4,139,733 | -0.00 | 0.00 |
| | Quarter 2 | 927 | 4,136,233 | 4,136,233 | 4,136,233 | -0.00 | 0.00 |
| | Quarter 3 | 948 | 4,134,158 | 4,134,159 | 4,134,159 | -0.00 | 0.00 |
| | Quarter 4 | 645 | 4,131,864 | 4,131,864 | 4,131,864 | -0.00 | 0.00 |
| Age Group | 12-17 | 849 | 1,338,771 | 1,340,514 | 1,340,514 | -0.13 | 0.00 |
| | 18-25 | 778 | 1,993,436 | 2,009,990 | 2,009,990 | -0.82 | 0.00 |
| | 26-34 | 477 | 2,568,416 | 2,550,581 | 2,550,581 | 0.70 | 0.00 |
| | 35-49 | 687 | 3,598,555 | 3,586,712 | 3,586,712 | 0.33 | 0.00 |
| | 50-64 | 249 | 3,771,994 | 3,847,196 | 3,847,196 | -1.95 | 0.00 |
| | 65+ | 220 | 3,270,816 | 3,206,995 | 3,206,995 | 1.99 | 0.00 |
| Race | White | 2,060 | 10,607,923 | 11,638,469 | 11,638,469 | -8.85 | -0.00 |
| | Black or African American | 591 | 3,119,267 | 2,832,521 | 2,832,521 | 10.12 | 0.00 |
| | American Indian/Alaska Native | 139 | 610,493 | 161,786 | 161,786 | 277.35 | 0.00 |
| | Asian | 321 | 1,755,044 | 1,546,204 | 1,546,204 | 13.51 | 0.00 |
| | Two or More Races | 149 | 449,261 | 363,009 | 363,009 | 23.76 | 0.00 |
| Hispanicity | Hispanic or Latino | 840 | 3,065,060 | 3,028,293 | 3,028,293 | 1.21 | 0.00 |
| | Non-Hispanic or Latino | 2,420 | 13,476,929 | 13,513,696 | 13,513,696 | -0.27 | 0.00 |
| Gender | Male | 1,522 | 7,982,296 | 7,929,688 | 7,929,688 | 0.66 | 0.00 |
| | Female | 1,738 | 8,559,692 | 8,612,301 | 8,612,301 | -0.61 | 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, 2019.

Table H.35 2019 NSDUH Slippage Rates: North Carolina

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 1,572 | 8,780,240 | 8,780,240 | 8,780,240 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 330 | 2,184,513 | 2,184,513 | 2,184,513 | -0.00 | 0.00 |
| | Quarter 2 | 365 | 2,191,194 | 2,191,194 | 2,191,194 | -0.00 | 0.00 |
| | Quarter 3 | 432 | 2,198,627 | 2,198,627 | 2,198,627 | -0.00 | 0.00 |
| | Quarter 4 | 445 | 2,205,905 | 2,205,906 | 2,205,906 | -0.00 | -0.00 |
| Age Group | 12-17 | 333 | 793,659 | 795,278 | 795,278 | -0.20 | -0.00 |
| | 18-25 | 446 | 1,054,439 | 1,070,088 | 1,070,088 | -1.46 | 0.00 |
| | 26-34 | 277 | 1,261,035 | 1,224,904 | 1,224,904 | 2.95 | -0.00 |
| | 35-49 | 275 | 1,930,581 | 1,951,326 | 1,951,326 | -1.06 | 0.00 |
| | 50-64 | 139 | 2,104,076 | 2,024,236 | 2,024,236 | 3.94 | 0.00 |
| | 65+ | 102 | 1,636,450 | 1,714,408 | 1,714,409 | -4.55 | -0.00 |
| Race | White | 954 | 5,999,817 | 6,301,309 | 6,301,309 | -4.78 | -0.00 |
| | Black or African American | 437 | 1,943,105 | 1,901,618 | 1,901,618 | 2.18 | 0.00 |
| | American Indian/Alaska Native | 53 | 256,603 | 112,557 | 131,422 | 95.25 | -14.35 |
| | Asian | 54 | 335,675 | 303,770 | 284,906 | 17.82 | 6.62 |
| | Two or More Races | 74 | 245,040 | 160,985 | 160,985 | 52.21 | 0.00 |
| Hispanicity | Hispanic or Latino | 180 | 761,100 | 744,321 | 744,321 | 2.25 | 0.00 |
| | Non-Hispanic or Latino | 1,392 | 8,019,140 | 8,035,919 | 8,035,919 | -0.21 | 0.00 |
| Gender | Male | 735 | 4,180,107 | 4,176,623 | 4,176,623 | 0.08 | -0.00 |
| | Female | 837 | 4,600,133 | 4,603,617 | 4,603,617 | -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, 2019.

Table H.36 2019 NSDUH Slippage Rates: North Dakota

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 938 | 620,262 | 620,263 | 620,263 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 179 | 154,714 | 154,714 | 154,714 | -0.00 | 0.00 |
| | Quarter 2 | 294 | 154,907 | 154,906 | 154,907 | 0.00 | -0.00 |
| | Quarter 3 | 250 | 155,179 | 155,179 | 155,179 | -0.00 | 0.00 |
| | Quarter 4 | 215 | 155,463 | 155,463 | 155,463 | 0.00 | 0.00 |
| Age Group | 12-17 | 242 | 54,945 | 55,075 | 55,075 | -0.24 | -0.00 |
| | 18-25 | 225 | 90,388 | 90,720 | 90,720 | -0.37 | 0.00 |
| | 26-34 | 134 | 99,437 | 98,975 | 98,975 | 0.47 | 0.00 |
| | 35-49 | 191 | 129,141 | 129,141 | 129,141 | -0.00 | 0.00 |
| | 50-64 | 86 | 141,819 | 132,591 | 132,591 | 6.96 | 0.00 |
| | 65+ | 60 | 104,532 | 113,761 | 113,761 | -8.11 | 0.00 |
| Race | White | 790 | 549,088 | 549,591 | 549,591 | -0.09 | 0.00 |
| | Black or African American | 44 | 19,089 | 18,646 | 18,646 | 2.38 | 0.00 |
| | American Indian/Alaska Native | 58 | 32,168 | 30,252 | 30,252 | 6.34 | 0.00 |
| | Asian | 25 | 13,061 | 10,874 | 10,874 | 20.10 | 0.00 |
| | Two or More Races | 21 | 6,857 | 10,900 | 10,900 | -37.10 | 0.00 |
| Hispanicity | Hispanic or Latino | 29 | 22,321 | 22,043 | 22,043 | 1.26 | 0.00 |
| | Non-Hispanic or Latino | 909 | 597,942 | 598,219 | 598,219 | -0.05 | 0.00 |
| Gender | Male | 438 | 315,531 | 315,531 | 315,531 | -0.00 | -0.00 |
| | Female | 500 | 304,731 | 304,731 | 304,731 | -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, 2019.

Table H.37 2019 NSDUH Slippage Rates: Ohio

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 2,446 | 9,829,310 | 9,829,310 | 9,829,310 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 561 | 2,455,104 | 2,455,104 | 2,455,104 | -0.00 | 0.00 |
| | Quarter 2 | 719 | 2,456,302 | 2,456,302 | 2,456,302 | -0.00 | 0.00 |
| | Quarter 3 | 520 | 2,458,203 | 2,458,203 | 2,458,203 | 0.00 | 0.00 |
| | Quarter 4 | 646 | 2,459,701 | 2,459,701 | 2,459,701 | -0.00 | -0.00 |
| Age Group | 12-17 | 584 | 886,363 | 886,363 | 886,363 | -0.00 | 0.00 |
| | 18-25 | 610 | 1,187,360 | 1,194,395 | 1,194,395 | -0.59 | 0.00 |
| | 26-34 | 385 | 1,399,551 | 1,371,942 | 1,371,942 | 2.01 | 0.00 |
| | 35-49 | 493 | 2,059,973 | 2,080,548 | 2,080,548 | -0.99 | 0.00 |
| | 50-64 | 196 | 2,241,515 | 2,316,555 | 2,316,555 | -3.24 | 0.00 |
| | 65+ | 178 | 2,054,548 | 1,979,507 | 1,979,508 | 3.79 | -0.00 |
| Race | White | 1,881 | 8,000,843 | 8,160,545 | 8,160,545 | -1.96 | -0.00 |
| | Black or African American | 353 | 1,206,879 | 1,204,736 | 1,204,736 | 0.18 | 0.00 |
| | American Indian/Alaska Native | 14 | 42,058 | 8,230 | 28,021 | 50.10 | -70.63 |
| | Asian | 75 | 280,371 | 272,548 | 252,757 | 10.92 | 7.83 |
| | Two or More Races | 123 | 299,158 | 183,250 | 183,250 | 63.25 | 0.00 |
| Hispanicity | Hispanic or Latino | 128 | 370,935 | 352,211 | 352,211 | 5.32 | 0.00 |
| | Non-Hispanic or Latino | 2,318 | 9,458,375 | 9,477,099 | 9,477,099 | -0.20 | 0.00 |
| Gender | Male | 1,182 | 4,760,440 | 4,761,972 | 4,761,972 | -0.03 | -0.00 |
| | Female | 1,264 | 5,068,870 | 5,067,337 | 5,067,337 | 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, 2019.

Table H.38 2019 NSDUH Slippage Rates: Oklahoma

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 952 | 3,244,253 | 3,244,253 | 3,244,253 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 267 | 809,008 | 809,008 | 809,008 | -0.00 | 0.00 |
| | Quarter 2 | 222 | 810,269 | 810,269 | 810,269 | 0.00 | 0.00 |
| | Quarter 3 | 243 | 811,788 | 811,788 | 811,788 | 0.00 | 0.00 |
| | Quarter 4 | 220 | 813,188 | 813,188 | 813,188 | 0.00 | 0.00 |
| Age Group | 12-17 | 212 | 319,743 | 319,059 | 319,059 | 0.21 | 0.00 |
| | 18-25 | 274 | 413,152 | 418,177 | 418,177 | -1.20 | 0.00 |
| | 26-34 | 159 | 477,187 | 470,642 | 470,642 | 1.39 | 0.00 |
| | 35-49 | 179 | 704,894 | 709,680 | 709,680 | -0.67 | 0.00 |
| | 50-64 | 70 | 763,827 | 709,096 | 709,096 | 7.72 | 0.00 |
| | 65+ | 58 | 565,450 | 617,599 | 617,599 | -8.44 | 0.00 |
| Race | White | 643 | 2,380,353 | 2,452,298 | 2,452,298 | -2.93 | 0.00 |
| | Black or African American | 92 | 249,485 | 238,790 | 238,790 | 4.48 | 0.00 |
| | American Indian/Alaska Native | 90 | 298,199 | 291,324 | 291,324 | 2.36 | 0.00 |
| | Asian | 22 | 85,464 | 86,365 | 86,365 | -1.04 | 0.00 |
| | Two or More Races | 105 | 230,751 | 175,477 | 175,477 | 31.50 | 0.00 |
| Hispanicity | Hispanic or Latino | 149 | 319,372 | 316,856 | 316,856 | 0.79 | 0.00 |
| | Non-Hispanic or Latino | 803 | 2,924,881 | 2,927,397 | 2,927,397 | -0.09 | 0.00 |
| Gender | Male | 461 | 1,577,135 | 1,578,552 | 1,578,552 | -0.09 | 0.00 |
| | Female | 491 | 1,667,118 | 1,665,701 | 1,665,701 | 0.09 | 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, 2019.

Table H.39 2019 NSDUH Slippage Rates: Oregon

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 954 | 3,608,390 | 3,608,390 | 3,608,390 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 247 | 898,268 | 898,268 | 898,268 | 0.00 | 0.00 |
| | Quarter 2 | 230 | 900,680 | 900,680 | 900,680 | -0.00 | 0.00 |
| | Quarter 3 | 303 | 903,409 | 903,409 | 903,409 | -0.00 | 0.00 |
| | Quarter 4 | 174 | 906,033 | 906,033 | 906,033 | 0.00 | 0.00 |
| Age Group | 12-17 | 271 | 295,056 | 295,505 | 295,505 | -0.15 | 0.00 |
| | 18-25 | 202 | 404,104 | 414,186 | 414,186 | -2.43 | 0.00 |
| | 26-34 | 149 | 541,433 | 538,884 | 538,884 | 0.47 | 0.00 |
| | 35-49 | 170 | 814,238 | 820,743 | 820,743 | -0.79 | -0.00 |
| | 50-64 | 75 | 709,317 | 783,069 | 783,069 | -9.42 | -0.00 |
| | 65+ | 87 | 844,243 | 756,003 | 756,004 | 11.67 | -0.00 |
| Race | White | 793 | 3,115,850 | 3,152,613 | 3,152,614 | -1.17 | -0.00 |
| | Black or African American | 14 | 68,762 | 74,800 | 74,800 | -8.07 | 0.00 |
| | American Indian/Alaska Native | 37 | 99,124 | 61,660 | 61,660 | 60.76 | -0.00 |
| | Asian | 52 | 194,342 | 196,469 | 196,469 | -1.08 | -0.00 |
| | Two or More Races | 58 | 130,311 | 122,848 | 122,848 | 6.07 | -0.00 |
| Hispanicity | Hispanic or Latino | 177 | 427,986 | 434,695 | 434,695 | -1.54 | 0.00 |
| | Non-Hispanic or Latino | 777 | 3,180,404 | 3,173,695 | 3,173,695 | 0.21 | 0.00 |
| Gender | Male | 458 | 1,765,386 | 1,770,526 | 1,770,526 | -0.29 | 0.00 |
| | Female | 496 | 1,843,005 | 1,837,865 | 1,837,865 | 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, 2019.

Table H.40 2019 NSDUH Slippage Rates: Pennsylvania

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 2,386 | 10,880,971 | 10,880,971 | 10,880,971 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 560 | 2,718,753 | 2,718,753 | 2,718,753 | 0.00 | -0.00 |
| | Quarter 2 | 699 | 2,719,223 | 2,719,223 | 2,719,223 | 0.00 | 0.00 |
| | Quarter 3 | 574 | 2,720,798 | 2,720,798 | 2,720,798 | 0.00 | 0.00 |
| | Quarter 4 | 553 | 2,722,197 | 2,722,197 | 2,722,197 | 0.00 | 0.00 |
| Age Group | 12-17 | 653 | 902,279 | 907,627 | 907,627 | -0.59 | 0.00 |
| | 18-25 | 512 | 1,312,068 | 1,282,534 | 1,282,534 | 2.30 | 0.00 |
| | 26-34 | 364 | 1,495,467 | 1,510,853 | 1,510,853 | -1.02 | 0.00 |
| | 35-49 | 476 | 2,231,291 | 2,248,594 | 2,248,594 | -0.77 | 0.00 |
| | 50-64 | 232 | 3,074,205 | 2,614,912 | 2,614,912 | 17.56 | -0.00 |
| | 65+ | 149 | 1,865,661 | 2,316,450 | 2,316,450 | -19.46 | -0.00 |
| Race | White | 1,856 | 8,821,204 | 9,030,930 | 9,030,930 | -2.32 | -0.00 |
| | Black or African American | 310 | 1,313,310 | 1,211,914 | 1,211,914 | 8.37 | 0.00 |
| | American Indian/Alaska Native | 32 | 120,517 | 31,043 | 39,647 | 203.98 | -21.70 |
| | Asian | 108 | 397,183 | 426,738 | 418,135 | -5.01 | 2.06 |
| | Two or More Races | 80 | 228,756 | 180,346 | 180,346 | 26.84 | 0.00 |
| Hispanicity | Hispanic or Latino | 221 | 765,945 | 755,116 | 755,116 | 1.43 | 0.00 |
| | Non-Hispanic or Latino | 2,165 | 10,115,026 | 10,125,855 | 10,125,855 | -0.11 | 0.00 |
| Gender | Male | 1,153 | 5,269,267 | 5,265,337 | 5,265,337 | 0.07 | 0.00 |
| | Female | 1,233 | 5,611,704 | 5,615,634 | 5,615,634 | -0.07 | -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, 2019.

Table H.41 2019 NSDUH Slippage Rates: Rhode Island

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 930 | 911,627 | 911,627 | 911,627 | 0.00 | 0.00 |
| <i>Quarter</i> | Quarter 1 | 212 | 227,694 | 227,694 | 227,694 | 0.00 | 0.00 |
| | Quarter 2 | 272 | 227,790 | 227,790 | 227,790 | 0.00 | 0.00 |
| | Quarter 3 | 232 | 227,978 | 227,978 | 227,978 | 0.00 | 0.00 |
| | Quarter 4 | 214 | 228,166 | 228,166 | 228,166 | -0.00 | 0.00 |
| <i>Age Group</i> | 12-17 | 252 | 73,622 | 72,327 | 72,327 | 1.79 | 0.00 |
| | 18-25 | 215 | 123,501 | 122,075 | 122,075 | 1.17 | 0.00 |
| | 26-34 | 147 | 131,034 | 131,220 | 131,220 | -0.14 | 0.00 |
| | 35-49 | 177 | 183,943 | 186,480 | 186,480 | -1.36 | 0.00 |
| | 50-64 | 83 | 247,687 | 219,532 | 219,532 | 12.83 | 0.00 |
| | 65+ | 56 | 151,839 | 179,994 | 179,994 | -15.64 | -0.00 |
| <i>Race</i> | White | 716 | 721,889 | 773,430 | 773,430 | -6.66 | 0.00 |
| | Black or African American | 71 | 73,816 | 72,736 | 72,736 | 1.49 | 0.00 |
| | American Indian/Alaska Native | 40 | 40,202 | 8,400 | 8,400 | 378.59 | 0.00 |
| | Asian | 64 | 46,445 | 35,372 | 35,372 | 31.30 | 0.00 |
| | Two or More Races | 39 | 29,275 | 21,690 | 21,690 | 34.97 | 0.00 |
| <i>Hispanicity</i> | Hispanic or Latino | 200 | 136,255 | 134,502 | 134,502 | 1.30 | 0.00 |
| | Non-Hispanic or Latino | 730 | 775,373 | 777,125 | 777,125 | -0.23 | 0.00 |
| <i>Gender</i> | Male | 438 | 438,992 | 438,992 | 438,992 | 0.00 | 0.00 |
| | Female | 492 | 472,636 | 472,636 | 472,636 | 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, 2019.

Table H.42 2019 NSDUH Slippage Rates: South Carolina

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 901 | 4,321,636 | 4,321,636 | 4,321,636 | 0.00 | -0.00 |
| <i>Quarter</i> | Quarter 1 | 197 | 1,074,060 | 1,074,060 | 1,074,060 | -0.00 | 0.00 |
| | Quarter 2 | 273 | 1,078,086 | 1,078,086 | 1,078,086 | 0.00 | 0.00 |
| | Quarter 3 | 196 | 1,082,535 | 1,082,535 | 1,082,535 | 0.00 | 0.00 |
| | Quarter 4 | 235 | 1,086,956 | 1,086,956 | 1,086,956 | 0.00 | -0.00 |
| <i>Age Group</i> | 12-17 | 232 | 375,974 | 380,001 | 380,002 | -1.06 | -0.00 |
| | 18-25 | 194 | 503,641 | 503,621 | 503,621 | 0.00 | 0.00 |
| | 26-34 | 146 | 587,734 | 592,292 | 592,292 | -0.77 | -0.00 |
| | 35-49 | 180 | 925,982 | 919,197 | 919,197 | 0.74 | -0.00 |
| | 50-64 | 84 | 1,058,390 | 1,005,109 | 1,005,109 | 5.30 | 0.00 |
| | 65+ | 65 | 869,915 | 921,416 | 921,416 | -5.59 | -0.00 |
| <i>Race</i> | White | 577 | 2,969,115 | 3,021,298 | 3,021,298 | -1.73 | 0.00 |
| | Black or African American | 235 | 1,119,915 | 1,130,124 | 1,130,124 | -0.90 | -0.00 |
| | American Indian/Alaska Native | 21 | 66,463 | 27,148 | 22,806 | 191.42 | 19.04 |
| | Asian | 14 | 72,611 | 78,776 | 83,118 | -12.64 | -5.22 |
| | Two or More Races | 54 | 93,532 | 64,290 | 64,290 | 45.49 | 0.00 |
| <i>Hispanicity</i> | Hispanic or Latino | 73 | 226,798 | 224,607 | 224,608 | 0.98 | -0.00 |
| | Non-Hispanic or Latino | 828 | 4,094,838 | 4,097,029 | 4,097,029 | -0.05 | 0.00 |
| <i>Gender</i> | Male | 428 | 2,046,579 | 2,047,769 | 2,047,769 | -0.06 | -0.00 |
| | Female | 473 | 2,275,058 | 2,273,867 | 2,273,867 | 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, 2019.

Table H.43 2019 NSDUH Slippage Rates: South Dakota

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 935 | 720,183 | 720,183 | 720,183 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 205 | 179,417 | 179,417 | 179,417 | 0.00 | 0.00 |
| | Quarter 2 | 240 | 179,810 | 179,810 | 179,810 | 0.00 | 0.00 |
| | Quarter 3 | 234 | 180,261 | 180,261 | 180,261 | 0.00 | 0.00 |
| | Quarter 4 | 256 | 180,696 | 180,696 | 180,696 | 0.00 | 0.00 |
| Age Group | 12-17 | 242 | 69,203 | 69,628 | 69,628 | -0.61 | 0.00 |
| | 18-25 | 229 | 90,134 | 91,002 | 91,002 | -0.95 | 0.00 |
| | 26-34 | 132 | 99,780 | 100,194 | 100,194 | -0.41 | 0.00 |
| | 35-49 | 187 | 149,721 | 149,395 | 149,396 | 0.22 | -0.00 |
| | 50-64 | 80 | 174,236 | 164,326 | 164,326 | 6.03 | -0.00 |
| | 65+ | 65 | 137,108 | 145,637 | 145,637 | -5.86 | -0.00 |
| Race | White | 783 | 616,053 | 625,053 | 625,053 | -1.44 | -0.00 |
| | Black or African American | 18 | 15,196 | 14,524 | 14,524 | 4.63 | 0.00 |
| | American Indian/Alaska Native | 84 | 59,310 | 55,086 | 55,086 | 7.67 | 0.00 |
| | Asian | 18 | 13,096 | 11,905 | 11,905 | 10.00 | 0.00 |
| | Two or More Races | 32 | 16,529 | 13,615 | 13,615 | 21.40 | 0.00 |
| Hispanicity | Hispanic or Latino | 35 | 21,972 | 25,296 | 25,296 | -13.14 | 0.00 |
| | Non-Hispanic or Latino | 900 | 698,211 | 694,887 | 694,887 | 0.48 | 0.00 |
| Gender | Male | 458 | 360,092 | 360,092 | 360,092 | 0.00 | 0.00 |
| | Female | 477 | 360,092 | 360,092 | 360,092 | 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, 2019.

Table H.44 2019 NSDUH Slippage Rates: Tennessee

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 987 | 5,726,254 | 5,726,254 | 5,726,254 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 185 | 1,425,799 | 1,425,799 | 1,425,799 | 0.00 | 0.00 |
| | Quarter 2 | 246 | 1,429,387 | 1,429,388 | 1,429,388 | -0.00 | 0.00 |
| | Quarter 3 | 288 | 1,433,510 | 1,433,511 | 1,433,511 | -0.00 | 0.00 |
| | Quarter 4 | 268 | 1,437,557 | 1,437,557 | 1,437,557 | 0.00 | 0.00 |
| Age Group | 12-17 | 218 | 518,159 | 514,439 | 514,439 | 0.72 | 0.00 |
| | 18-25 | 227 | 688,487 | 686,583 | 686,583 | 0.28 | 0.00 |
| | 26-34 | 170 | 818,368 | 829,080 | 829,080 | -1.29 | 0.00 |
| | 35-49 | 211 | 1,251,601 | 1,261,763 | 1,261,763 | -0.81 | 0.00 |
| | 50-64 | 96 | 1,445,847 | 1,318,852 | 1,318,852 | 9.63 | 0.00 |
| | 65+ | 65 | 1,003,791 | 1,115,537 | 1,115,537 | -10.02 | 0.00 |
| Race | White | 760 | 4,474,095 | 4,557,167 | 4,557,167 | -1.82 | 0.00 |
| | Black or African American | 163 | 942,830 | 935,175 | 935,175 | 0.82 | 0.00 |
| | American Indian/Alaska Native | 16 | 67,978 | 26,231 | 26,231 | 159.15 | 0.00 |
| | Asian | 20 | 156,999 | 118,002 | 118,002 | 33.05 | 0.00 |
| | Two or More Races | 28 | 84,351 | 89,678 | 89,678 | -5.94 | 0.00 |
| Hispanicity | Hispanic or Latino | 85 | 312,490 | 279,958 | 279,958 | 11.62 | 0.00 |
| | Non-Hispanic or Latino | 902 | 5,413,764 | 5,446,296 | 5,446,296 | -0.60 | 0.00 |
| Gender | Male | 480 | 2,712,015 | 2,748,115 | 2,748,115 | -1.31 | 0.00 |
| | Female | 507 | 3,014,239 | 2,978,139 | 2,978,139 | 1.21 | 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, 2019.

Table H.45 2019 NSDUH Slippage Rates: Texas

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 3,238 | 23,624,747 | 23,624,747 | 23,624,747 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 733 | 5,871,159 | 5,871,159 | 5,871,159 | -0.00 | 0.00 |
| | Quarter 2 | 946 | 5,893,461 | 5,893,461 | 5,893,461 | -0.00 | 0.00 |
| | Quarter 3 | 705 | 5,917,916 | 5,917,916 | 5,917,916 | -0.00 | 0.00 |
| | Quarter 4 | 854 | 5,942,211 | 5,942,211 | 5,942,211 | 0.00 | 0.00 |
| Age Group | 12-17 | 815 | 2,488,801 | 2,496,989 | 2,496,989 | -0.33 | 0.00 |
| | 18-25 | 773 | 3,116,074 | 3,123,590 | 3,123,590 | -0.24 | 0.00 |
| | 26-34 | 487 | 3,708,210 | 3,743,384 | 3,743,384 | -0.94 | 0.00 |
| | 35-49 | 655 | 5,654,528 | 5,675,183 | 5,675,183 | -0.36 | 0.00 |
| | 50-64 | 295 | 5,130,937 | 4,929,282 | 4,929,282 | 4.09 | 0.00 |
| | 65+ | 213 | 3,526,198 | 3,656,319 | 3,656,319 | -3.56 | 0.00 |
| Race | White | 2,377 | 17,741,961 | 18,684,460 | 18,684,460 | -5.04 | -0.00 |
| | Black or African American | 505 | 3,119,103 | 2,978,946 | 2,978,946 | 4.70 | 0.00 |
| | American Indian/Alaska Native | 110 | 734,373 | 247,848 | 247,848 | 196.30 | 0.00 |
| | Asian | 124 | 1,431,624 | 1,313,428 | 1,313,429 | 9.00 | -0.00 |
| | Two or More Races | 122 | 597,685 | 400,065 | 400,065 | 49.40 | 0.00 |
| Hispanicity | Hispanic or Latino | 1,402 | 9,123,473 | 8,972,226 | 8,972,226 | 1.69 | 0.00 |
| | Non-Hispanic or Latino | 1,836 | 14,501,275 | 14,652,522 | 14,652,522 | -1.03 | 0.00 |
| Gender | Male | 1,498 | 11,533,193 | 11,542,075 | 11,542,075 | -0.08 | 0.00 |
| | Female | 1,740 | 12,091,554 | 12,082,672 | 12,082,672 | 0.07 | 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, 2019.

Table H.46 2019 NSDUH Slippage Rates: Utah

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 947 | 2,565,992 | 2,565,993 | 2,565,993 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 213 | 636,110 | 636,110 | 636,110 | -0.00 | 0.00 |
| | Quarter 2 | 252 | 639,659 | 639,659 | 639,659 | 0.00 | 0.00 |
| | Quarter 3 | 249 | 643,334 | 643,334 | 643,334 | 0.00 | 0.00 |
| | Quarter 4 | 233 | 646,890 | 646,890 | 646,890 | 0.00 | 0.00 |
| Age Group | 12-17 | 222 | 313,870 | 314,853 | 314,853 | -0.31 | -0.00 |
| | 18-25 | 239 | 402,195 | 409,221 | 409,221 | -1.72 | -0.00 |
| | 26-34 | 124 | 411,511 | 413,894 | 413,894 | -0.58 | 0.00 |
| | 35-49 | 211 | 630,088 | 614,032 | 614,032 | 2.61 | 0.00 |
| | 50-64 | 86 | 442,944 | 452,187 | 452,187 | -2.04 | 0.00 |
| | 65+ | 65 | 365,385 | 361,806 | 361,806 | 0.99 | 0.00 |
| Race | White | 838 | 2,312,331 | 2,337,056 | 2,337,056 | -1.06 | 0.00 |
| | Black or African American | 9 | 42,316 | 35,920 | 35,920 | 17.80 | -0.00 |
| | American Indian/Alaska Native | 22 | 65,667 | 36,828 | 36,828 | 78.31 | 0.00 |
| | Asian | 37 | 94,128 | 100,432 | 100,432 | -6.28 | 0.00 |
| | Two or More Races | 41 | 51,552 | 55,757 | 55,757 | -7.54 | 0.00 |
| Hispanicity | Hispanic or Latino | 219 | 365,989 | 344,691 | 344,691 | 6.18 | -0.00 |
| | Non-Hispanic or Latino | 728 | 2,200,003 | 2,221,302 | 2,221,302 | -0.96 | 0.00 |
| Gender | Male | 474 | 1,281,022 | 1,281,022 | 1,281,022 | -0.00 | -0.00 |
| | Female | 473 | 1,284,971 | 1,284,971 | 1,284,971 | -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, 2019.

Table H.47 2019 NSDUH Slippage Rates: Vermont

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 944 | 545,208 | 545,208 | 545,208 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 235 | 136,217 | 136,217 | 136,217 | 0.00 | 0.00 |
| | Quarter 2 | 278 | 136,264 | 136,264 | 136,264 | 0.00 | 0.00 |
| | Quarter 3 | 235 | 136,344 | 136,344 | 136,344 | 0.00 | 0.00 |
| | Quarter 4 | 196 | 136,385 | 136,385 | 136,385 | 0.00 | 0.00 |
| Age Group | 12-17 | 237 | 41,150 | 40,754 | 40,754 | 0.97 | 0.00 |
| | 18-25 | 245 | 73,245 | 73,012 | 73,012 | 0.32 | 0.00 |
| | 26-34 | 147 | 65,817 | 66,117 | 66,117 | -0.45 | 0.00 |
| | 35-49 | 184 | 107,451 | 107,780 | 107,780 | -0.31 | 0.00 |
| | 50-64 | 62 | 123,713 | 135,603 | 135,603 | -8.77 | 0.00 |
| | 65+ | 69 | 133,832 | 121,943 | 121,943 | 9.75 | 0.00 |
| Race | White | 857 | 510,738 | 516,214 | 516,214 | -1.06 | 0.00 |
| | Black or African American | 28 | 8,884 | 7,084 | 7,084 | 25.40 | 0.00 |
| | American Indian/Alaska Native | 3 | 2,183 | 397 | 2,140 | 2.04 | -81.47 |
| | Asian | 17 | 9,087 | 12,357 | 10,614 | -14.39 | 16.42 |
| | Two or More Races | 39 | 14,316 | 9,156 | 9,156 | 56.35 | 0.00 |
| Hispanicity | Hispanic or Latino | 23 | 10,002 | 10,418 | 10,418 | -4.00 | 0.00 |
| | Non-Hispanic or Latino | 921 | 535,206 | 534,790 | 534,790 | 0.08 | 0.00 |
| Gender | Male | 441 | 270,258 | 267,716 | 267,716 | 0.95 | 0.00 |
| | Female | 503 | 274,950 | 277,492 | 277,492 | -0.92 | 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, 2019.

Table H.48 2019 NSDUH Slippage Rates: Virginia

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 1,474 | 7,094,545 | 7,094,545 | 7,094,545 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 313 | 1,769,748 | 1,769,748 | 1,769,748 | 0.00 | 0.00 |
| | Quarter 2 | 417 | 1,772,086 | 1,772,086 | 1,772,086 | 0.00 | 0.00 |
| | Quarter 3 | 429 | 1,774,981 | 1,774,981 | 1,774,981 | 0.00 | 0.00 |
| | Quarter 4 | 315 | 1,777,730 | 1,777,730 | 1,777,730 | 0.00 | 0.00 |
| Age Group | 12-17 | 393 | 641,453 | 629,762 | 629,762 | 1.86 | 0.00 |
| | 18-25 | 346 | 842,532 | 865,225 | 865,225 | -2.62 | 0.00 |
| | 26-34 | 191 | 1,004,003 | 1,012,079 | 1,012,079 | -0.80 | 0.00 |
| | 35-49 | 304 | 1,643,062 | 1,601,250 | 1,601,250 | 2.61 | 0.00 |
| | 50-64 | 137 | 1,720,050 | 1,653,069 | 1,653,069 | 4.05 | 0.00 |
| | 65+ | 103 | 1,243,444 | 1,333,160 | 1,333,160 | -6.73 | 0.00 |
| Race | White | 943 | 4,696,350 | 4,999,404 | 4,999,404 | -6.06 | -0.00 |
| | Black or African American | 252 | 1,390,455 | 1,368,957 | 1,368,957 | 1.57 | 0.00 |
| | American Indian/Alaska Native | 75 | 200,552 | 41,831 | 37,947 | 428.51 | 10.24 |
| | Asian | 116 | 564,048 | 507,862 | 511,746 | 10.22 | -0.76 |
| | Two or More Races | 88 | 243,139 | 176,491 | 176,491 | 37.76 | 0.00 |
| Hispanicity | Hispanic or Latino | 185 | 634,722 | 631,504 | 631,504 | 0.51 | 0.00 |
| | Non-Hispanic or Latino | 1,289 | 6,459,823 | 6,463,041 | 6,463,041 | -0.05 | 0.00 |
| Gender | Male | 717 | 3,407,114 | 3,411,730 | 3,411,730 | -0.14 | 0.00 |
| | Female | 757 | 3,687,431 | 3,682,815 | 3,682,815 | 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, 2019.

Table H.49 2019 NSDUH Slippage Rates: Washington

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 945 | 6,391,782 | 6,391,782 | 6,391,782 | 0.00 | -0.00 |
| Quarter | Quarter 1 | 162 | 1,589,285 | 1,589,285 | 1,589,285 | -0.00 | 0.00 |
| | Quarter 2 | 259 | 1,594,877 | 1,594,877 | 1,594,877 | 0.00 | 0.00 |
| | Quarter 3 | 285 | 1,600,909 | 1,600,909 | 1,600,909 | -0.00 | -0.00 |
| | Quarter 4 | 239 | 1,606,712 | 1,606,712 | 1,606,712 | 0.00 | -0.00 |
| Age Group | 12-17 | 268 | 548,165 | 548,165 | 548,165 | 0.00 | -0.00 |
| | 18-25 | 206 | 738,369 | 737,998 | 737,998 | 0.05 | -0.00 |
| | 26-34 | 119 | 986,518 | 1,032,024 | 1,032,024 | -4.41 | 0.00 |
| | 35-49 | 193 | 1,528,221 | 1,472,690 | 1,472,690 | 3.77 | 0.00 |
| | 50-64 | 73 | 1,253,142 | 1,408,831 | 1,408,831 | -11.05 | -0.00 |
| | 65+ | 86 | 1,337,367 | 1,192,075 | 1,192,075 | 12.19 | -0.00 |
| Race | White | 696 | 4,890,072 | 5,083,071 | 5,083,071 | -3.80 | -0.00 |
| | Black or African American | 43 | 289,610 | 259,284 | 259,284 | 11.70 | -0.00 |
| | American Indian/Alaska Native | 51 | 211,951 | 110,524 | 110,524 | 91.77 | -0.00 |
| | Asian | 102 | 713,074 | 681,003 | 681,003 | 4.71 | 0.00 |
| | Two or More Races | 53 | 287,075 | 257,899 | 257,899 | 11.31 | 0.00 |
| Hispanicity | Hispanic or Latino | 167 | 683,895 | 736,870 | 736,870 | -7.19 | -0.00 |
| | Non-Hispanic or Latino | 778 | 5,707,887 | 5,654,912 | 5,654,912 | 0.94 | -0.00 |
| Gender | Male | 445 | 3,163,345 | 3,158,760 | 3,158,760 | 0.15 | 0.00 |
| | Female | 500 | 3,228,437 | 3,233,022 | 3,233,022 | -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, 2019.

Table H.50 2019 NSDUH Slippage Rates: West Virginia

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 968 | 1,529,678 | 1,529,678 | 1,529,678 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 193 | 383,123 | 383,123 | 383,123 | -0.00 | 0.00 |
| | Quarter 2 | 284 | 382,602 | 382,602 | 382,602 | 0.00 | 0.00 |
| | Quarter 3 | 240 | 382,202 | 382,202 | 382,202 | -0.00 | -0.00 |
| | Quarter 4 | 251 | 381,752 | 381,752 | 381,752 | 0.00 | 0.00 |
| Age Group | 12-17 | 226 | 125,855 | 124,268 | 124,268 | 1.28 | 0.00 |
| | 18-25 | 250 | 171,428 | 172,509 | 172,509 | -0.63 | -0.00 |
| | 26-34 | 146 | 184,594 | 186,579 | 186,579 | -1.06 | -0.00 |
| | 35-49 | 192 | 325,483 | 321,493 | 321,493 | 1.24 | 0.00 |
| | 50-64 | 78 | 371,057 | 366,399 | 366,399 | 1.27 | 0.00 |
| | 65+ | 76 | 351,261 | 358,429 | 358,429 | -2.00 | 0.00 |
| Race | White | 884 | 1,424,748 | 1,440,063 | 1,440,063 | -1.06 | 0.00 |
| | Black or African American | 50 | 54,451 | 50,744 | 50,744 | 7.30 | -0.00 |
| | American Indian/Alaska Native | 3 | 15,664 | 6,894 | 3,884 | 303.34 | 77.51 |
| | Asian | 4 | 10,088 | 10,312 | 13,322 | -24.28 | -22.60 |
| | Two or More Races | 27 | 24,728 | 21,665 | 21,665 | 14.14 | -0.00 |
| Hispanicity | Hispanic or Latino | 21 | 23,286 | 23,340 | 23,340 | -0.23 | -0.00 |
| | Non-Hispanic or Latino | 947 | 1,506,392 | 1,506,338 | 1,506,338 | 0.00 | 0.00 |
| Gender | Male | 444 | 749,362 | 749,362 | 749,362 | 0.00 | -0.00 |
| | Female | 524 | 780,316 | 780,316 | 780,316 | 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, 2019.

Table H.51 2019 NSDUH Slippage Rates: Wisconsin

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 958 | 4,929,540 | 4,929,540 | 4,929,540 | -0.00 | 0.00 |
| Quarter | Quarter 1 | 263 | 1,230,062 | 1,230,062 | 1,230,062 | 0.00 | 0.00 |
| | Quarter 2 | 219 | 1,231,443 | 1,231,443 | 1,231,443 | 0.00 | 0.00 |
| | Quarter 3 | 254 | 1,233,220 | 1,233,220 | 1,233,220 | 0.00 | 0.00 |
| | Quarter 4 | 222 | 1,234,816 | 1,234,816 | 1,234,816 | -0.00 | 0.00 |
| Age Group | 12-17 | 245 | 439,486 | 442,258 | 442,258 | -0.63 | 0.00 |
| | 18-25 | 220 | 613,367 | 612,565 | 612,565 | 0.13 | 0.00 |
| | 26-34 | 148 | 644,876 | 651,153 | 651,153 | -0.96 | 0.00 |
| | 35-49 | 194 | 1,052,145 | 1,041,543 | 1,041,543 | 1.02 | 0.00 |
| | 50-64 | 81 | 1,170,697 | 1,188,355 | 1,188,355 | -1.49 | 0.00 |
| | 65+ | 70 | 1,008,970 | 993,667 | 993,667 | 1.54 | 0.00 |
| Race | White | 800 | 4,314,290 | 4,360,382 | 4,360,382 | -1.06 | 0.00 |
| | Black or African American | 80 | 298,937 | 294,568 | 294,568 | 1.48 | 0.00 |
| | American Indian/Alaska Native | 19 | 77,734 | 51,863 | 51,863 | 49.88 | 0.00 |
| | Asian | 23 | 143,666 | 146,202 | 146,202 | -1.73 | 0.00 |
| | Two or More Races | 36 | 94,913 | 76,526 | 76,526 | 24.03 | 0.00 |
| Hispanicity | Hispanic or Latino | 70 | 333,142 | 309,754 | 309,754 | 7.55 | 0.00 |
| | Non-Hispanic or Latino | 888 | 4,596,399 | 4,619,786 | 4,619,786 | -0.51 | 0.00 |
| Gender | Male | 481 | 2,424,513 | 2,429,407 | 2,429,407 | -0.20 | 0.00 |
| | Female | 477 | 2,505,027 | 2,500,133 | 2,500,133 | 0.20 | 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, 2019.

Table H.52 2019 NSDUH Slippage Rates: Wyoming

| Domain | | <i>n</i> | Initial Total (I) ¹ | Final Total (F) ² | Census Total (C) | (I-C)/C% | (F-C)/C% |
|--------------------|--------------------------------------|----------|--------------------------------|------------------------------|------------------|----------|----------|
| Total | | 930 | 480,786 | 480,786 | 480,786 | 0.00 | 0.00 |
| Quarter | Quarter 1 | 226 | 119,927 | 119,927 | 119,927 | 0.00 | 0.00 |
| | Quarter 2 | 256 | 120,090 | 120,090 | 120,090 | 0.00 | -0.00 |
| | Quarter 3 | 198 | 120,294 | 120,294 | 120,294 | 0.00 | 0.00 |
| | Quarter 4 | 250 | 120,475 | 120,475 | 120,475 | 0.00 | 0.00 |
| Age Group | 12-17 | 216 | 45,959 | 45,255 | 45,256 | 1.55 | -0.00 |
| | 18-25 | 226 | 56,454 | 57,346 | 57,346 | -1.55 | 0.00 |
| | 26-34 | 150 | 66,731 | 67,104 | 67,104 | -0.56 | 0.00 |
| | 35-49 | 192 | 105,378 | 104,817 | 104,817 | 0.54 | 0.00 |
| | 50-64 | 81 | 113,901 | 109,449 | 109,449 | 4.07 | -0.00 |
| | 65+ | 65 | 92,363 | 96,815 | 96,815 | -4.60 | 0.00 |
| Race | White | 835 | 434,595 | 448,787 | 448,787 | -3.16 | -0.00 |
| | Black or African American | 13 | 5,709 | 5,516 | 5,516 | 3.50 | 0.00 |
| | American Indian/Alaska Native | 37 | 20,383 | 11,687 | 11,687 | 74.41 | 0.00 |
| | Asian | 7 | 5,440 | 6,150 | 6,150 | -11.54 | -0.00 |
| | Two or More Races | 38 | 14,658 | 8,646 | 8,646 | 69.53 | 0.00 |
| Hispanicity | Hispanic or Latino | 135 | 45,007 | 44,106 | 44,106 | 2.04 | 0.00 |
| | Non-Hispanic or Latino | 795 | 435,779 | 436,680 | 436,680 | -0.21 | -0.00 |
| Gender | Male | 435 | 242,540 | 242,540 | 242,540 | 0.00 | -0.00 |
| | Female | 495 | 238,246 | 238,246 | 238,246 | 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, 2019.

Appendix I
Evaluation of Calibration Weights: Weight Summary
Statistics

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Table I.1 2019 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 | 148,023 | 5 | 316 | 581 | 763 | 4,811 | 1.33 | 22 | 417 | 791 | 1,078 | 4,899 | 1.39 | 17 | 413 | 828 | 1,162 | 10,643 | 1.45 |
| Alaska | 2,066 | 72 | 74 | 79 | 98 | 164 | 1.03 | 85 | 99 | 111 | 140 | 210 | 1.04 | 43 | 104 | 127 | 153 | 533 | 1.08 |
| Alabama | 2,213 | 590 | 612 | 681 | 756 | 910 | 1.02 | 649 | 728 | 825 | 940 | 1,682 | 1.03 | 145 | 748 | 892 | 1,030 | 3,621 | 1.08 |
| Arkansas | 2,001 | 373 | 386 | 426 | 508 | 809 | 1.02 | 377 | 445 | 505 | 631 | 1,061 | 1.05 | 142 | 496 | 583 | 683 | 2,599 | 1.08 |
| Arizona | 1,978 | 754 | 801 | 893 | 995 | 4,059 | 1.13 | 867 | 1,155 | 1,285 | 1,530 | 3,509 | 1.11 | 264 | 1,125 | 1,331 | 1,632 | 9,472 | 1.17 |
| California | 8,774 | 731 | 820 | 910 | 946 | 2,620 | 1.03 | 1,006 | 1,300 | 1,418 | 1,510 | 3,897 | 1.05 | 492 | 1,318 | 1,502 | 1,722 | 7,845 | 1.09 |
| Colorado | 1,995 | 659 | 689 | 723 | 796 | 2,355 | 1.04 | 757 | 923 | 1,024 | 1,148 | 3,982 | 1.06 | 211 | 980 | 1,108 | 1,288 | 4,160 | 1.08 |
| Connecticut | 2,080 | 338 | 346 | 420 | 514 | 547 | 1.03 | 391 | 487 | 583 | 767 | 2,502 | 1.12 | 155 | 462 | 647 | 813 | 2,937 | 1.17 |
| District of Columbia | 3,400 | 5 | 34 | 40 | 49 | 343 | 1.64 | 22 | 56 | 78 | 120 | 516 | 1.49 | 17 | 54 | 79 | 115 | 611 | 1.44 |
| Delaware | 2,619 | 63 | 64 | 81 | 102 | 408 | 1.14 | 77 | 98 | 120 | 152 | 512 | 1.22 | 27 | 107 | 136 | 170 | 579 | 1.18 |
| Florida | 7,032 | 553 | 634 | 713 | 806 | 4,811 | 1.14 | 635 | 799 | 952 | 1,159 | 3,170 | 1.13 | 223 | 932 | 1,131 | 1,404 | 5,018 | 1.13 |
| Georgia | 2,947 | 760 | 779 | 883 | 896 | 1,357 | 1.02 | 764 | 969 | 1,131 | 1,278 | 2,160 | 1.05 | 342 | 1,067 | 1,288 | 1,529 | 5,596 | 1.12 |
| Hawaii | 2,076 | 82 | 106 | 114 | 160 | 308 | 1.10 | 94 | 157 | 187 | 237 | 465 | 1.11 | 67 | 179 | 208 | 243 | 1,236 | 1.13 |
| Iowa | 2,286 | 311 | 319 | 367 | 433 | 600 | 1.05 | 319 | 408 | 481 | 624 | 2,831 | 1.13 | 86 | 422 | 515 | 651 | 1,946 | 1.11 |
| Idaho | 1,774 | 152 | 225 | 235 | 259 | 472 | 1.04 | 233 | 284 | 304 | 353 | 1,159 | 1.06 | 54 | 298 | 352 | 428 | 1,717 | 1.12 |
| Illinois | 5,602 | 415 | 429 | 443 | 482 | 767 | 1.03 | 479 | 595 | 669 | 929 | 3,793 | 1.25 | 343 | 616 | 748 | 997 | 6,595 | 1.26 |
| Indiana | 2,060 | 732 | 762 | 781 | 852 | 890 | 1.00 | 870 | 1,035 | 1,113 | 1,215 | 1,701 | 1.02 | 385 | 1,084 | 1,174 | 1,330 | 3,559 | 1.06 |
| Kansas | 1,947 | 363 | 378 | 425 | 465 | 539 | 1.01 | 393 | 489 | 538 | 603 | 1,042 | 1.03 | 179 | 495 | 557 | 658 | 2,648 | 1.08 |
| Kentucky | 2,005 | 538 | 566 | 606 | 718 | 767 | 1.01 | 595 | 717 | 836 | 902 | 1,239 | 1.02 | 129 | 735 | 875 | 1,001 | 4,179 | 1.08 |
| Louisiana | 1,967 | 564 | 644 | 656 | 776 | 1,821 | 1.08 | 649 | 716 | 799 | 1,001 | 2,177 | 1.10 | 131 | 799 | 924 | 1,080 | 5,093 | 1.11 |
| Massachusetts | 2,434 | 548 | 565 | 607 | 618 | 908 | 1.04 | 740 | 862 | 947 | 1,150 | 1,826 | 1.05 | 286 | 863 | 1,002 | 1,211 | 4,258 | 1.11 |
| Maryland | 2,000 | 596 | 626 | 716 | 910 | 1,001 | 1.04 | 703 | 896 | 1,160 | 1,323 | 3,135 | 1.08 | 229 | 882 | 1,112 | 1,350 | 4,049 | 1.12 |
| Maine | 2,723 | 138 | 143 | 148 | 158 | 272 | 1.03 | 144 | 169 | 183 | 212 | 530 | 1.06 | 51 | 174 | 200 | 247 | 739 | 1.09 |
| Michigan | 5,231 | 480 | 497 | 555 | 595 | 865 | 1.01 | 560 | 648 | 712 | 759 | 2,825 | 1.03 | 262 | 661 | 740 | 849 | 2,212 | 1.05 |
| Minnesota | 2,299 | 610 | 625 | 668 | 704 | 883 | 1.01 | 677 | 784 | 850 | 1,045 | 3,156 | 1.09 | 279 | 807 | 924 | 1,140 | 6,438 | 1.10 |
| Missouri | 2,184 | 727 | 750 | 780 | 835 | 2,125 | 1.03 | 752 | 915 | 1,027 | 1,175 | 1,539 | 1.04 | 311 | 967 | 1,100 | 1,278 | 4,895 | 1.07 |

(continued)

Table I.1 2019 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 | 1,976 | 316 | 352 | 396 | 521 | 662 | 1.04 | 360 | 452 | 532 | 611 | 860 | 1.03 | 77 | 483 | 575 | 675 | 2,868 | 1.12 |
| Montana | 2,437 | 99 | 110 | 134 | 145 | 242 | 1.04 | 121 | 144 | 171 | 181 | 292 | 1.03 | 29 | 153 | 180 | 209 | 411 | 1.05 |
| North Carolina | 3,234 | 747 | 767 | 803 | 964 | 1,170 | 1.02 | 765 | 1,095 | 1,316 | 1,441 | 2,278 | 1.05 | 279 | 1,109 | 1,307 | 1,566 | 5,947 | 1.10 |
| North Dakota | 2,391 | 76 | 78 | 86 | 93 | 199 | 1.06 | 89 | 103 | 112 | 128 | 292 | 1.05 | 32 | 102 | 124 | 148 | 658 | 1.11 |
| Nebraska | 2,013 | 229 | 234 | 246 | 295 | 326 | 1.02 | 251 | 303 | 332 | 386 | 710 | 1.04 | 94 | 326 | 375 | 438 | 2,271 | 1.10 |
| New Hampshire | 2,422 | 121 | 124 | 147 | 162 | 357 | 1.05 | 138 | 167 | 197 | 229 | 593 | 1.08 | 40 | 184 | 216 | 255 | 750 | 1.08 |
| New Jersey | 3,227 | 574 | 609 | 670 | 711 | 1,014 | 1.02 | 672 | 878 | 975 | 1,122 | 2,524 | 1.04 | 314 | 823 | 936 | 1,082 | 5,303 | 1.11 |
| New Mexico | 1,758 | 296 | 307 | 312 | 322 | 368 | 1.00 | 334 | 395 | 419 | 438 | 633 | 1.01 | 78 | 401 | 440 | 493 | 2,416 | 1.13 |
| Nevada | 1,967 | 279 | 295 | 353 | 419 | 757 | 1.05 | 342 | 449 | 526 | 632 | 1,646 | 1.11 | 72 | 442 | 553 | 693 | 3,480 | 1.16 |
| New York | 7,419 | 463 | 475 | 501 | 615 | 1,068 | 1.03 | 615 | 775 | 901 | 1,056 | 3,591 | 1.09 | 251 | 746 | 907 | 1,143 | 6,279 | 1.23 |
| Ohio | 5,206 | 511 | 551 | 565 | 681 | 934 | 1.01 | 546 | 752 | 813 | 905 | 3,260 | 1.05 | 282 | 808 | 914 | 1,039 | 2,189 | 1.04 |
| Oklahoma | 1,801 | 505 | 534 | 613 | 664 | 763 | 1.01 | 505 | 642 | 776 | 861 | 2,291 | 1.07 | 114 | 684 | 853 | 1,022 | 2,324 | 1.10 |
| Oregon | 2,286 | 407 | 431 | 501 | 517 | 895 | 1.03 | 471 | 566 | 635 | 751 | 1,480 | 1.05 | 261 | 588 | 673 | 828 | 2,757 | 1.10 |
| Pennsylvania | 5,684 | 515 | 528 | 577 | 635 | 1,529 | 1.03 | 604 | 732 | 847 | 944 | 3,402 | 1.06 | 248 | 744 | 853 | 986 | 3,565 | 1.08 |
| Rhode Island | 2,317 | 93 | 97 | 103 | 115 | 424 | 1.03 | 118 | 142 | 159 | 182 | 544 | 1.10 | 48 | 147 | 171 | 203 | 1,093 | 1.13 |
| South Carolina | 1,996 | 295 | 523 | 581 | 693 | 732 | 1.02 | 390 | 741 | 876 | 969 | 1,176 | 1.02 | 151 | 861 | 1,011 | 1,137 | 5,074 | 1.07 |
| South Dakota | 2,182 | 88 | 91 | 120 | 145 | 166 | 1.03 | 103 | 123 | 151 | 165 | 352 | 1.04 | 37 | 131 | 151 | 181 | 589 | 1.11 |
| Tennessee | 1,915 | 895 | 927 | 984 | 1,018 | 1,352 | 1.02 | 964 | 1,153 | 1,283 | 1,464 | 3,938 | 1.04 | 231 | 1,203 | 1,420 | 1,624 | 7,381 | 1.11 |
| Texas | 5,652 | 978 | 1,013 | 1,174 | 1,269 | 1,917 | 1.01 | 988 | 1,251 | 1,445 | 1,786 | 4,899 | 1.12 | 236 | 1,424 | 1,722 | 2,125 | 10,643 | 1.14 |
| Utah | 1,271 | 397 | 425 | 552 | 566 | 594 | 1.02 | 491 | 621 | 695 | 772 | 1,123 | 1.03 | 98 | 662 | 802 | 944 | 3,482 | 1.15 |
| Virginia | 3,269 | 160 | 643 | 683 | 837 | 1,090 | 1.02 | 445 | 785 | 937 | 1,152 | 2,879 | 1.09 | 139 | 774 | 943 | 1,174 | 3,655 | 1.13 |
| Vermont | 2,445 | 62 | 68 | 80 | 82 | 100 | 1.01 | 64 | 82 | 98 | 104 | 364 | 1.07 | 33 | 98 | 106 | 119 | 364 | 1.06 |
| Washington | 2,558 | 663 | 675 | 692 | 929 | 1,191 | 1.05 | 684 | 858 | 980 | 1,246 | 2,023 | 1.06 | 325 | 934 | 1,091 | 1,360 | 5,474 | 1.10 |
| Wisconsin | 2,196 | 688 | 752 | 767 | 794 | 1,481 | 1.01 | 716 | 886 | 947 | 1,016 | 3,043 | 1.04 | 343 | 898 | 996 | 1,140 | 2,950 | 1.08 |
| West Virginia | 2,785 | 151 | 165 | 189 | 204 | 228 | 1.01 | 156 | 218 | 251 | 281 | 585 | 1.02 | 65 | 245 | 263 | 299 | 715 | 1.04 |
| Wyoming | 1,923 | 83 | 86 | 89 | 92 | 502 | 1.07 | 99 | 110 | 117 | 123 | 230 | 1.01 | 32 | 117 | 129 | 141 | 703 | 1.06 |

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, 2019.

Table I.2 2019 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 | 101,509 | 20 | 839 | 1,683 | 3,377 | 79,044 | 2.23 | 9 | 829 | 1,698 | 3,402 | 37,416 | 2.20 |
| Alaska | 1,468 | 44 | 165 | 310 | 500 | 2,522 | 1.61 | 20 | 167 | 300 | 520 | 1,738 | 1.62 |
| Alabama | 1,424 | 215 | 1,233 | 2,154 | 3,532 | 23,710 | 1.63 | 49 | 1,189 | 2,200 | 3,635 | 12,876 | 1.61 |
| Arkansas | 1,273 | 253 | 892 | 1,507 | 2,433 | 10,900 | 1.52 | 223 | 920 | 1,437 | 2,305 | 8,928 | 1.62 |
| Arizona | 1,408 | 436 | 1,713 | 2,925 | 4,574 | 43,980 | 1.89 | 362 | 1,608 | 2,788 | 4,742 | 37,416 | 2.08 |
| California | 7,274 | 642 | 1,892 | 3,590 | 5,461 | 54,364 | 1.62 | 489 | 1,952 | 3,583 | 5,562 | 31,474 | 1.59 |
| Colorado | 1,450 | 301 | 1,255 | 2,595 | 4,572 | 24,927 | 1.61 | 362 | 1,261 | 2,491 | 4,878 | 16,027 | 1.60 |
| Connecticut | 1,580 | 165 | 796 | 1,219 | 2,253 | 19,596 | 1.98 | 98 | 770 | 1,185 | 2,388 | 23,588 | 2.10 |
| District of Columbia | 1,244 | 20 | 119 | 343 | 617 | 4,421 | 1.99 | 16 | 124 | 348 | 662 | 4,201 | 2.02 |
| Delaware | 1,560 | 43 | 159 | 315 | 597 | 4,062 | 2.22 | 12 | 167 | 327 | 617 | 3,870 | 2.15 |
| Florida | 4,696 | 341 | 1,317 | 2,533 | 4,232 | 44,484 | 2.11 | 240 | 1,316 | 2,485 | 4,302 | 35,394 | 2.15 |
| Georgia | 2,062 | 345 | 1,828 | 3,031 | 5,018 | 43,353 | 1.72 | 360 | 1,809 | 3,019 | 5,164 | 26,012 | 1.72 |
| Hawaii | 1,540 | 68 | 256 | 452 | 771 | 14,284 | 2.21 | 34 | 264 | 454 | 848 | 9,813 | 2.09 |
| Iowa | 1,422 | 111 | 664 | 1,208 | 1,885 | 13,230 | 1.92 | 38 | 660 | 1,171 | 1,976 | 21,511 | 2.24 |
| Idaho | 1,350 | 75 | 439 | 750 | 1,247 | 7,131 | 1.77 | 25 | 437 | 750 | 1,242 | 8,373 | 1.83 |
| Illinois | 4,157 | 426 | 1,051 | 1,813 | 3,587 | 27,306 | 1.80 | 281 | 1,051 | 1,822 | 3,531 | 17,920 | 1.68 |
| Indiana | 1,445 | 440 | 1,729 | 3,003 | 4,279 | 40,379 | 1.68 | 206 | 1,705 | 2,952 | 4,479 | 19,970 | 1.61 |
| Kansas | 1,403 | 254 | 784 | 1,274 | 1,828 | 12,807 | 1.62 | 73 | 796 | 1,244 | 1,930 | 8,667 | 1.69 |
| Kentucky | 1,438 | 161 | 1,142 | 1,991 | 3,107 | 15,200 | 1.66 | 34 | 1,129 | 1,886 | 3,186 | 13,428 | 1.66 |
| Louisiana | 1,329 | 140 | 1,110 | 2,147 | 3,561 | 14,324 | 1.73 | 77 | 1,135 | 2,187 | 3,578 | 22,605 | 1.69 |
| Massachusetts | 1,633 | 330 | 1,550 | 2,754 | 4,154 | 37,164 | 1.81 | 79 | 1,517 | 2,673 | 4,359 | 35,165 | 1.81 |
| Maryland | 1,362 | 278 | 1,422 | 2,689 | 4,880 | 34,249 | 1.77 | 243 | 1,389 | 2,627 | 4,961 | 20,192 | 1.77 |
| Maine | 1,487 | 92 | 274 | 481 | 783 | 5,903 | 2.12 | 24 | 267 | 462 | 823 | 6,102 | 2.14 |
| Michigan | 3,496 | 418 | 1,033 | 1,651 | 2,412 | 18,216 | 1.78 | 277 | 1,030 | 1,710 | 2,744 | 17,199 | 1.75 |
| Minnesota | 1,410 | 299 | 1,271 | 2,455 | 4,163 | 79,044 | 2.04 | 271 | 1,321 | 2,567 | 4,234 | 28,476 | 1.65 |
| Missouri | 1,422 | 457 | 1,580 | 2,717 | 4,156 | 20,292 | 1.72 | 180 | 1,579 | 2,552 | 4,216 | 28,481 | 1.75 |

(continued)

Table I.2 2019 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 | 1,514 | 98 | 661 | 1,230 | 2,006 | 8,457 | 1.63 | 29 | 641 | 1,198 | 2,168 | 16,105 | 1.69 |
| Montana | 1,501 | 30 | 216 | 371 | 611 | 3,852 | 2.05 | 25 | 216 | 365 | 638 | 4,549 | 2.25 |
| North Carolina | 2,181 | 382 | 1,603 | 2,747 | 4,804 | 33,848 | 1.79 | 239 | 1,543 | 2,714 | 5,075 | 23,351 | 1.77 |
| North Dakota | 1,544 | 38 | 178 | 292 | 470 | 3,479 | 1.74 | 34 | 174 | 291 | 499 | 2,075 | 1.70 |
| Nebraska | 1,371 | 95 | 424 | 650 | 1,251 | 9,536 | 2.00 | 24 | 420 | 639 | 1,336 | 9,672 | 2.11 |
| New Hampshire | 1,537 | 44 | 263 | 494 | 795 | 11,930 | 2.12 | 32 | 276 | 466 | 816 | 6,001 | 2.24 |
| New Jersey | 2,461 | 357 | 1,138 | 2,226 | 3,467 | 35,182 | 1.89 | 208 | 1,187 | 2,116 | 3,798 | 27,054 | 1.76 |
| New Mexico | 1,309 | 79 | 538 | 882 | 1,448 | 12,155 | 1.82 | 47 | 540 | 883 | 1,507 | 9,837 | 1.86 |
| Nevada | 1,401 | 84 | 630 | 1,203 | 2,207 | 24,556 | 1.92 | 19 | 634 | 1,213 | 2,430 | 21,422 | 1.92 |
| New York | 5,485 | 355 | 1,152 | 2,026 | 3,418 | 49,560 | 1.99 | 260 | 1,153 | 1,979 | 3,432 | 34,728 | 1.96 |
| Ohio | 3,626 | 285 | 1,110 | 1,984 | 3,032 | 18,832 | 1.75 | 270 | 1,097 | 1,903 | 3,046 | 14,446 | 1.75 |
| Oklahoma | 1,393 | 231 | 920 | 1,579 | 2,629 | 32,298 | 2.07 | 239 | 913 | 1,518 | 2,662 | 15,803 | 1.95 |
| Oregon | 1,417 | 286 | 924 | 1,825 | 3,182 | 20,737 | 1.81 | 234 | 906 | 1,777 | 3,236 | 21,021 | 1.81 |
| Pennsylvania | 3,627 | 271 | 1,147 | 2,163 | 3,288 | 26,926 | 1.86 | 156 | 1,153 | 2,080 | 3,308 | 22,286 | 1.86 |
| Rhode Island | 1,432 | 52 | 240 | 416 | 682 | 4,484 | 1.86 | 43 | 223 | 435 | 728 | 7,680 | 2.00 |
| South Carolina | 1,257 | 152 | 1,386 | 2,352 | 3,649 | 19,471 | 1.77 | 84 | 1,350 | 2,391 | 3,834 | 19,058 | 1.85 |
| South Dakota | 1,376 | 42 | 206 | 338 | 541 | 3,646 | 1.80 | 9 | 207 | 353 | 579 | 2,629 | 1.88 |
| Tennessee | 1,419 | 234 | 1,720 | 2,930 | 4,747 | 29,245 | 1.64 | 117 | 1,674 | 2,954 | 4,928 | 27,328 | 1.70 |
| Texas | 4,666 | 269 | 2,267 | 3,970 | 6,478 | 61,707 | 1.62 | 311 | 2,363 | 3,941 | 6,302 | 37,233 | 1.55 |
| Utah | 1,335 | 121 | 899 | 1,672 | 2,854 | 15,457 | 1.59 | 72 | 956 | 1,651 | 2,617 | 6,764 | 1.43 |
| Virginia | 2,127 | 141 | 1,323 | 2,395 | 4,228 | 26,156 | 1.80 | 109 | 1,326 | 2,366 | 4,269 | 18,612 | 1.74 |
| Vermont | 1,461 | 42 | 132 | 230 | 358 | 2,764 | 2.12 | 27 | 125 | 225 | 371 | 2,696 | 2.23 |
| Washington | 1,475 | 521 | 1,608 | 3,142 | 5,050 | 22,554 | 1.62 | 406 | 1,587 | 3,006 | 5,927 | 23,749 | 1.77 |
| Wisconsin | 1,400 | 399 | 1,443 | 2,545 | 3,820 | 34,574 | 1.80 | 306 | 1,476 | 2,333 | 3,683 | 31,464 | 1.91 |
| West Virginia | 1,610 | 78 | 367 | 633 | 939 | 6,881 | 1.91 | 33 | 362 | 636 | 1,013 | 4,310 | 1.86 |
| Wyoming | 1,251 | 44 | 166 | 271 | 414 | 2,247 | 1.66 | 14 | 170 | 273 | 403 | 2,782 | 1.78 |

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, 2019.

Table I.3 2019 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 | 67,625 | 12 | 817 | 1,652 | 3,303 | 37,416 | 2.21 | 16 | 1,144 | 2,394 | 5,014 | 70,410 | 2.40 | 16 | 1,144 | 2,394 | 5,014 | 70,410 | 2.40 | 4 | 1,061 | 2,386 | 5,048 | 69,794 | 2.46 | | | | |
| Alaska | 988 | 20 | 163 | 294 | 505 | 1,738 | 1.64 | 20 | 238 | 429 | 780 | 5,845 | 1.80 | 20 | 238 | 429 | 780 | 5,845 | 1.80 | 20 | 236 | 431 | 770 | 6,614 | 1.88 | | | | |
| Alabama | 978 | 49 | 1,169 | 2,111 | 3,524 | 12,876 | 1.63 | 49 | 1,572 | 2,893 | 5,331 | 27,824 | 1.79 | 49 | 1,572 | 2,893 | 5,331 | 27,824 | 1.79 | 10 | 1,622 | 2,922 | 5,247 | 31,086 | 1.84 | | | | |
| Arkansas | 936 | 223 | 875 | 1,450 | 2,270 | 8,928 | 1.62 | 251 | 1,097 | 1,938 | 3,161 | 16,399 | 1.72 | 251 | 1,097 | 1,938 | 3,161 | 16,399 | 1.72 | 68 | 1,102 | 1,923 | 3,211 | 17,435 | 1.75 | | | | |
| Arizona | 932 | 362 | 1,596 | 2,863 | 4,696 | 37,416 | 2.09 | 414 | 2,415 | 4,315 | 7,146 | 44,796 | 2.17 | 414 | 2,415 | 4,315 | 7,146 | 44,796 | 2.17 | 187 | 2,338 | 4,155 | 7,397 | 61,338 | 2.28 | | | | |
| California | 4,677 | 489 | 1,856 | 3,349 | 5,211 | 31,474 | 1.62 | 651 | 2,682 | 4,925 | 8,903 | 51,029 | 1.81 | 651 | 2,682 | 4,925 | 8,903 | 51,029 | 1.81 | 213 | 2,681 | 4,891 | 9,159 | 60,461 | 1.90 | | | | |
| Colorado | 932 | 482 | 1,267 | 2,464 | 4,631 | 15,798 | 1.62 | 482 | 1,929 | 3,495 | 7,531 | 26,939 | 1.71 | 482 | 1,929 | 3,495 | 7,531 | 26,939 | 1.71 | 224 | 1,877 | 3,367 | 7,526 | 26,569 | 1.76 | | | | |
| Connecticut | 985 | 142 | 727 | 1,133 | 2,220 | 23,588 | 2.14 | 158 | 1,033 | 1,819 | 3,761 | 35,992 | 2.45 | 158 | 1,033 | 1,819 | 3,761 | 35,992 | 2.45 | 104 | 1,006 | 1,791 | 3,776 | 57,417 | 2.79 | | | | |
| District of Columbia | 961 | 16 | 104 | 313 | 650 | 4,201 | 2.10 | 17 | 152 | 416 | 888 | 4,587 | 2.14 | 17 | 152 | 416 | 888 | 4,587 | 2.14 | 11 | 138 | 395 | 865 | 4,493 | 2.19 | | | | |
| Delaware | 935 | 12 | 163 | 328 | 610 | 3,870 | 2.11 | 16 | 287 | 521 | 1,019 | 6,924 | 2.20 | 16 | 287 | 521 | 1,019 | 6,924 | 2.20 | 4 | 281 | 502 | 1,046 | 7,056 | 2.24 | | | | |
| Florida | 3,331 | 240 | 1,267 | 2,353 | 4,018 | 32,656 | 2.17 | 276 | 1,685 | 3,206 | 5,957 | 70,410 | 2.38 | 276 | 1,685 | 3,206 | 5,957 | 70,410 | 2.38 | 79 | 1,647 | 3,198 | 6,168 | 45,793 | 2.35 | | | | |
| Georgia | 1,519 | 491 | 1,771 | 2,970 | 5,073 | 26,012 | 1.73 | 642 | 2,331 | 3,937 | 7,208 | 41,604 | 1.82 | 642 | 2,331 | 3,937 | 7,208 | 41,604 | 1.82 | 137 | 2,266 | 3,914 | 7,142 | 44,471 | 1.88 | | | | |
| Hawaii | 1,007 | 37 | 251 | 430 | 791 | 9,813 | 2.20 | 37 | 358 | 655 | 1,413 | 9,877 | 2.17 | 37 | 358 | 655 | 1,413 | 9,877 | 2.17 | 34 | 359 | 661 | 1,384 | 8,413 | 2.18 | | | | |
| Iowa | 968 | 71 | 664 | 1,171 | 1,971 | 11,376 | 2.18 | 71 | 930 | 1,659 | 2,881 | 23,174 | 2.29 | 71 | 930 | 1,659 | 2,881 | 23,174 | 2.29 | 14 | 939 | 1,681 | 2,941 | 27,383 | 2.31 | | | | |
| Idaho | 960 | 25 | 435 | 742 | 1,222 | 7,851 | 1.78 | 42 | 597 | 999 | 1,853 | 11,230 | 1.90 | 42 | 597 | 999 | 1,853 | 11,230 | 1.90 | 40 | 592 | 996 | 1,828 | 11,782 | 1.93 | | | | |
| Illinois | 2,361 | 281 | 1,017 | 1,731 | 3,277 | 14,928 | 1.68 | 306 | 1,654 | 3,019 | 5,901 | 33,063 | 1.86 | 306 | 1,654 | 3,019 | 5,901 | 33,063 | 1.86 | 96 | 1,659 | 3,054 | 5,838 | 38,360 | 1.91 | | | | |
| Indiana | 974 | 238 | 1,660 | 2,879 | 4,464 | 19,970 | 1.63 | 238 | 2,436 | 4,209 | 6,950 | 32,981 | 1.73 | 238 | 2,436 | 4,209 | 6,950 | 32,981 | 1.73 | 83 | 2,478 | 4,279 | 7,068 | 67,544 | 1.79 | | | | |
| Kansas | 951 | 73 | 804 | 1,237 | 1,987 | 8,667 | 1.67 | 73 | 1,070 | 1,758 | 3,081 | 13,711 | 1.76 | 73 | 1,070 | 1,758 | 3,081 | 13,711 | 1.76 | 15 | 981 | 1,746 | 3,089 | 56,811 | 2.44 | | | | |
| Kentucky | 978 | 34 | 1,097 | 1,885 | 3,133 | 12,102 | 1.66 | 34 | 1,600 | 2,783 | 4,724 | 27,048 | 1.72 | 34 | 1,600 | 2,783 | 4,724 | 27,048 | 1.72 | 7 | 1,564 | 2,879 | 4,637 | 21,794 | 1.74 | | | | |
| Louisiana | 936 | 77 | 1,100 | 2,011 | 3,414 | 17,887 | 1.69 | 96 | 1,488 | 2,843 | 5,286 | 20,136 | 1.77 | 96 | 1,488 | 2,843 | 5,286 | 20,136 | 1.77 | 19 | 1,398 | 2,801 | 5,493 | 24,496 | 1.83 | | | | |
| Massachusetts | 955 | 79 | 1,384 | 2,498 | 4,343 | 28,525 | 1.78 | 393 | 2,041 | 4,372 | 8,030 | 49,919 | 2.01 | 393 | 2,041 | 4,372 | 8,030 | 49,919 | 2.01 | 90 | 1,914 | 4,447 | 8,375 | 69,794 | 2.04 | | | | |
| Maryland | 959 | 304 | 1,380 | 2,647 | 4,988 | 20,192 | 1.73 | 436 | 1,934 | 3,809 | 6,946 | 38,861 | 1.80 | 436 | 1,934 | 3,809 | 6,946 | 38,861 | 1.80 | 97 | 1,892 | 3,826 | 6,883 | 27,239 | 1.84 | | | | |
| Maine | 961 | 24 | 266 | 441 | 825 | 4,848 | 2.13 | 32 | 368 | 680 | 1,366 | 10,149 | 2.23 | 32 | 368 | 680 | 1,366 | 10,149 | 2.23 | 13 | 378 | 661 | 1,339 | 12,993 | 2.25 | | | | |
| Michigan | 2,497 | 277 | 1,021 | 1,693 | 2,668 | 17,199 | 1.75 | 292 | 1,356 | 2,291 | 3,883 | 21,352 | 1.82 | 292 | 1,356 | 2,291 | 3,883 | 21,352 | 1.82 | 133 | 1,335 | 2,314 | 3,952 | 29,560 | 1.86 | | | | |
| Minnesota | 962 | 271 | 1,318 | 2,570 | 4,211 | 28,476 | 1.67 | 277 | 1,937 | 3,608 | 6,625 | 43,317 | 1.74 | 277 | 1,937 | 3,608 | 6,625 | 43,317 | 1.74 | 168 | 1,907 | 3,590 | 6,583 | 42,190 | 1.76 | | | | |
| Missouri | 968 | 180 | 1,535 | 2,478 | 4,198 | 18,160 | 1.70 | 267 | 2,086 | 3,627 | 6,188 | 39,451 | 1.92 | 267 | 2,086 | 3,627 | 6,188 | 39,451 | 1.92 | 211 | 2,130 | 3,733 | 5,940 | 33,105 | 1.89 | | | | |

(continued)

Table I.3 2019 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 | 1,041 | 34 | 641 | 1,203 | 2,107 | 16,105 | 1.71 | 80 | 910 | 1,614 | 3,123 | 13,494 | 1.81 | 80 | 910 | 1,614 | 3,123 | 13,494 | 1.81 | 16 | 876 | 1,635 | 3,075 | 14,157 | 1.82 |
| Montana | 963 | 25 | 218 | 364 | 649 | 4,549 | 2.26 | 28 | 334 | 550 | 995 | 7,912 | 2.25 | 28 | 334 | 550 | 995 | 7,912 | 2.25 | 16 | 339 | 543 | 956 | 8,090 | 2.35 |
| North Carolina | 1,572 | 239 | 1,535 | 2,645 | 4,924 | 23,351 | 1.76 | 456 | 2,022 | 3,429 | 6,907 | 34,786 | 1.94 | 456 | 2,022 | 3,429 | 6,907 | 34,786 | 1.94 | 205 | 2,073 | 3,469 | 6,878 | 47,423 | 1.99 |
| North Dakota | 938 | 37 | 167 | 285 | 495 | 2,075 | 1.72 | 39 | 256 | 481 | 870 | 5,677 | 1.84 | 39 | 256 | 481 | 870 | 5,677 | 1.84 | 35 | 255 | 480 | 860 | 5,136 | 1.88 |
| Nebraska | 999 | 24 | 416 | 671 | 1,321 | 9,672 | 2.09 | 24 | 561 | 887 | 1,792 | 17,766 | 2.20 | 24 | 561 | 887 | 1,792 | 17,766 | 2.20 | 18 | 582 | 876 | 1,763 | 25,676 | 2.41 |
| New Hampshire | 961 | 32 | 272 | 466 | 813 | 6,001 | 2.24 | 62 | 411 | 733 | 1,429 | 14,581 | 2.29 | 62 | 411 | 733 | 1,429 | 14,581 | 2.29 | 13 | 404 | 700 | 1,406 | 12,521 | 2.37 |
| New Jersey | 1,490 | 208 | 1,147 | 2,069 | 3,553 | 27,054 | 1.80 | 221 | 1,817 | 3,249 | 6,140 | 33,600 | 1.93 | 221 | 1,817 | 3,249 | 6,140 | 33,600 | 1.93 | 89 | 1,771 | 3,307 | 6,229 | 43,395 | 2.01 |
| New Mexico | 917 | 47 | 540 | 862 | 1,478 | 9,837 | 1.86 | 74 | 712 | 1,208 | 2,162 | 15,357 | 1.99 | 74 | 712 | 1,208 | 2,162 | 15,357 | 1.99 | 23 | 686 | 1,218 | 2,251 | 15,898 | 2.04 |
| Nevada | 978 | 19 | 604 | 1,124 | 2,208 | 21,422 | 2.00 | 19 | 816 | 1,516 | 3,178 | 21,422 | 2.15 | 19 | 816 | 1,516 | 3,178 | 21,422 | 2.15 | 5 | 780 | 1,509 | 3,053 | 21,077 | 2.33 |
| New York | 3,260 | 260 | 1,081 | 1,847 | 3,143 | 34,728 | 2.09 | 291 | 1,654 | 3,184 | 6,143 | 49,003 | 2.21 | 291 | 1,654 | 3,184 | 6,143 | 49,003 | 2.21 | 94 | 1,638 | 3,178 | 6,159 | 46,811 | 2.19 |
| Ohio | 2,446 | 270 | 1,086 | 1,915 | 3,017 | 14,446 | 1.75 | 297 | 1,586 | 2,705 | 4,622 | 26,240 | 1.83 | 297 | 1,586 | 2,705 | 4,622 | 26,240 | 1.83 | 80 | 1,588 | 2,756 | 4,693 | 23,793 | 1.85 |
| Oklahoma | 952 | 288 | 911 | 1,500 | 2,733 | 15,803 | 1.89 | 331 | 1,298 | 2,269 | 3,988 | 26,753 | 2.05 | 331 | 1,298 | 2,269 | 3,988 | 26,753 | 2.05 | 222 | 1,252 | 2,210 | 4,029 | 26,487 | 2.11 |
| Oregon | 954 | 234 | 879 | 1,777 | 3,132 | 15,201 | 1.79 | 243 | 1,267 | 2,508 | 5,115 | 29,688 | 1.87 | 243 | 1,267 | 2,508 | 5,115 | 29,688 | 1.87 | 49 | 1,255 | 2,554 | 5,023 | 37,136 | 1.89 |
| Pennsylvania | 2,386 | 156 | 1,116 | 2,020 | 3,315 | 19,068 | 1.88 | 211 | 1,684 | 3,032 | 5,226 | 43,872 | 1.96 | 211 | 1,684 | 3,032 | 5,226 | 43,872 | 1.96 | 49 | 1,696 | 3,045 | 5,251 | 57,916 | 2.01 |
| Rhode Island | 930 | 43 | 214 | 405 | 687 | 4,255 | 2.00 | 43 | 308 | 616 | 1,165 | 9,341 | 2.22 | 43 | 308 | 616 | 1,165 | 9,341 | 2.22 | 11 | 281 | 602 | 1,228 | 14,287 | 2.34 |
| South Carolina | 901 | 84 | 1,318 | 2,388 | 3,914 | 18,661 | 1.86 | 91 | 1,817 | 3,228 | 5,603 | 50,012 | 1.95 | 91 | 1,817 | 3,228 | 5,603 | 50,012 | 1.95 | 42 | 1,797 | 3,326 | 5,835 | 50,012 | 1.97 |
| South Dakota | 935 | 18 | 202 | 350 | 581 | 2,629 | 1.91 | 20 | 290 | 518 | 870 | 5,525 | 1.89 | 20 | 290 | 518 | 870 | 5,525 | 1.89 | 4 | 291 | 516 | 878 | 4,899 | 1.89 |
| Tennessee | 987 | 117 | 1,635 | 2,910 | 4,776 | 25,572 | 1.68 | 117 | 2,249 | 4,052 | 6,904 | 37,775 | 1.88 | 117 | 2,249 | 4,052 | 6,904 | 37,775 | 1.88 | 84 | 2,183 | 4,114 | 7,023 | 45,901 | 1.90 |
| Texas | 3,238 | 336 | 2,258 | 3,808 | 6,117 | 25,371 | 1.55 | 346 | 3,030 | 5,457 | 9,143 | 57,006 | 1.70 | 346 | 3,030 | 5,457 | 9,143 | 57,006 | 1.70 | 105 | 3,041 | 5,475 | 9,236 | 41,792 | 1.70 |
| Utah | 947 | 72 | 956 | 1,590 | 2,613 | 6,764 | 1.43 | 72 | 1,273 | 2,277 | 3,743 | 11,359 | 1.50 | 72 | 1,273 | 2,277 | 3,743 | 11,359 | 1.50 | 65 | 1,249 | 2,210 | 3,742 | 11,626 | 1.53 |
| Virginia | 1,474 | 109 | 1,313 | 2,295 | 4,153 | 18,612 | 1.73 | 109 | 1,730 | 3,125 | 6,306 | 32,752 | 1.89 | 109 | 1,730 | 3,125 | 6,306 | 32,752 | 1.89 | 22 | 1,735 | 3,165 | 6,191 | 60,399 | 2.01 |
| Vermont | 944 | 27 | 125 | 224 | 379 | 2,696 | 2.24 | 37 | 186 | 341 | 613 | 4,174 | 2.22 | 37 | 186 | 341 | 613 | 4,174 | 2.22 | 26 | 182 | 339 | 625 | 3,992 | 2.28 |
| Washington | 945 | 427 | 1,538 | 2,926 | 5,735 | 22,022 | 1.77 | 529 | 2,178 | 4,284 | 9,363 | 60,206 | 1.95 | 529 | 2,178 | 4,284 | 9,363 | 60,206 | 1.95 | 152 | 2,084 | 4,237 | 9,103 | 50,788 | 2.03 |
| Wisconsin | 958 | 416 | 1,416 | 2,279 | 3,683 | 18,690 | 1.88 | 516 | 1,975 | 3,382 | 5,731 | 46,852 | 1.96 | 516 | 1,975 | 3,382 | 5,731 | 46,852 | 1.96 | 271 | 1,944 | 3,373 | 5,910 | 53,622 | 1.98 |
| West Virginia | 968 | 37 | 363 | 624 | 994 | 4,310 | 1.87 | 41 | 570 | 971 | 1,773 | 9,647 | 2.00 | 41 | 570 | 971 | 1,773 | 9,647 | 2.00 | 34 | 576 | 967 | 1,759 | 8,612 | 2.01 |
| Wyoming | 930 | 14 | 170 | 271 | 410 | 2,782 | 1.80 | 25 | 224 | 357 | 581 | 3,944 | 1.78 | 25 | 224 | 357 | 581 | 3,944 | 1.78 | 5 | 222 | 360 | 594 | 4,907 | 1.85 |

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, 2019.

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