2016-2017
National Survey on Drug Use and Health: Guide to State Tables and Summary of Small Area Estimation Methodology

Section A: Overview of NSDUH and Model-Based State Estimates

A.1 Introduction

This document provides information on the model-based small area estimates of substance use and mental disorders in states based on data from the combined 2016-2017 National Surveys on Drug Use and Health (NSDUHs). These estimates are available online along with other related information.[1] NSDUH is an annual survey conducted from January through December of the civilian, noninstitutionalized population aged 12 or older and is sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA). The survey collects information from individuals residing in households, noninstitutionalized group quarters (e.g., shelters, rooming houses, dormitories), and civilians living on military bases. In 2016-2017, NSDUH collected data from 135,974 respondents aged 12 or older and was designed to obtain representative samples from the 50 states and the District of Columbia. NSDUH is planned and managed by SAMHSA's Center for Behavioral Health Statistics and Quality (CBHSQ). Data collection and analysis are conducted under contract with RTI International.[2] A summary of NSDUH's methodology is given in Section A.2. Section A.3 lists all of the tables and files associated with the 2016-2017 state small area estimates and when and where they can be found. Information is given in Section A.4 on the confidence intervals and margins of error and how to make interpretations with respect to the small area estimates. Section A.5 discusses related substance use measures and warns users about not drawing conclusions by subtracting small area estimates from two different measures. Section A.6 discusses NSDUH questionnaire changes from 2015 and how these changes affect the small area estimates.

The survey-weighted hierarchical Bayes (SWHB) estimation methodology used in the production of state estimates from the 1999 to 2016 surveys also was used in the production of the 2016-2017 state estimates. The SWHB methodology is described in Appendix E of the 2001 state report (Wright, 2003b) and in Folsom, Shah, and Vaish (1999). A general model description is given in Section B.1 of this document. A list of measures for which small area estimates are produced is given in Section B.2. Predictors used in the 2016-2017 small area estimation (SAE) modeling are listed and described in Section B.3. Variable selection is discussed in Section B.4.

Small area estimates obtained using the SWHB methodology are design consistent (i.e., the small area estimates for states with large sample sizes are close to the robust design-based estimates). The state small area estimates when aggregated using the appropriate population totals result in national small area estimates that are very close to the national design-based estimates. However, to ensure internal consistency, it is desirable to have national small area estimates[3] exactly match the national design-based estimates. This process is called

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[1] Use the NSDUH link on the following web page: https://www.samhsa.gov/data/.
[2] RTI International is a registered trademark and a trade name of Research Triangle Institute, Research Triangle Park, North Carolina.
[3] *National small area estimates = Population-weighted averages of state-level small area estimates*.

"benchmarking." The benchmarked state-level estimates are also potentially less biased than the unbenchmarked state-level estimates. Beginning in 2002, exact benchmarking was introduced, as described in Section B.5.[4] Tables of the estimated numbers of individuals associated with each measure are available online,[5] and an explanation of how these counts and their respective Bayesian confidence intervals[6] are calculated can be found in Section B.6. Section B.7 discusses the method to compute aggregate estimates by combining two age groups. The definition and explanation of the formula used in estimating the marijuana initiation rate are given in Section B.8. Note that, unlike the other SAE outcomes discussed in this document, marijuana initiation is calculated as a ratio of two measures.

For all measures except major depressive episode (MDE, i.e., depression), serious mental illness (SMI), any mental illness (AMI), receipt of mental health services, and serious thoughts of suicide, the age groups for which estimates are provided are 12 to 17, 18 to 25, 26 or older, 18 or older, and 12 or older.[7]

Estimates of underage (aged 12 to 20) alcohol use and binge alcohol use were also produced.[8] Alcohol consumption is expected to differ significantly across the 18 to 25 age group because of the legalization of alcohol at age 21. Therefore, it was decided that it would be useful to produce small area estimates for individuals aged 12 to 20. A short description of the methodology used to produce underage drinking estimates is provided in Section B.9.

The remainder of Section B covers two topics:

- Section B.10 discusses the criteria used to define substance use disorder (SUD) and needing but not receiving treatment.

- Section B.11 discusses the production of estimates for MDE (i.e., depression), SMI, AMI, and suicidal thoughts. Note that for MDE, no estimates are published for individuals aged 12 or older. Also, for SMI, AMI, and serious thoughts of suicide, no estimates are produced for youths aged 12 to 17 because youths are not asked these questions.

In Section C, the 2015, 2016, 2017, pooled 2015-2016, and pooled 2016-2017 survey sample sizes, population estimates, and response rates are included in Tables C.1 to C.14,

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[4] The census region-level estimates in the tables are population-weighted aggregates of the state estimates. The published national estimates, however, are benchmarked to exactly match the design-based estimates.

[5] At https://www.samhsa.gov/data/, see Tables 1 to 31 in "2016-2017 NSDUHs: Model-Based Estimated Totals (in Thousands) (50 States and the District of Columbia)."

[6] Note that in the 2004-2005 NSDUH state report (Wright, Sathe, & Spagnola, 2007) and prior reports, the term "prediction interval" (PI) was used to represent uncertainty in the state and regional estimates. However, that term also is used in other applications to estimate future values of a parameter of interest. That interpretation does not apply to NSDUH state report estimates; thus, "prediction interval" was dropped and replaced with "Bayesian confidence interval."

[7] For MDE, estimates for individuals aged 12 or older are not included. For AMI, SMI, mental health services, and thoughts of suicide, estimates for youths aged 12 to 17 and individuals aged 12 or older are not included.

[8] Binge drinking is defined as having five or more drinks (for males) or four or more drinks (for females) on the same occasion on at least 1 day in the 30 days prior to the survey. In 2015, the definition for females changed from five to four drinks.

respectively. Table C.15 lists all of the measures and the years for which small area estimates were produced going back to the 2002 NSDUH, and Table C.16 lists all of the measures by age groups for which small area estimates were produced. In addition, Table C.17 provides a summary of milestones implemented in the SAE production process from 2002 to 2017.

A.2   Summary of NSDUH Methodology

NSDUH is the primary source of statistical information on the use of illicit drugs, alcohol, and tobacco by the U.S. civilian, noninstitutionalized population aged 12 or older. The survey also includes several modules of questions that focus on mental health issues. Conducted by the federal government since 1971, the survey collects data by administering questionnaires to a representative sample of the population through face-to-face interviews at their place of residence.

The survey covers residents of households, noninstitutional group quarters (e.g., shelters, rooming houses, dormitories), and civilians living on military bases. Persons excluded from the survey include homeless people who do not use shelters, military personnel on active duty, and residents of institutional group quarters, such as jails or prisons and long-term hospitals. The 1999 survey marked the first year in which the national sample was interviewed using a computer-assisted interviewing (CAI) method. The survey used a combination of computer-assisted personal interviewing (CAPI) conducted by an interviewer and audio computer-assisted self-interviewing (ACASI). Use of ACASI is designed to provide the respondent with a highly private and confidential means of responding to questions and increases the level of honest reporting of illicit drug use and other sensitive behaviors. For further details on the development of the CAI procedures for the 1999 National Household Survey on Drug Abuse (NHSDA),[9] see the Office of Applied Studies (OAS, 2001).

The 1999 through 2001 NHSDAs and the 2002 through 2013 NSDUHs employed an independent, multistage area probability sample design for each of the 50 states and the District of Columbia. For this design, eight states were designated as large sample states (California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania, and Texas) with target sample sizes of 3,600 per year. For the remaining 42 states and the District of Columbia, the target sample size was 900 per year. This approach ensured that there was sufficient sample in every state to support SAE while at the same time maintaining efficiency for national estimates. The design also oversampled youths and young adults, so that each state's sample was approximately equally distributed among three major age groups: 12 to 17 years, 18 to 25 years, and 26 years or older.

A coordinated design was developed for the 2014 through 2017 NSDUHs. Similar to the 1999 through 2013 surveys, the coordinated 4-year design is state-based with an independent, multistage area probability sample within each state and the District of Columbia. This design designates 12 states as large sample states. These 12 states have the following target sample sizes per year: 4,560 interviews in California; 3,300 interviews in Florida, New York, and Texas; 2,400 interviews in Illinois, Michigan, Ohio, and Pennsylvania; and 1,500 interviews in Georgia, New Jersey, North Carolina, and Virginia. Making the sample sizes more proportional to the

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[9] In 2002, the survey's name changed from the National Household Survey on Drug Abuse (NHSDA) to the National Survey on Drug Use and Health (NSDUH).

state population sizes improves the precision of national NSDUH estimates. This change also allows for a more cost-efficient sample allocation to the largest states while slightly increasing the sample sizes in smaller states to improve the precision of state estimates (note that the target sample size per year in the small states is 960 interviews except for Hawaii where the target sample size is 967 interviews). The fielded sample sizes for each state in 2017 are provided in Table C.5, and the combined 2016-2017 sample sizes are provided in Table C.9.

Starting in 2014, the allocation of the NSDUH sample is 25 percent for adolescents aged 12 to 17, 25 percent for adults aged 18 to 25, and 50 percent for adults aged 26 or older. The sample of adults aged 26 or older is further divided into three subgroups: aged 26 to 34 (15 percent), aged 35 to 49 (20 percent), and aged 50 or older (15 percent). For more information on the 2014 through the 2017 NSDUH sample design and for differences between the 2013 and 2014 surveys, refer to the 2014 NSDUH sample design report (CBHSQ, 2015a).

Nationally in 2016-2017, 273,249 addresses were screened, and 135,974 individuals responded within the screened addresses (see Table C.9). The screening response rate (SRR) for 2016-2017 combined averaged 76.5 percent, and the interview response rate (IRR) averaged 67.8 percent, for an overall response rate (ORR) of 51.8 percent (Table C.9). The ORRs for 2016-2017 ranged from 38.4 percent in New York to 66.0 percent in New Mexico. Estimates have been adjusted to reflect the probability of selection, unit nonresponse, poststratification to known census population estimates, item imputation, and other aspects of the estimation process. These procedures are described in detail in the 2015, 2016, and 2017 NSDUHs' methodological resource books (MRBs) (CBHSQ, 2016a, 2017, in press).

The weighted SRR is defined as the weighted number of successfully screened households (or dwelling units)[10] divided by the weighted number of eligible households, or

$$SRR = \frac{\sum w_{hh} complete_{hh}}{\sum w_{hh} eligible_{hh}},$$

where w_{hh} is the inverse of the unconditional probability of selection for the household (hh) and excludes all adjustments for nonresponse and poststratification.

At the person level, the weighted IRR is defined as the weighted number of respondents divided by the weighted number of selected persons, or

$$IRR = \frac{\sum w_i complete_i}{\sum w_i selected_i},$$

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[10] A successfully screened household is one in which all screening questionnaire items were answered by an adult resident of the household and either zero, one, or two household members were selected for the NSDUH interview.

where w_i is the inverse of the probability of selection for the *i*th person and includes household-level nonresponse and poststratification adjustments. To be considered a completed interview, a respondent must provide enough data to pass the usable case rule.[11]

The weighted ORR is defined as the product of the weighted SRR and the weighted IRR or

$$ORR = SRR \times IRR.$$

A.3   Presentation of Data

In addition to this methodology document for the 2016-2017 state SAE results, the following files are available at https://www.samhsa.gov/data/:

- **2016-2017 NSDUH: Model-Based Prevalence Estimates (50 States and the District of Columbia) (Tables 1 to 31, by Age Group)**: Tables of percentages and associated 95 percent Bayesian confidence intervals are included for youths aged 12 to 17, young adults aged 18 to 25, adults aged 26 or older, adults aged 18 or older, and all individuals aged 12 or older. Also included are tables for underage (12 to 20) alcohol use and underage binge alcohol use. These tables are available in Excel and PDF formats. In order to increase the precision of small area estimates and rankings especially for small sample states and to detect year-to-year changes more efficiently, an SAE expert panel[12] recommended producing annual state estimates based on 2 consecutive years of pooled NSDUH data and to base comparisons of estimates (to measure change) on 2-year moving averages.

- **2016-2017 NSDUH National Maps of Prevalence Estimates, by State (Figures 1a to 31d)**: The color of each state on these U.S. maps indicates how the state ranks relative to other states for each measure. States could fall into one of five groups according to their ranking by quintiles. Because 51 states were ranked for each measure, the middle quintile was assigned to 11 states, and the remaining quintiles were assigned 10 states each. In some cases, a "quintile" could have more or fewer states than desired because two (or more) states had the same estimate (to two decimal places). When such ties occurred at the "boundary" between two quintiles, all the states with the same estimate were conservatively assigned to the lower quintile. Those states with the highest rates for a given measure are in dark red, with the exception of the perceptions of risk measures, for which the lowest perceptions of great risk are in dark red. Those states with the lowest estimates are in dark blue, with the exception of the perceptions of risk measures, for

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[11] The usable case rule requires that a respondent answer "yes" or "no" to the question on lifetime use of cigarettes and "yes" or "no" to at least nine additional lifetime use questions.

[12] The SAE expert panel, convened in April 2002, had six members: Dr. William Bell of the U.S. Bureau of the Census; Partha Lahiri, Professor of the Joint Program in Survey Methodology at the University of Maryland at College Park; Professor Balgobin Nandram of Worcester Polytechnic Institute; Wesley Schaible, formerly Associate Commissioner for Research and Evaluation at the Bureau of Labor Statistics; Professor J. N. K. Rao of Carleton University; and Professor Alan Zaslavsky of Harvard University.

which the highest perceptions of great risk are in dark blue. These maps are available in HTML and PDF formats.

Note that because the past year heroin use for youths aged 12 to 17 was so low and had such an abbreviated range, no U.S. map was included.

- **2016-2017 NSDUH State Estimates Categorized into Five Groups, by Age Group**: This table shows the ranges of percentages for each outcome categorized into five groups (used to form the U.S. maps described above) from the lowest to highest estimate for youths aged 12 to 17, young adults aged 18 to 25, adults aged 26 or older, adults aged 18 or older, and all individuals aged 12 or older. Also included are ranges for underage (12 to 20) alcohol use and underage binge alcohol use. This table is available in HTML and PDF formats.

- **2016-2017 NSDUH: Model-Based Estimated Totals (in Thousands) (50 States and the District of Columbia) (Tables 1 to 31)**: Tables showing estimated numbers (counts in thousands) and confidence intervals are included for youths aged 12 to 17, young adults aged 18 to 25, adults aged 26 or older, adults aged 18 or older, and all individuals aged 12 or older. Also included are tables for underage (12 to 20) alcohol use and underage binge alcohol use. These tables are available in Excel and PDF formats.

- **2016-2017 NSDUH State-Specific Tables (Tables 1 to 112)**: Tables are provided for each individual state and the District of Columbia, as well as for the total United States and the four census regions (i.e., Northeast, Midwest, South, and West). The tables (two per area) show the percentages and the numbers of individuals (counts in thousands). These tables are available in HTML and PDF formats.

- **NSDUH: Comparison of 2015-2016 and 2016-2017 Population Percentages (50 States and the District of Columbia) (Tables 1 to 31)**: Tables are presented that show the 2015-2016 (previously published data) and 2016-2017 NSDUH state estimates and an indication of the statistical significance of the difference or change (p value). Estimates are shown for youths aged 12 to 17, young adults aged 18 to 25, adults aged 26 or older, adults aged 18 or older, and all individuals aged 12 or older. Also included are tables for underage (12 to 20) alcohol use and underage binge alcohol use. Because annual state-level estimates are based on 2 years of pooled NSDUH data, two consecutive sets of estimates have a 1-year overlap (e.g., 2015-2016 and 2016-2017). If the population totals across the 3 years (e.g., 2015, 2016, and 2017) were the same, then the null hypothesis of no difference between the log odds of the 2015-2016 and 2016-2017 prevalence rates would be equivalent to testing the null hypothesis that the difference between the 2015-2016 and 2016-2017 prevalence rates is zero, which in turn would be equivalent to testing that the difference between the 2015 and 2017 prevalence rates is zero. The methodology used to compare these percentages is provided at the end of the tables. These tables are available in HTML and PDF formats.

- **NSDUH: Comparison of 2008-2009 and 2016-2017 Population Percentages (50 States and the District of Columbia) (Tables 1 to 13)**: Tables are presented that show the 2008-2009 (previously published data) and 2016-2017 NSDUH state estimates and an indication of the statistical significance of the difference or change (p value). Estimates are shown for youths aged 12 to 17, young adults aged 18 to 25, adults aged 26 or older, adults aged 18 or older, and all individuals aged 12 or older. Also included

are tables for underage (12 to 20) alcohol use. This comparison is done between the most recent estimates (in this case, 2016-2017) and the earliest comparable estimates for all outcomes, including mental health (based on 2008-2009 NSDUH data). The methodology used to compare these percentages is provided at the end of the tables. These tables are available in HTML and PDF formats.

- **2016-2017 NSDUH: Other Sources of State-Level Data**: This document compares two outcomes (cigarette and alcohol use) from NSDUH with data from the Behavioral Risk Factor Surveillance System (BRFSS). This document is available in HTML and PDF formats.

- **2016-2017 NSDUH: Comparison of Population Percentages from the United States, Census Regions, States, and the District of Columbia**: The *p* values contained in these tables for each outcome and age group can be used to test the null hypothesis of no difference between population percentages for the following types of comparisons: total United States versus census region, total United States versus state, census region versus census region, census region versus state, and state versus state. These tables are available in Excel format, and the methodology used to compute these *p* values is provided in a document published with these Excel tables. This methodology document is available in HTML and PDF formats.

A.4 Confidence Intervals and Margins of Error

At the top of each of the 31 tables showing state-level model-based estimates[13] is the design-based national estimate along with a 95 percent design-based confidence interval, all of which are based on the survey design, the survey weights, and the reported data. The state estimates are model-based statistics (using SAE methodology) that have been adjusted (benchmarked) such that the population-weighted mean of the estimates across the 50 states and the District of Columbia equals the design-based national estimate. For more details on this benchmarking, see Section B.5. The region-level estimates are also benchmarked and are obtained by taking the population-weighted mean of the associated state-level benchmarked estimates. Associated with each state and regional estimate is a 95 percent Bayesian confidence interval. These intervals indicate the uncertainty in the estimate due to both sampling variability and model fit. For example, the state with the highest estimate of past month use of marijuana for young adults aged 18 to 25 was Vermont, with an estimate of 38.8 percent and a 95 percent confidence interval that ranged from 34.2 to 43.7 percent (see Table 3 of the state model-based estimates' tables). Assuming that sampling and modeling conditions held, the Bayes posterior probability was 0.95 that the true percentage of past month marijuana use in Vermont for young adults aged 18 to 25 in 2016-2017 was between 34.2 and 43.7 percent. As noted earlier in a Section A.1 footnote, the term "prediction interval" (PI) was used in the 2004-2005 NSDUH state report (Wright et al., 2007) and prior reports to represent uncertainty in the state and regional estimates. However, that term also is used in other applications to estimate future values of a parameter of interest. That interpretation does not apply to NSDUH state model-based estimates, so PI was replaced with "Bayesian confidence interval."

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[13] At https://www.samhsa.gov/data/, see "2016-2017 NSDUH: Model-Based Prevalence Estimates (50 States and the District of Columbia)" (Tables 1 to 31, by Age Group).

Margin of error is another term used to describe uncertainty in the estimates. For example, if (l, u) is a 95 percent symmetric confidence interval for the population proportion (p) and $\hat{p}$ is an estimate of p obtained from the survey data, then the margin of error of $\hat{p}$ is given by $(u - \hat{p})$ or $(\hat{p} - l)$. Because (l, u) is a symmetric confidence interval, $(u - \hat{p})$ will be the same as $(\hat{p} - l)$. In this case, the probability is 0.95 that the interval $\pm (u - \hat{p})$ or $\pm (\hat{p} - l)$ will contain the true population value (p). This defined margin of error will vary for each estimate and will be affected not only by the sample size (e.g., the larger the sample, the smaller the margin of error), but also by the sample design (e.g., telephone surveys using random digit dialing and surveys employing a stratified multistage cluster design will, more than likely, produce a different margin of error) (Scheuren, 2004).

The confidence intervals shown in NSDUH reports are asymmetric, meaning that the distance between the estimate and the lower confidence limit will not be the same as the distance between the upper confidence limit and the estimate. For example, Utah's past month marijuana use estimate is 14.7 percent for adults aged 18 to 25 years, with a 95 percent confidence interval equal to 12.0 to 17.9 percent (see Table 3 of the state model-based estimates' tables). Therefore, Utah's estimate is 2.7 (i.e., 14.7 – 12.0) percentage points from the lower 95 percent confidence limit and 3.2 (i.e., 17.9 – 14.7) percentage points from the upper limit. These asymmetric confidence intervals work well for small percentages often found in NSDUH tables and reports while still being appropriate for larger percentages. Some surveys or polls provide only one margin of error for all reported percentages. This single number is usually calculated by setting the sample percentage estimate ($\hat{p}$) equal to 50 percent, which will produce an upper bound or maximum margin of error. Such an approach would not be feasible in NSDUH because the estimates vary from less than 1 percent to over 75 percent; hence, applying a single margin of error to these estimates could significantly overstate or understate the actual precision levels. Therefore, given the differences mentioned above, it is more useful and informative to report the confidence interval for each estimate instead of a margin of error.

When it is indicated that a state has the highest or lowest estimate, it does not imply that the state's estimate is significantly higher or lower than the next highest or lowest state's estimate. Additionally, two significantly different state estimates (at the 5 percent level of significance) may have overlapping 95 percent confidence intervals. For details on a more accurate test to compare state estimates, see the "2016-2017 National Survey on Drug Use and Health: Comparison of Population Percentages from the United States, Census Regions, States, and the District of Columbia" at https://www.samhsa.gov/data/.

A.5   Related Substance Use Measures

Small area estimates are produced for a number of related drug measures, such as marijuana use and illicit drug use. It might appear that one could draw conclusions by subtracting one from the other (e.g., subtracting the percentage who used illicit drugs other than marijuana in the past month from the percentage who used illicit drugs in the past month to find the percentage who used only marijuana in the past month). Because related measures have been estimated with different models (i.e., separate models by age group and outcome), subtracting one measure from another related measure at the state or census region level can give misleading results, perhaps even a "negative" estimate, and should be avoided. However, these comparisons

can be made at the national level because these estimates are design-based estimates. For example, at the national level, subtracting cigarette use estimates from tobacco use estimates will give the estimate of individuals who did not use cigarettes, but used other forms of tobacco, such as cigars, pipes, or smokeless tobacco.

A.6   2015 NSDUH Changes and Their Effects on Small Area Estimates

In 2015, a number of changes were made to the NSDUH questionnaire and data collection procedures. These changes were intended to improve the quality of the data that were collected and to address the changing needs of substance use and mental health policy and research.[14] For a more detailed discussion of the questionnaire redesign and its effect, see Section C of the 2015 NSDUH's methodological summary and definitions report (CBHSQ, 2016b) and a brief report summarizing the implications of the changes for data users (CBHSQ, 2016c). To specifically see the impact of the 2015 questionnaire redesign as it is related to the SAE outcomes,[15] refer to Section A.6 of the "2015-2016 NSDUH: Guide to State Tables and Summary of Small Area Estimation Methodology" at https://www.samhsa.gov/data/. All SAE outcomes remained comparable between the 2015, 2016, and 2017 NSDUHs.

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[14] The exact changes are documented in the 2015 NSDUH's Office of Management and Budget (OMB) clearance package and in a summary report (CBHSQ, 2015b). The summary report and the 2015 NSDUH questionnaire are available on the SAMHSA website at https://www.samhsa.gov/data/.

[15] For a list of SAE outcomes, see Section B.2.

Section B: State Model-Based Estimation Methodology

B.1 General Model Description

The model can be characterized as a complex mixed[16] model (including both fixed and random effects) of the following form:

$$\log[\pi_{aijk} / (1 - \pi_{aijk})] = x'_{aijk}\beta_a + \eta_{ai} + \nu_{aij},$$

where π_{aijk} is the probability of engaging in the behavior of interest (e.g., using marijuana in the past month) for person-k belonging to age group-a in grouped state sampling region (SSR)-j of state-i.[17] Let x_{aijk} denote a $p_a \times 1$ vector of auxiliary (predictor) variables associated with age group-a (12 to 17, 18 to 25, 26 to 34, and 35 or older) and β_a denote the associated vector of the regression parameters. The age group-specific vectors of the auxiliary variables are defined for every block group in the nation and also include person-level demographic variables, such as race/ethnicity and gender. The vectors of state-level random effects $\eta_i = (\eta_{1i}, \cdots, \eta_{Ai})'$ and grouped SSR-level random effects $\nu_{ij} = (\nu_{1ij}, \cdots, \nu_{Aij})'$ are assumed to be mutually independent with $\eta_i \sim N_A(0, D_\eta)$ and $\nu_{ij} \sim N_A(0, D_\nu)$, where A is the total number of individual age groups modeled (generally, $A = 4$). For hierarchical Bayes (HB) estimation purposes, an improper uniform prior distribution is assumed for β_a, and proper Wishart prior distributions are assumed for D_η^{-1} and D_ν^{-1}. The HB solution for π_{aijk} involves a series of complex Markov Chain Monte Carlo (MCMC) steps to generate values of the desired fixed and

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[16] The use of mixed models (fixed and random effects) allows additional error components (random effects) to be included. These account for differences between states and within-state variations that are not taken into account by the predictor variables (fixed effects) alone. It is also difficult (if not impossible) to produce valid mean squared errors (MSEs) for small area estimates based solely on a fixed-effect national regression model (i.e., synthetic estimation) (Rao, 2003, p. 52). The mixed models produce estimates that are approximately represented by a weighted combination of the direct estimate from the state data and a regression estimate from the national model. The regression coefficients of the national model are estimated using data from all of the states (i.e., borrowing strength), and the regression estimate for a particular state is obtained by applying the national model to the state-specific predictor data. The regression estimate for the state is then combined with the direct estimate from the state data in a weighted combination where the weights are obtained by minimizing the MSE (variance + squared bias) of the small area estimate.

[17] To increase the precision of the estimated random effects at the within-state level, three SSRs were grouped together. California had 12 grouped SSRs; Florida, New York, and Texas each had 10 grouped SSRs; Illinois, Michigan, Ohio, and Pennsylvania each had 8 grouped SSRs; Georgia, New Jersey, North Carolina, and Virginia each had 5 grouped SSRs; and the rest of the states and the District of Columbia each had 4 grouped SSRs. Note that these 250 grouped SSRs were used on both the 2016 and 2017 samples.

random effects from the underlying joint posterior distribution. The basic process is described in Folsom et al. (1999), Shah, Barnwell, Folsom, and Vaish (2000), and Wright (2003a, 2003b).

Once the required number of MCMC samples (1,250 in all) for the parameters of interest are generated and tested for convergence properties (see Raftery & Lewis, 1992), the small area estimates for each race/ethnicity × gender cell within a block group can be obtained for each age group. These block group-level small area estimates then can be aggregated using the appropriate population count projections for the desired age group(s) to form state-level small area estimates. These state-level small area estimates are benchmarked to the national design-based estimates as described in Section B.5.

B.2   Variables Modeled

The 2017 National Survey on Drug Use and Health (NSDUH) data were pooled with the 2016 NSDUH data, and age group-specific state estimates for 30 binary (0, 1) outcomes listed below were produced. Comparisons between the 2015-2016 and the 2016-2017 state estimates also were produced for all measures.

1. past month use of illicit drugs,

2. past year use of marijuana,

3. past month use of marijuana,

4. perceptions of great risk from smoking marijuana once a month,

5. average annual rate of first use of marijuana,[18]

6. past month use of illicit drugs other than marijuana,

7. past year use of cocaine,

8. perceptions of great risk from using cocaine once a month,

9. past year use of heroin,

10. perceptions of great risk from trying heroin once or twice,

11. past year use of methamphetamine,[19]

12. past year misuse of pain relievers,

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[18] For details on how the average annual rate of marijuana (initiation of marijuana) is calculated, see Section B.8 of this document.
[19] This is the first time that small area estimates of past year use of methamphetamine have been published by the Substance Abuse and Mental Health Services Administration (SAMHSA).

13. past month use of alcohol,[20]

14. past month binge alcohol use,[21]

15. perceptions of great risk from having five or more drinks of an alcoholic beverage once or twice a week,

16. past month use of tobacco products,

17. past month use of cigarettes,

18. perceptions of great risk from smoking one or more packs of cigarettes per day,

19. past year illicit drug use disorder,

20. past year pain reliever use disorder,

21. past year alcohol use disorder,

22. past year substance use disorder (SUD),

23. past year needing but not receiving treatment for illicit drug use at a special facility,

24. past year needing but not receiving treatment for alcohol use at a special facility,

25. past year needing but not receiving treatment for substance use at a special facility,

26. serious mental illness (SMI) in the past year,[22]

27. any mental illness (AMI) in the past year,

28. received mental health services in the past year,

29. had serious thoughts of suicide in the past year, and

30. past year major depressive episode (MDE, i.e., depression).

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[20] Estimates of underage (aged 12 to 20) alcohol use were also produced.

[21] Estimates of underage (aged 12 to 20) binge alcohol use were also produced.

[22] SMI reported here is defined as having a diagnosable mental, behavioral, or emotional disorder, other than a developmental disorder or SUD, 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) (American Psychiatric Association [APA], 1994). SMI includes individuals with diagnoses resulting in serious functional impairment. These mental illness estimates are based on a predictive model and are not direct measures of diagnostic status. For details on the methodology used in NSDUH to estimate SMI and other levels of mental illness, see Section B.11. In August 2016, SAMHSA updated the SMI definition for use in mental health block grants to include mental disorders as specified in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (DSM-5) (APA, 2013); however, the estimates presented here are based on the DSM-IV.

B.3 Predictors Used in Mixed Logistic Regression Models

Local area data used as potential predictor variables in the mixed logistic regression models were obtained from a number of sources, as noted in the following discussion. Variable selection was done using combined 2016 and 2017 data for all outcomes. Fixed-effect predictors were selected using the method described in Section B.4.

Sources and potential data items used in the 2016-2017 modeling are provided in the following text and lists.

- *Claritas*. The demographic data package used from Claritas[23] contains data for 2013 with projections to 2018. The population projections are used to update these predictor variables each year. The 2016 and 2017 population projections were used for producing the 2016-2017 state small area estimates.

- *U.S. Census Bureau*. The 2010 census (demographic and geographic variables) and 2015 food stamp participation estimates were used (https://www.census.gov/data/datasets/time-series/demo/saipe/model-tables.html). The Census Bureau's Small Area Income and Poverty Estimates (SAIPE) program obtains Food Stamp program (now known as the Supplemental Nutrition Assistance Program [SNAP]) participation estimates from the U.S. Department of Agriculture, Food and Nutrition Service. Also, the Census Bureau's 2012-2016 American Community Survey (ACS) 5-year ACS demographic and socioeconomic variables at the tract level and poverty variable at the county level were used (https://www.census.gov/programs-surveys/acs/).

- *Federal Bureau of Investigation (FBI)*. Uniform Crime Report (UCR) arrest totals were obtained from https://www.icpsr.umich.edu/icpsrweb/NACJD/series/57 ⧉ The most current data used are from 2014 for most counties, with previous years' data substituted in a few cases.

- *Bureau of Labor Statistics (BLS)*. The 2017 county-level unemployment estimates were used (https://www.bls.gov/lau/tables.htm). The BLS uses results from the Current Population Survey (CPS) to provide county-level unemployment estimates. The CPS is a monthly survey of households conducted by the Census Bureau for the BLS.

- *Bureau of Economic Analysis (BEA)*. The 2016 county-level per capita income estimates were used (https://www.bea.gov/data/income-saving/personal-income-county-metro-and-other-areas). These county-level per capita income estimates are produced by the Regional Income Division of the BEA.

- *National Center for Health Statistics (NCHS)*. Mortality data using International Classification of Diseases, 10th revision (ICD-10), 2008-2013, were used. The ICD-10 death data are from the NCHS at the Centers for Disease Control and Prevention (CDC).

- *SAMHSA, Center for Behavioral Health Statistics and Quality (CBHSQ, formerly the Office of Applied Studies [OAS])*. Data were used from the National Survey of Substance Abuse Treatment Services (N-SSATS), formerly known as the Uniform Facility Data Set

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[23] Claritas is a market research firm headquartered in Ithaca, New York (see https://www.claritas.com/ ⧉). When the Claritas data were obtained for use in 2016-2017 NSDUH modeling, Claritas was affiliated with Nielsen Holdings, from which they became independent in January 2017.

(UFDS). The 2013 and 2015 data on drug and alcohol treatment estimates were obtained. Maintenance of effort expenditures, block grant awards, cost of services, and total taxable resources data were also used.

The following lists provide the specific independent variables that were potential predictors in the models.

Claritas Data (Description)	*Claritas Data* (Level)
% Population Aged 0 to 19 in Block Group	Block Group
% Population Aged 20 to 24 in Block Group	Block Group
% Population Aged 25 to 34 in Block Group	Block Group
% Population Aged 35 to 44 in Block Group	Block Group
% Population Aged 45 to 54 in Block Group	Block Group
% Population Aged 55 to 64 in Block Group	Block Group
% Population Aged 65 or Older in Block Group	Block Group
% Non-Hispanic Blacks in Block Group	Block Group
% Hispanics in Block Group	Block Group
% Non-Hispanic Other Races in Block Group	Block Group
% Non-Hispanic Whites in Block Group	Block Group
% Males in Block Group	Block Group
% American Indians, Eskimos, Aleuts in Tract	Tract
% Asians, Pacific Islanders in Tract	Tract
% Population Aged 0 to 19 in Tract	Tract
% Population Aged 20 to 24 in Tract	Tract
% Population Aged 25 to 34 in Tract	Tract
% Population Aged 35 to 44 in Tract	Tract
% Population Aged 45 to 54 in Tract	Tract
% Population Aged 55 to 64 in Tract	Tract
% Population Aged 65 or Older in Tract	Tract
% Non-Hispanic Blacks in Tract	Tract
% Hispanics in Tract	Tract
% Non-Hispanic Other Races in Tract	Tract
% Non-Hispanic Whites in Tract	Tract
% Males in Tract	Tract
% Population Aged 0 to 19 in County	County
% Population Aged 20 to 24 in County	County
% Population Aged 25 to 34 in County	County
% Population Aged 35 to 44 in County	County
% Population Aged 45 to 54 in County	County
% Population Aged 55 to 64 in County	County
% Population Aged 65 or Older in County	County
% Non-Hispanic Blacks in County	County
% Hispanics in County	County
% Non-Hispanic Other Races in County	County
% Non-Hispanic Whites in County	County
% Males in County	County

American Community Survey (ACS) (Description)	ACS Data (Level)
% Population Who Dropped Out of High School	Tract
% Housing Units Built in 1940 to 1949	Tract
% Females 16 Years or Older in Labor Force	Tract
% Females Never Married	Tract
% Females Separated, Divorced, Widowed, or Other	Tract
% One-Person Households	Tract
% Males 16 Years or Older in Labor Force	Tract
% Males Never Married	Tract
% Males Separated, Divorced, Widowed, or Other	Tract
% Housing Units Built in 1939 or Earlier	Tract
Average Number of Persons per Room	Tract
% Families below Poverty Level	Tract
% Households with Public Assistance Income	Tract
% Housing Units Rented	Tract
% Population with 9 to 12 Years of School, No High School Diploma	Tract
% Population with 0 to 8 Years of School	Tract
% Population with Associate's Degree	Tract
% Population with Some College and No Degree	Tract
% Population with Bachelor's, Graduate, Professional Degree	Tract
% Housing Units with No Telephone Service Available	Tract
% Households with No Vehicle Available	Tract
% Population with No Health Insurance	Tract
Median Rents for Rental Units	Tract
Median Value of Owner-Occupied Housing Units	Tract
Median Household Income	Tract
% Families below the Poverty Level	County

Uniform Crime Report (UCR) Data (Description)	UCR Data (Level)
Drug Possession Arrest Rate	County
Drug Sale or Manufacture Arrest Rate	County
Drug Violations' Arrest Rate	County
Marijuana Possession Arrest Rate	County
Marijuana Sale or Manufacture Arrest Rate	County
Opium or Cocaine Possession Arrest Rate	County
Opium or Cocaine Sale or Manufacture Arrest Rate	County
Other Drug Possession Arrest Rate	County
Other Dangerous Non-Narcotics Arrest Rate	County
Serious Crime Arrest Rate	County
Violent Crime Arrest Rate	County
Driving under Influence Arrest Rate	County

Other Categorical Data (Description)	Other Categorical Data (Source)	Other Categorical Data (Level)
= 1 if Hispanic, = 0 Otherwise	National Survey on Drug Use and Health (NSDUH) Sample	Person

Other Categorical Data (Description)	Other Categorical Data (Source)	Other Categorical Data (Level)
= 1 if Non-Hispanic Black, = 0 Otherwise	NSDUH Sample	Person
= 1 if Non-Hispanic Other, = 0 Otherwise	NSDUH Sample	Person
= 1 if Male, = 0 if Female	NSDUH Sample	Person
= 1 if Metropolitan Statistical Area (MSA) with ≥ 1 Million, = 0 Otherwise	2010 Census	County
= 1 if MSA with < 1 Million, = 0 Otherwise	2010 Census	County
= 1 if Non-MSA Urban, = 0 Otherwise	2010 Census	Tract
= 1 if Urban Area, = 0 if Rural Area	2010 Census	Tract
= 1 if No Cubans in Tract, = 0 Otherwise	2010 Census	Tract
= 1 if No Arrests for Dangerous Non-Narcotics, = 0 Otherwise	Uniform Crime Report (UCR)	County
= 1 if No Arrests for Opium or Cocaine Possession = 0 Otherwise	UCR	County
= 1 if No Housing Units Built in 1939 or Earlier, = 0 Otherwise	American Community Survey (ACS)	Tract
=1 if No Housing Units Built in 1940 to 1949, = 0 Otherwise	ACS	Tract
= 1 if No Households with Public Assistance Income, = 0 Otherwise	ACS	Tract

Miscellaneous Data (Description)	Miscellaneous Data (Source)	Miscellaneous Data (Level)
Alcohol Death Rate, Underlying Cause	National Center for Health Statistics' International Classification of Diseases, 10th revision (NCHS-ICD-10)	County
Cigarette Death Rate, Underlying Cause	NCHS-ICD-10	County
Drug Death Rate, Underlying Cause	NCHS-ICD-10	County
Alcohol Treatment Rate	National Survey of Substance Abuse Treatment Services (N-SSATS) (Formerly Called Uniform Facility Data Set [UFDS])	County
Alcohol and Drug Treatment Rate	N-SSATS (Formerly Called UFDS)	County
Drug Treatment Rate	N-SSATS (Formerly Called UFDS)	County
Unemployment Rate	Bureau of Labor Statistics (BLS)	County
Per Capita Income (in Thousands)	Bureau of Economic Analysis (BEA)	County
Average Suicide Rate (per 10,000)	NCHS-ICD-10	County
Food Stamp Participation Rate	Census Bureau	County
Single State Agency Maintenance of Effort	National Association of State Alcohol and Drug Abuse Directors (NASADAD)	State
Block Grant Awards	Substance Abuse and Mental Health Services Administration (SAMHSA)	State
Cost of Services Factor Index	SAMHSA	State
Total Taxable Resources per Capita Index	U.S. Department of Treasury	State
% Hispanics Who Are Cuban	2010 Census	Tract

B.4　Selection of Independent Variables for the Models

State estimates for past year methamphetamine (METHAMYR) use were not produced in prior years. Hence, in order to be consistent with the other sets of outcomes, the fixed-effect predictors for this outcome were selected using the pooled 2015-2016 NSDUH data. These fixed-effect predictors were selected based on the steps detailed in Section B.4 of the "2015-2016 NSDUH: Guide to State Tables and Summary of Small Area Estimation Methodology" at https://www.samhsa.gov/data/, and their updated versions were used to produce 2016-2017 state estimates for METHAMYR. For all the other outcome variables, no new variable selection was done. The updated versions of fixed-effect predictors that were used in modeling the 2015-2016 data were used to model the 2016-2017 data. Because the interest was to estimate change between the 2015-2016 and 2016-2017 state estimates, the same set of fixed-effect predictors was used for producing both sets of estimates.

B.5　Benchmarking the Age Group-Specific Small Area Estimates

The self-calibration built into the survey-weighted hierarchical Bayes (SWHB) solution ensures that the population-weighted average of the state small area estimates will closely match the national design-based estimates. The national design-based estimates in NSDUH are based entirely on survey-weighted data using a direct estimation approach, whereas the state and census region estimates are model-based. Given the self-calibration ensured by the SWHB method, for state reports prior to 2002, the standard Bayes prescription was followed; specifically, the posterior mean was used for the point estimate, and the tail percentiles of the posterior distribution were used for the Bayesian confidence interval limits.

Singh and Folsom (2001) extended Ghosh's (1992) results on constrained Bayes estimation to include exact benchmarking to design-based national estimates. In the simplest version of this constrained Bayes solution where only the design-based mean is imposed as a benchmarking constraint, each of the 2016-2017 state-by-age group small area estimates is adjusted by adding the common factor $\Delta_a = (D_a - P_a)$, where D_a is the design-based national estimate and P_a is the population-weighted mean of the state small area estimates (P_{sa}) for age group-a. The exactly benchmarked state-s and age group-a small area estimates then are given by $\theta_{sa} = P_{sa} + \Delta_a$. Experience with such additive adjustments suggests that the resulting exactly benchmarked state small area estimates will always be between 0 percent and 100 percent because the SWHB self-calibration ensures that the adjustment factor is small relative to the size of the state-level small area estimates.

Relative to the Bayes posterior mean, these benchmark-constrained state small area estimates are biased by the common additive adjustment factor. Therefore, the posterior mean squared error (MSE) for each benchmarked state small area estimate has the square of this adjustment factor added to its posterior variance. To achieve the desirable feature of exact benchmarking, this constrained Bayes adjustment factor was implemented for the state-by-age group small area estimates. The associated Bayesian confidence (credible) intervals can be recentered at the benchmarked small area estimates on the logit scale with the symmetric interval

end points based on the posterior root mean squared errors (RMSEs). The adjusted 95 percent Bayesian confidence intervals $(Lower_{sa}, Upper_{sa})$ are defined as follows:

$$Lower_{sa} = \exp(L_{sa}) / [1 + \exp(L_{sa})] \text{ and } Upper_{sa} = \exp(U_{sa}) / [1 + \exp(U_{sa})],$$

where

$$L_{sa} = \ln[\theta_{sa} / (1 - \theta_{sa})] - 1.96 * \sqrt{MSE_{sa}},$$

$$U_{sa} = \ln[\theta_{sa} / (1 - \theta_{sa})] + 1.96 * \sqrt{MSE_{sa}}, \text{ and}$$

$$MSE_{sa} = (\ln[P_{sa} / (1 - P_{sa})] - \ln[\theta_{sa} / (1 - \theta_{sa})])^2 + \text{posterior variance of } \ln[P_{sa} / (1 - P_{sa})].$$

The associated posterior coverage probabilities for these benchmarked intervals are very close to the prescribed 0.95 value because the state small area estimates have posterior distributions that can be approximated exceptionally well by a Gaussian distribution after the logit transformation.

B.6   Calculation of Estimated Number of Individuals Associated with Each Outcome

Tables 1 to 31 of "2016-2017 NSDUHs: Model-Based Estimated Totals (in Thousands) (50 States and the District of Columbia)" show the estimated numbers of individuals associated with each of the 30 outcomes of interest.[24] To calculate these numbers, the benchmarked small area estimates and the associated 95 percent Bayesian confidence intervals are multiplied by the average population across the 2 years (in this case, 2016 and 2017) of the state by the age group of interest.

For example, past month use of alcohol among 18 to 25 year olds in Alabama was 50.18 percent.[25] The corresponding Bayesian confidence intervals ranged from 46.18 to 54.17 percent. The population count for 18 to 25 year olds averaged across 2015 and 2016 in Alabama was 515,697 (see Table C.10 in Section C of this methodology document). Hence, the estimated number of 18 to 25 year olds using alcohol in the past month in Alabama was 0.5018 × 515,697, which is 258,777.[26] The associated Bayesian confidence intervals ranged from 0.4618 × 515,697 (i.e., 238,149) to 0.5417 × 515,697 (i.e., 279,353). Note that when estimates of the number of individuals are calculated for Tables 1 to 31 in "2016-2017 NSDUHs: Model-Based Estimated Totals (in Thousands) (50 States and the District of Columbia)" (follow the link in footnote 24), the unrounded percentages and population counts are used, then the numbers are reported to the nearest thousand. Hence, the number obtained by multiplying the published estimate with the published population estimate may not exactly match the counts that are published in these tables because of rounding differences.

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[24] This file is available at https://www.samhsa.gov/data/.
[25] See Table 13 of the "2016-2017 NSDUH: Model-Based Prevalence Estimates (50 States and the District of Columbia)" at https://www.samhsa.gov/data/.
[26] See Table 13 in the file described in footnote 25.

The only exception to this calculation is the production of the estimated numbers of marijuana initiates. Those estimates cannot be directly calculated as the product of the percentage estimate of first use of marijuana and the population counts available in Section C. That is because the denominator of that percentage estimate is defined as the number of person years at risk for marijuana initiation, which is a combination of individuals who never used marijuana and one half of the individuals who initiated in the past 24 months (see Section B.8 for more details).

B.7   Calculation of Aggregate Age Group Estimates and Limitations

Tables 1 to 31 of "2016-2017 NSDUHs: Model-Based Prevalence Estimates (50 States and the District of Columbia)" show estimates for the following age groups: 12 to 17, 18 to 25, 26 or older, 18 or older, and 12 or older.[27] If a user was interested in producing aggregated estimates, such as for those aged 12 to 25, the aggregated estimates could be calculated using prevalence estimates along with the population totals shown in Section C of this document. However, with the information that is provided in the tables, the confidence intervals cannot be calculated. Below is an example of this calculation for a given state.

For example, past month use of alcohol in Alabama among youths 12 to 17 was 8.88 percent, and among young adults 18 to 25 it was 50.18 percent.[28] The population counts for 12 to 17 year olds and 18 to 25 year olds averaged across 2016 and 2017 in Alabama were 375,632 and 515,697, respectively (see Table C.10 in Section C of this methodology document). Hence, one would calculate the estimate for individuals aged 12 to 25 by first finding the number of users aged 12 to 25, which is 292,133 ([0.0888 × 375,632] + [0.5018 × 515,697]), then dividing that number by the population aged 12 to 25, which results in a rate of 32.77 percent (292,133 / [375,632 + 515,697]).

B.8   Calculation of Average Annual Initiation of Marijuana Use

Initiation[29] rates typically are calculated as the number of new initiates of a substance during a period of time (such as in the past year) divided by an estimate of the number of person-years of exposure (in thousands). The initiation definition used here employs a simpler form of the at-risk population based on the model-based methodology. This model-based average annual initiation rate is defined as follows:

$$Average\ annual\ rate = 100 * \left\{ [X_1 \div (0.5 * X_1 + X_2)] \div 2 \right\},$$

where X_1 is the number of marijuana initiates in the past 24 months and X_2 is the number of persons who never used marijuana.

The initiation rate is expressed as a percentage or rate per 100 person-years of exposure. Note that this estimate uses a 2-year time period to accumulate initiation cases from each annual

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[27] This file is available at https://www.samhsa.gov/data/.
[28] See Table 13 of the "2016-2017 NSDUH: Model-Based Prevalence Estimates (50 States and the District of Columbia)" at https://www.samhsa.gov/data/.
[29] In previous NSDUH SAE reports, the term "initiation" was referred to as "incidence."

survey. By assuming further that the distribution of first use for the initiation cases is uniform across the 2-year interval, the total number of person-years of exposure is 1 year on average for the initiation cases plus 2 years for all the "never users" at the end of the time period. This approximation to the person-years of exposure permits one to recast the initiation rate as a function of two population prevalence rates, namely, the fraction of persons who first used marijuana in the past 2 years and the fraction who had never used marijuana. Both of these prevalence estimates were estimated using the SWHB estimation approach.

The count of persons who first used marijuana in the past 2 years is based on a "moving" 2-year period that ranges over 3 calendar years. Subjects were asked when they first used marijuana. If a person indicated first use of marijuana between the day of the interview and 2 years prior, the person was included in the count. Thus, it is possible for a person interviewed in the first part of 2017 to indicate first use as early as the first part of 2015 or as late as the first part of 2017. Similarly, a subject interviewed in the last part of 2017 could indicate first use as early as the last part of 2015 or as late as the last part of 2017. Therefore, in the 2017 survey, the reported period of first use ranged from early 2015 to late 2017 and was "centered" in 2016. For example, about half of the 12 to 17 year olds who reported first use in the past 24 months reported first use in 2016, while a quarter each reported first use in 2015 and 2017. Persons who responded in 2017 that they had never used marijuana were included in the count of "never used." Similarly, reports of first use in the past 24 months from the 2016 survey ranged from early 2014 to late 2016 and were centered in 2015. Half of the 12 to 17 year olds who reported first use in the past 24 months reported first use in 2015, while a quarter each reported first use in 2014 and 2016. Note that only initiation rates for marijuana use are provided here.

B.9   Underage Drinking

To obtain small area estimates for individuals aged 12 to 20 for past month alcohol and binge alcohol use, a separate set of models was fit for these two outcomes for the 12 to 17 age group and the 18 to 20 age group. Model-based estimates for individuals aged 12 to 20 were produced by taking the population-weighted average of the individual age group (12 to 17 and 18 to 20) estimates. Estimates for underage drinking for past month alcohol and binge alcohol use were benchmarked to match national design-based estimates for that age group using the process described in Section B.5.

B.10   Substance Use Disorder / Needing But Not Receiving Treatment

The NSDUH computer-assisted interviewing (CAI) instrumentation includes questions that are designed to measure dependence or abuse of alcohol and illicit drugs (i.e., SUDs). For these substances,[30] dependence and abuse questions were based on the criteria in the DSM-IV (APA, 1994).

Specifically, for marijuana, hallucinogens, inhalants, and tranquilizers, a respondent was defined as having dependence if he or she met three or more of the following six dependence criteria:

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[30] Substances include alcohol, marijuana, cocaine, heroin, hallucinogens, inhalants, methamphetamine, and the misuse of prescription psychotherapeutics (i.e., pain relievers, tranquilizers, stimulants, and sedatives).

1. Spent a great deal of time over a period of a month getting, using, or getting over the effects of the substance.

2. Used the substance more often than intended or was unable to keep set limits on the substance use.

3. Needed to use the substance more than before to get desired effects or noticed that the same amount of substance use had less effect than before.

4. Inability to cut down or stop using the substance every time tried or wanted to.

5. Continued to use the substance even though it was causing problems with emotions, nerves, mental health, or physical problems.

6. The substance use reduced or eliminated involvement or participation in important activities.

For alcohol, cocaine, heroin, methamphetamine, pain relievers, sedatives, and prescription stimulants, a seventh withdrawal criterion was added. The seventh withdrawal criterion is defined by a respondent reporting having experienced a certain number of withdrawal symptoms that vary by substance (e.g., having trouble sleeping, cramps, hands tremble). A respondent was defined as having dependence if he or she met three or more of seven dependence criteria for these substances.

For each illicit drug and alcohol, a respondent was defined as having abused that substance if he or she met one or more of the following four abuse criteria and was determined not to be dependent on the respective substance in the past year (i.e., because dependence takes precedence over abuse):

1. Serious problems at home, work, or school caused by the substance, such as neglecting your children, missing work or school, doing a poor job at work or school, or losing a job or dropping out of school.

2. Used the substance regularly and then did something that might have put you in physical danger.

3. Use of the substance caused you to do things that repeatedly got you in trouble with the law.

4. Had problems with family or friends that were probably caused by using the substance and continued to use the substance even though you thought the substance use caused these problems.

For additional details on how respondents were classified as having substance use disorder, see Section B.4.3 in Section B of the 2017 NSDUH methodological summary and definitions report (CBHSQ, 2018).

Additionally, the NSDUH CAI instrument included a series of questions that are designed to measure treatment need for an alcohol or illicit drug use problem and to determine persons needing but not receiving treatment. Respondents were classified as needing substance use treatment in the past year if they met either of the following criteria:

1. presence of an SUD in the past year for alcohol or illicit drugs (i.e., dependence or abuse) (see Section B.4.3 in Section B of CBHSQ, 2018); or

2. receipt of treatment at a specialty facility (i.e., drug and alcohol rehabilitation facility [inpatient or outpatient], hospital [inpatient only], or mental health center) in the past year for the use of alcohol or illicit drugs (or both).

A respondent was classified as needing but not receiving treatment for an alcohol problem if he or she met the criteria for alcohol dependence or abuse in the past year, but did not receive treatment at a specialty facility for an alcohol problem in the past year.

For additional details on how respondents were classified as needing substance use treatment, see Section B.4.4 in Section B of the 2017 NSDUH methodological summary and definitions report (CBHSQ, 2018).

B.11 Mental Health Measures

This section provides a summary of the measurement issues associated with three of the mental health outcome variables—SMI, AMI, and MDE. Additional details can be found in Sections B.4.6 through B.4.8 in Section B of the 2017 NSDUH methodological summary and definitions report (CBHSQ, 2018).

B.11.1 Mental Illness

In the 2000-2001 and 2002-2003 NSDUH state SAE reports (Wright, 2003a, 2003b; Wright & Sathe, 2005), the Kessler-6 (K6) distress scale was used to measure SMI (Kessler et al., 2003). However, SAMHSA discontinued producing state-level SMI estimates beginning with the release of the 2003-2004 state report (Wright & Sathe, 2006) because of concerns about the validity of using only the K6 distress scale without an impairment scale; see Section B.4.4 in Appendix B of the 2004 NSDUH national findings report (OAS, 2005). The use of the K6 distress scale continued in the 2003-2004 and the 2004-2005 state reports (Wright & Sathe, 2006; Wright et al., 2007), not as a measure of SMI, but as a measure of serious psychological distress (SPD) because it was determined that the K6 scale measured only SPD and merely contributed to measuring SMI and AMI (see the details that follow).

In December 2006, a new technical advisory group was convened by SAMHSA's OAS (which later became CBHSQ) and the Center for Mental Health Services (CMHS) to solicit recommendations for data collection strategies to address SAMHSA's legislative requirements. Although it was recognized that the ideal way to estimate SMI in NSDUH would be to administer a clinical diagnostic interview annually to all 45,000 adult respondents, this approach was not feasible because of constraints on the interview time and the need for trained mental health clinicians to conduct the interviews. Therefore, the approach recommended by the technical advisory group and adopted by SAMHSA for NSDUH was to utilize short scales in the NSDUH interview that separately measure psychological distress and functional impairment for use in a statistical model that predicts whether a respondent had mental illness.

In response, SAMHSA's CBHSQ initiated a Mental Health Surveillance Study (MHSS) under its NSDUH contract with RTI International to develop and implement methods to estimate SMI. Based on recommendations from this panel, estimates of SMI were presented based on a revised methodology and, thus, were not comparable with estimates for SMI or SPD shown in NSDUH state reports prior to 2009. However, in 2013, another revision to the methodology for creating SMI estimates was made, and the estimates presented for 2011 and 2012 are based on this revised methodology (and therefore are not comparable with previously published estimates of SMI). Thus, the 2008-2009, 2009-2010, and 2010-2011 SMI estimates were reproduced using the new 2013 methodology.

To develop methods for preparing the estimates of SMI and AMI presented in this and other NSDUH reports and documents, the MHSS was initiated as part of the 2008 NSDUH design and analysis. Because of constraints on the interview time in NSDUH and the need for trained mental health clinicians, it was not possible to administer a full structured diagnostic clinical interview to assess mental illness on approximately 45,000 adult respondents; therefore, the approach adopted by SAMHSA was to utilize short scales separately measuring psychological distress (K6) and functional impairment that could be used in a statistical model to accurately predict whether a respondent had a mental illness. Two impairment scales—the World Health Organization Disability Assessment Schedule (WHODAS) and the Sheehan Disability Scale (SDS)—were included in the 2008 survey for evaluation. The collection of clinical psychiatric interview data was achieved using a subsample of approximately 1,500 adult NSDUH participants in 2008. These participants were recruited for a follow-up clinical interview consisting of a gold-standard diagnostic assessment for mental disorders and functional impairment. In order to determine the optimal scale to measure functional impairment, a split-sample design was incorporated into the full 2008 NSDUH data collection in which half of the adult respondents received the WHODAS and half received the SDS (only the WHODAS scale was used starting in 2009). The 2008 statistical models (subsequently referred to as the "2008 model") using the data from the subsample of respondents collected as part of the MHSS then were developed for each half sample in which the short scales (the K6 in combination with the WHODAS or the K6 in combination with the SDS) were used as predictors in models of mental illness assessed via the clinical interviews. The model parameter estimates then were used to predict SMI in the full 2008 NSDUH sample. SMI probabilities and SMI predicted values (as well as for AMI) were computed for respondents in NSDUH samples from 2008 to 2011 using model parameter estimates from the 2008 model.

In 2010, SAMHSA began preliminary investigations to assess whether improvements to the model were warranted using all of the clinical data that had been collected since 2008. In 2011 and 2012, the clinical sample was augmented to include 1,500 respondents per year, leading to a combined sample of approximately 5,000 clinical interviews for 2008 to 2012. SAMHSA determined that the 2008 model had some important shortcomings that had not been detected in the original model fitting because of the small number of respondents in the 2008 clinical subsample. Specifically, the 2008 model substantially overestimated SMI and AMI among young adults aged 18 to 25 relative to the clinical interview data. In addition, improvements were needed in the weighting procedures for the MHSS sample data to account better for nonresponse and undercoverage. Therefore, SAMHSA decided to modify the model for the 2012 estimates using the combined 2008-2012 clinical data (subsequently referred to as the "2012 model"). To reduce bias and improve prediction, additional mental health-related

variables and an age variable were added in the 2012 model. To provide consistent data for trend assessment, state mental illness estimates for 2008-2009, 2009-2010, and 2010-2011 were also recomputed using the new 2012 model. Note that tables or maps showing estimates of AMI and SMI based on these 2012 models include "Revised October 2013" in the source line for estimates using 2008 through 2011 data.

The next few paragraphs describe the instruments and items used to measure the variables employed in the 2012 model. Specifically, the instrument used to measure mental illness in the clinical interviews is described, followed by descriptions of the scales and items in the main NSDUH interviews that were used as predictor variables in the model (e.g., the K6 and WHODAS total scores, age, MDE, and suicidal thoughts).

Clinical Measurement of Mental Illness. Mental illness was measured in the MHSS clinical interviews using an adapted version of the Structured Clinical Interview for the DSM-IV-TR Axis I Disorders, Research Version, Non-patient Edition (SCID-I/NP) (First, Spitzer, Gibbon, & Williams, 2002) and was differentiated by the level of functional impairment based on the Global Assessment of Functioning (GAF) scale (Endicott, Spitzer, Fleiss, & Cohen, 1976). Past year disorders that were assessed through the SCID included mood disorders (e.g., MDE, manic episode), anxiety disorders (e.g., panic disorder, generalized anxiety disorder, posttraumatic stress disorder), eating disorders (e.g., anorexia nervosa), intermittent explosive disorder, and adjustment disorder. In addition, the presence of psychotic symptoms was assessed. SUDs also were assessed, although these disorders were not used to produce estimates of mental illness.

- Respondents were defined as having *any mental illness* (AMI) if they were determined to have any of the mental disorders assessed in the SCID (not including SUDs), regardless of the level of functional impairment.
- Respondents were defined as having *serious mental illness* (SMI) if they had any of the mental disorders assessed in the SCID (not including SUDs), and these disorders resulted in substantial impairment in carrying out major life activities, based on GAF scores of 50 or below. The SMI diagnosis was used as the response variable in both the 2008 and 2012 prediction models.

The SCID and the GAF in combination were considered to be the gold standard for measuring mental illness.

Kessler-6 (K6) Distress Scale. The K6 in the main NSDUH consists of two sets of six questions that asked adult respondents how frequently they experienced symptoms of psychological distress during two different time periods: (1) during the past 30 days, and (2) if applicable, the one month in the past year when they were at their worst emotionally. Respondents were asked about the second time period only if they indicated that there was a month in the past 12 months when they felt more depressed, anxious, or emotionally stressed than they felt during the past 30 days.

The six questions comprising the K6 scale for the past month are as follows:

NERVE30   During the past 30 days, how often did you feel nervous?

        1   All of the time
        2   Most of the time
        3   Some of the time
        4   A little of the time
        5   None of the time
        Don't know/Refused

Response categories are the same for the remaining questions shown below.

HOPE30   During the past 30 days, how often did you feel hopeless?

FIDG30   During the past 30 days, how often did you feel restless or fidgety?

NOCHR30   During the past 30 days, how often did you feel so sad or depressed that nothing could cheer you up?

EFFORT30   During the past 30 days, how often did you feel that everything was an effort?

DOWN30   During the past 30 days, how often did you feel down on yourself, no good or worthless?

To create a score, the six items (NERVE30, HOPE30, FIDG30, NOCHR30, EFFORT30, and DOWN30) on the K6 scale were recoded from 0 to 4 so that "all of the time" was coded 4, "most of the time" 3, "some of the time" 2, "a little of the time" 1, and "none of the time" 0, with "don't know" and "refused" also coded as 0. Summing across the transformed responses in these six items resulted in a score with a range from 0 to 24.

If respondents were asked about a month in the past 12 months when they felt more depressed, anxious, or emotionally stressed than they felt during the past 30 days, they were asked comparable K6 items for that particular month in the past 12 months. The scoring procedures for these K6 items for the past 12 months were the same as those described above. The higher of the two K6 total scores for the past 30 days or past 12 months was used both for MHSS analysis purposes and in the adult respondents' final data.

An *alternative K6* total score also was created in which K6 scores of less than 8 were recoded as 0 and scores from 8 to 24 were recoded as 1 to 17. The rationale for creating the alternative past year K6 score was that SMI prevalence was typically extremely low for respondents with past year K6 scores of less than 8, and the prevalence rates started increasing only when scores were 8 or greater. The alternative K6 score was used in both the 2008 and 2012 SMI prediction models.

WHODAS. An initial step of the MHSS was to modify the WHODAS for use in a general population survey, including making minor changes to question wording and reducing its

length (Novak, 2007). That is, a subset of 8 items was found to capture the information represented in the full 16-item scale with no significant loss of information.

These eight WHODAS items that were included in the main NSDUH interview were assessed on a 0 to 3 scale, with responses of "no difficulty," "don't know," and "refused" coded as 0; "mild difficulty" coded as 1; "moderate difficulty" coded as 2; and "severe difficulty" coded as 3. Some items had an additional category for respondents who did not engage in a particular activity (e.g., they did not leave the house on their own). Respondents who reported that they did not engage in an activity were asked a follow-up question to determine if they did not do so because of emotions, nerves, or mental health. Those who answered "yes" to this follow-up question were subsequently assigned to the "severe difficulty" category; otherwise (i.e., for responses of "no," "don't know," or "refused"), they were assigned to the "no difficulty" category. Summing across these codes for the eight responses resulted in a total score with a range from 0 to 24. More information about scoring of the WHODAS can be found in the 2015 NSDUH public use file codebook (CBHSQ, 2016d).

An *alternative WHODAS* total score was created in which individual WHODAS item scores of less than 2 were recoded as 0, and item scores of 2 to 3 were recoded as 1. The individual alternative item scores then were summed to yield a total alternative score ranging from 0 to 8. Creation of an alternative version of the WHODAS score was based on the assumption that a dichotomous measure dividing respondents into two groups (i.e., severely impaired vs. less severely impaired) might fit better than a linear continuous measure in models predicting SMI. This alternative WHODAS score was the variable used in both the 2008 and 2012 SMI prediction models.

Suicidal Thoughts, MDE, and Age. In addition to the K6 and WHODAS scales, the 2012 model included the following measures as predictors of SMI: (a) serious thoughts of suicide in the past year; (b) having a past year MDE; and (c) age. The first two variables were added to the model to decrease the error rate in the predictions (i.e., the sum of the false-negative and false-positive rates relative to the clinical interview results). A recoded age variable reduced the biases in estimates for particular age groups, especially 18 to 25 year olds.

Since 2008, all adult respondents in NSDUH have been asked the following question: "At any time in the past 12 months, that is from [DATEFILL] up to and including today, did you seriously think about killing yourself?"[31] Definitions for MDE in the lifetime and past year periods are discussed in Section B.11.2 of this document. For respondents aged 18 to 30, an adjusted age was created by subtracting 18 from the respondent's current age, resulting in values ranging from 0 to 12. For a respondent aged 18, for example, the adjusted age was 0 (i.e., 18 minus 18), and for a respondent aged 30, the adjusted age was 12 (i.e., 30 minus 18). For respondents aged 31 or older, the adjusted age was assigned a value of 12.

The 2012 SMI Model. The 2012 SMI prediction model was fit with data from 4,912 WHODAS MHSS respondents from 2008 through 2012. The response variable Y equaled 1

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[31] In the question about serious thoughts of suicide, [DATEFILL] refers to the date at the start of a respondent's 12-month reference period. The interview program sets the start of the 12-month reference period as the same month and day as the interview date but in the previous calendar year.

when an SMI diagnosis was positive based on the clinical interview; otherwise, Y was 0. Letting $\mathbf{X}$ be a vector of characteristics attached to a NSDUH respondent and letting the probability that this respondent had SMI be $\pi = \Pr(Y = 1 \mid \mathbf{X})$, the 2012 SMI prediction model was

$$\text{logit}(\hat{\pi}) = \log[\hat{\pi} / (1 - \hat{\pi})] = -5.972664 + 0.0873416 X_k + 0.3385193 X_w + 1.9552664 X_s$$
$$+ 1.1267330\, X_m + 0.1059137 X_a \qquad (1)$$

or

$$\hat{\pi} = \frac{1}{1 + \exp[-(-5.972664 + 0.0873416 X_k + 0.3385193 X_w + 1.9552664 X_s + 1.1267330\, X_m + 0.1059137 X_a)]},$$

where $\hat{\pi}$ refers to an estimate of the SMI response probability π.

These covariates in equation (1) came from the main NSDUH interview data:

- X_k = *Alternative Past Year K6 Score*: Past year K6 score of less than 8 recoded as 0; past year K6 score of 8 to 24 recoded as 1 to 17.

- X_w = *Alternative WHODAS Score*: WHODAS item score of less than 2 recoded as 0; WHODAS item score of 2 to 3 recoded as 1, then summed for a score ranging from 0 to 8.

- X_s = *Serious Thoughts of Suicide in the Past Year*: Coded as 1 if "yes"; coded as 0 otherwise.

- X_m = *Past Year MDE:* Coded as 1 if criteria for past year MDE were met (see Section B.11.2); coded as 0 otherwise.

- X_a = *Adjusted Age:* Coded as age minus 18 if aged 18 to 30; coded as 12 otherwise.

As with the 2008 model, a cut point probability π_0 was determined, so that if $\hat{\pi} \geq \pi_0$ for a particular respondent, then he or she was *predicted* to be SMI positive; otherwise, he or she was predicted to be SMI negative. The cut point (0.260573529) was chosen so that the weighted number of false positives and false negatives in the MHSS dataset were as close to equal as possible. The predicted SMI status for all adult NSDUH respondents was used to compute SMI small area estimates.

A second cut point probability (0.0192519810) was determined so that respondents with an SMI probability greater than or equal to the cut point were predicted to be positive for AMI, and the remainder were predicted to be negative for AMI. The second cut point was chosen so that the weighted numbers of AMI false positives and false negatives were as close to equal as possible.

B.11.2 Major Depressive Episode (Depression)

According to the DSM-5, a person is defined as having had MDE in his or her lifetime if he or she has had at least five or more of the following nine symptoms nearly every day (except where noted) in the same 2-week period, where at least one of the symptoms is a depressed mood

or loss of interest or pleasure in daily activities (APA, 2013). These symptoms are as follows: (1) depressed mood most of the day; (2) markedly diminished interest or pleasure in all or almost all activities most of the day; (3) significant weight loss when not sick or dieting, or weight gain when not pregnant or growing, or decrease or increase in appetite; (4) insomnia or hypersomnia; (5) psychomotor agitation or retardation at a level that is observable by others; (6) fatigue or loss of energy; (7) feelings of worthlessness or excessive or inappropriate guilt; (8) diminished ability to think or concentrate or indecisiveness; and (9) recurrent thoughts of death or suicidal ideation (i.e., recurrent suicidal ideation without a specific plan, making a specific plan, or making an attempt). Unlike the other symptoms listed previously, recurrent thoughts of death or suicidality did not need to have occurred nearly every day. Respondents who have had an MDE in their lifetime are asked if, during the past 12 months, they had a period of depression lasting 2 weeks or longer while also having some of the other symptoms mentioned. Respondents reporting experiences consistent with them having had an MDE in the past year are asked questions from the SDS to measure the level of functional impairment in major life activities reported to be caused by the MDE in the past 12 months (Leon et al., 1997).

Beginning in 2004, sections related to MDE were included in the questionnaire. These sections, which were originally derived from DSM-IV (APA, 1994) criteria for MDE, contain questions that did not change for the 2017 NSDUH questionnaire. Consistent with the more recent DSM-5 criteria (APA, 2013), NSDUH does not exclude MDEs that occurred exclusively in the context of bereavement. These questions permit prevalence estimates of MDE to be calculated. Separate modules were administered to adults aged 18 or older and youths aged 12 to 17. The adult questions were adapted from the depression section of the National Comorbidity Survey Replication (NCS-R), and the questions for youths were adapted from the depression section of the National Comorbidity Survey Replication Adolescent Supplement (NCS-A) (see https://www.hcp.med.harvard.edu/ncs/). To make the sections developmentally appropriate for youths, there are minor wording differences in a few questions between the adult and youth modules. Revisions to the questions in both modules were made primarily to reduce the length and to modify the NCS questions, which are interviewer-administered, to the audio computer-assisted self-interviewing (ACASI) format used in NSDUH. In addition, some revisions, based on cognitive testing, were made to improve comprehension.

Since 2004, the NSDUH questions that determine MDE have remained unchanged for both adults and youths. In the 2008 questionnaire, however, changes were made in other mental health items that precede the MDE questions for adults (K6, suicide, and impairment). Questions also were retained in 2009 for the WHODAS impairment scale, and the questions for the SDS impairment scale were deleted; see Sections B.4.6 and B.4.7 in Section B of the 2017 NSDUH methodological summary and definitions (CBHSQ, 2018) for further details about these questionnaire changes. The questionnaire changes in 2008 appear to have affected the reporting on MDE questions among adults.

Because the WHODAS was selected to be used in the 2009 and subsequent surveys, model-based adjustments were applied to MDE estimates from the SDS half sample in 2008 to remove the context effect differential between the two half samples. Additionally, model-based adjustments were made to the 2005, 2006, and 2007 adult MDE estimates to make them comparable with the 2008 through 2012 MDE estimates (for more information on these adjustments, see CBHSQ, 2012). Thus, the 2008-2009 estimates of MDE were produced using

the adjusted 2008 MDE variable along with the unadjusted 2009 MDE variable. Revised estimates for 2005-2006, 2006-2007, and 2007-2008 were produced using the adjusted MDE variable.

In addition, changes to the youth mental health service utilization section questions in 2009 that preceded the questions about adolescent depression could have affected adolescents' responses to the adolescent depression questions and estimates of adolescent MDE. However, these changes in 2009 did not appear to affect the estimates of adolescent MDE. Therefore, data on trends in past year MDE from 2004 to 2017 are available for adolescents aged 12 to 17.

Section C: Sample Sizes, Response Rates, and Population Estimates

Table C.1   Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2015

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Total U.S.	197,962	165,328	132,210	79.69%	94,499	68,073	267,694,489	69.25%	55.19%
Northeast	44,157	37,292	28,065	73.23%	18,988	13,026	47,810,262	65.61%	48.04%
Midwest	46,269	38,853	32,108	81.52%	22,352	15,890	56,662,334	68.39%	55.75%
South	64,177	52,861	43,064	82.87%	30,920	22,768	100,182,409	70.93%	58.78%
West	43,359	36,322	28,973	77.73%	22,239	16,389	63,039,483	70.09%	54.48%
Alabama	2,797	2,185	1,831	83.26%	1,328	953	4,056,416	67.99%	56.61%
Alaska	3,289	2,381	1,892	79.18%	1,373	981	581,652	71.59%	56.68%
Arizona	3,022	2,314	1,949	84.15%	1,363	996	5,645,911	70.73%	59.52%
Arkansas	2,875	2,344	2,005	85.49%	1,343	981	2,457,367	68.96%	58.95%
California	11,282	10,153	7,564	73.80%	6,445	4,671	32,556,837	68.69%	50.69%
Colorado	2,637	2,240	1,795	80.03%	1,328	994	4,526,726	72.42%	57.96%
Connecticut	2,872	2,518	1,936	76.95%	1,411	964	3,058,139	66.21%	50.94%
Delaware	2,701	2,339	1,756	75.03%	1,323	945	795,351	71.21%	53.43%
District of Columbia	5,177	4,341	3,118	71.43%	1,231	924	574,552	74.47%	53.19%
Florida	10,530	8,387	6,793	80.63%	4,665	3,386	17,257,952	70.07%	56.50%
Georgia	4,015	3,307	2,603	78.78%	1,992	1,498	8,359,362	71.79%	56.56%
Hawaii	3,139	2,630	1,959	74.23%	1,389	1,020	1,158,550	70.76%	52.53%
Idaho	2,020	1,813	1,530	84.44%	1,277	949	1,347,084	72.78%	61.46%
Illinois	7,103	6,286	4,639	73.92%	3,592	2,365	10,737,272	63.14%	46.67%
Indiana	2,729	2,292	1,819	79.34%	1,376	973	5,486,199	68.00%	53.95%
Iowa	3,068	2,668	2,265	84.66%	1,357	962	2,597,548	68.53%	58.02%
Kansas	2,640	2,283	1,962	85.92%	1,351	986	2,367,256	71.42%	61.37%
Kentucky	2,469	2,000	1,695	84.66%	1,271	938	3,667,827	72.06%	61.01%
Louisiana	2,618	2,170	1,804	83.66%	1,282	957	3,819,762	73.03%	61.10%
Maine	4,277	3,140	2,643	84.00%	1,400	994	1,151,684	68.79%	57.78%
Maryland	2,308	2,018	1,513	75.20%	1,290	946	5,018,659	69.83%	52.52%
Massachusetts	3,366	2,960	2,131	72.27%	1,591	948	5,822,667	57.99%	41.91%
Michigan	7,166	5,787	4,853	83.66%	3,383	2,441	8,392,983	69.43%	58.08%
Minnesota	2,490	2,149	1,766	82.05%	1,286	951	4,575,592	73.16%	60.02%
Mississippi	2,554	2,060	1,741	84.80%	1,257	921	2,443,849	70.17%	59.51%

See notes at end of table.   (continued)

Table C.1   Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2015 (continued)

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Missouri	2,582	2,094	1,846	88.22%	1,342	986	5,057,574	70.25%	61.98%
Montana	3,195	2,528	2,159	85.62%	1,329	977	866,257	69.44%	59.45%
Nebraska	2,510	2,156	1,794	82.82%	1,301	945	1,548,885	71.21%	58.97%
Nevada	2,676	2,287	1,746	76.61%	1,317	997	2,408,267	69.97%	53.60%
New Hampshire	3,324	2,763	2,191	79.00%	1,435	995	1,148,726	68.23%	53.90%
New Jersey	4,076	3,647	2,807	75.90%	2,247	1,517	7,552,211	65.39%	49.63%
New Mexico	2,568	1,853	1,644	88.94%	1,260	959	1,717,549	73.85%	65.68%
New York	12,117	10,496	6,863	64.83%	4,963	3,310	16,779,910	63.60%	41.23%
North Carolina	4,251	3,606	2,990	82.87%	2,125	1,576	8,320,518	69.99%	58.00%
North Dakota	3,425	2,758	2,484	89.86%	1,342	988	618,680	72.44%	65.09%
Ohio	7,032	5,899	4,773	80.86%	3,458	2,428	9,732,558	68.48%	55.38%
Oklahoma	2,857	2,285	1,918	84.37%	1,359	971	3,185,569	67.59%	57.02%
Oregon	2,526	2,195	1,803	82.11%	1,333	962	3,420,080	71.04%	58.33%
Pennsylvania	7,429	6,257	5,054	80.80%	3,232	2,374	10,849,493	71.72%	57.95%
Rhode Island	2,901	2,461	1,915	77.81%	1,354	964	903,886	69.45%	54.04%
South Carolina	2,944	2,436	2,040	83.70%	1,304	987	4,070,523	72.52%	60.70%
South Dakota	2,354	1,968	1,799	91.69%	1,199	904	695,959	74.77%	68.56%
Tennessee	2,670	2,172	1,846	84.96%	1,352	1,004	5,507,975	69.71%	59.22%
Texas	6,227	5,184	4,538	87.56%	4,358	3,308	22,151,524	73.28%	64.16%
Utah	1,506	1,316	1,176	89.31%	1,204	968	2,350,775	77.43%	69.16%
Vermont	3,795	3,050	2,525	82.82%	1,355	960	543,548	68.96%	57.11%
Virginia	3,934	3,410	2,754	80.78%	2,113	1,526	6,928,628	69.71%	56.32%
Washington	2,692	2,423	1,867	76.82%	1,306	944	5,978,195	69.98%	53.76%
West Virginia	3,250	2,617	2,119	80.92%	1,327	947	1,566,577	66.77%	54.03%
Wisconsin	3,170	2,513	2,108	84.08%	1,365	961	4,851,828	68.35%	57.47%
Wyoming	2,807	2,189	1,889	86.02%	1,315	971	481,602	72.26%	62.16%

DU = dwelling unit.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015.

Table C.2   Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2015

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Total U.S.	21,859	16,955	24,893,417	77.66%	23,211	17,215	34,907,162	74.45%	49,429	33,903	207,893,910	67.36%
Northeast	4,308	3,228	4,124,414	72.98%	4,651	3,233	6,117,578	68.66%	10,029	6,565	37,568,270	64.28%
Midwest	5,296	3,955	5,351,313	73.95%	5,509	4,106	7,415,255	74.10%	11,547	7,829	43,895,766	66.73%
South	7,267	5,767	9,483,323	79.64%	7,496	5,676	12,959,382	76.41%	16,157	11,325	77,739,704	68.96%
West	4,988	4,005	5,934,367	81.09%	5,555	4,200	8,414,946	75.99%	11,696	8,184	48,690,170	67.73%
Alabama	289	229	380,027	78.20%	338	251	527,315	74.78%	701	473	3,149,075	65.56%
Alaska	322	227	58,808	69.67%	331	247	82,845	73.61%	720	507	439,999	71.46%
Arizona	296	239	547,813	80.67%	324	248	745,197	76.07%	743	509	4,352,901	68.60%
Arkansas	323	256	236,353	77.64%	329	245	318,810	74.57%	691	480	1,902,203	66.87%
California	1,411	1,148	3,044,310	80.84%	1,603	1,224	4,441,882	76.89%	3,431	2,299	25,070,645	65.77%
Colorado	320	269	419,211	84.39%	327	241	593,941	73.82%	681	484	3,513,574	70.56%
Connecticut	305	241	281,090	79.35%	347	227	387,506	64.40%	759	496	2,389,542	64.87%
Delaware	302	238	68,905	79.72%	325	221	98,641	67.69%	696	486	627,805	70.81%
District of Columbia	264	210	30,686	80.79%	257	190	94,114	73.72%	710	524	449,752	74.18%
Florida	1,072	844	1,406,795	78.55%	1,159	889	1,981,426	77.16%	2,434	1,653	13,869,730	68.21%
Georgia	524	420	851,391	80.68%	447	358	1,116,369	79.67%	1,021	720	6,391,602	69.17%
Hawaii	286	226	97,117	75.80%	360	275	139,707	76.77%	743	519	921,726	69.35%
Idaho	281	220	145,770	80.39%	346	260	174,661	76.34%	650	469	1,026,653	71.02%
Illinois	887	648	1,018,545	72.96%	809	561	1,382,295	68.56%	1,896	1,156	8,336,432	61.04%
Indiana	316	242	540,488	73.99%	352	256	743,142	73.45%	708	475	4,202,568	66.29%
Iowa	346	253	243,085	73.21%	346	249	358,657	72.25%	665	460	1,995,806	67.26%
Kansas	347	251	237,829	71.04%	296	242	329,951	83.24%	708	493	1,799,476	69.27%
Kentucky	296	232	339,561	77.14%	297	224	471,843	75.59%	678	482	2,856,423	70.90%
Louisiana	311	244	367,609	79.34%	319	233	509,882	73.11%	652	480	2,942,271	72.13%
Maine	382	293	91,980	75.70%	309	217	125,074	69.44%	709	484	934,630	67.99%
Maryland	307	238	453,696	78.67%	326	247	622,611	75.45%	657	461	3,942,353	68.06%
Massachusetts	337	228	487,806	67.52%	375	221	791,046	57.80%	879	499	4,543,815	56.96%
Michigan	798	601	784,266	74.15%	847	653	1,112,424	77.93%	1,738	1,187	6,496,293	67.36%
Minnesota	319	247	426,424	76.74%	304	230	571,849	77.88%	663	474	3,577,318	71.96%
Mississippi	287	231	244,034	81.89%	289	226	335,131	77.47%	681	464	1,864,684	67.41%

See notes at end of table.   (continued)

Table C.2   Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2015 (continued)

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Missouri	308	244	470,294	77.78%	384	293	655,956	76.45%	650	449	3,931,325	68.27%
Montana	300	230	74,532	77.20%	302	229	111,838	73.93%	727	518	679,888	67.95%
Nebraska	289	220	152,144	76.73%	338	248	212,640	71.16%	674	477	1,184,101	70.52%
Nevada	324	271	223,603	84.13%	334	254	288,923	75.66%	659	472	1,895,740	67.17%
New Hampshire	322	238	97,633	75.02%	325	235	143,062	74.78%	788	522	908,031	66.49%
New Jersey	527	387	695,324	72.89%	588	411	894,807	69.65%	1,132	719	5,962,081	63.92%
New Mexico	255	215	164,982	84.38%	304	237	226,226	78.86%	701	507	1,326,341	71.89%
New York	1,065	766	1,421,217	69.93%	1,302	909	2,218,443	67.76%	2,596	1,635	13,140,250	62.15%
North Carolina	539	438	780,506	82.17%	515	397	1,065,839	77.39%	1,071	741	6,474,173	67.38%
North Dakota	318	231	52,164	71.69%	328	259	104,459	77.80%	696	498	462,057	71.27%
Ohio	803	589	914,823	72.84%	827	599	1,225,255	73.19%	1,828	1,240	7,592,481	67.22%
Oklahoma	349	260	313,866	75.40%	289	215	431,841	71.97%	721	496	2,439,862	65.76%
Oregon	281	214	291,606	77.27%	335	244	415,899	72.61%	717	504	2,712,575	70.12%
Pennsylvania	742	574	931,284	77.42%	794	596	1,354,815	76.16%	1,696	1,204	8,563,393	70.38%
Rhode Island	286	228	74,717	79.60%	332	235	128,339	71.08%	736	501	700,830	68.02%
South Carolina	344	282	366,745	82.77%	274	219	519,107	79.59%	686	486	3,184,672	70.29%
South Dakota	300	230	65,584	77.20%	297	233	93,003	77.41%	602	441	537,373	73.96%
Tennessee	295	230	508,351	77.48%	414	318	703,173	74.53%	643	456	4,296,451	67.99%
Texas	959	780	2,380,293	80.39%	1,085	849	3,080,905	78.32%	2,314	1,679	16,690,326	71.33%
Utah	299	262	292,037	88.19%	308	250	383,514	81.11%	597	456	1,675,224	74.73%
Vermont	342	273	43,364	79.72%	279	182	74,485	66.68%	734	505	425,699	68.21%
Virginia	490	392	625,315	79.95%	504	357	895,251	70.76%	1,119	777	5,408,062	68.32%
Washington	285	227	530,641	79.31%	350	250	747,302	71.32%	671	467	4,700,252	68.75%
West Virginia	316	243	129,191	78.60%	329	237	187,125	73.58%	682	467	1,250,260	64.34%
Wisconsin	265	199	445,668	72.18%	381	283	625,624	72.36%	719	479	3,780,537	67.14%
Wyoming	328	257	43,939	77.94%	331	241	63,010	74.06%	656	473	374,652	71.28%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015.

Table C.3 Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2016

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Total U.S.	205,589	173,149	135,188	77.88%	95,607	67,942	269,430,135	68.44%	53.30%
Northeast	45,388	38,488	28,275	71.60%	18,782	12,711	47,797,488	64.63%	46.28%
Midwest	46,850	39,972	32,231	79.66%	22,649	16,023	56,744,903	68.00%	54.17%
South	67,261	56,067	44,353	80.59%	31,462	22,833	101,241,206	70.62%	56.91%
West	46,090	38,622	30,329	76.52%	22,714	16,375	63,646,539	68.21%	52.20%
Alabama	2,996	2,478	2,026	82.04%	1,392	983	4,064,691	66.70%	54.72%
Alaska	3,272	2,386	1,901	79.52%	1,325	960	585,025	69.03%	54.90%
Arizona	2,921	2,203	1,835	83.43%	1,313	982	5,742,769	74.79%	62.39%
Arkansas	3,036	2,503	2,041	81.73%	1,381	992	2,468,292	69.49%	56.80%
California	12,192	11,070	7,993	72.01%	6,720	4,619	32,689,876	65.40%	47.10%
Colorado	2,570	2,163	1,757	80.69%	1,324	920	4,612,005	67.04%	54.10%
Connecticut	2,980	2,559	1,931	75.41%	1,392	937	3,052,524	65.01%	49.03%
Delaware	2,953	2,459	1,880	76.98%	1,330	928	802,361	67.70%	52.12%
District of Columbia	5,940	5,119	3,401	65.20%	1,260	967	580,859	74.11%	48.32%
Florida	11,282	9,267	7,135	77.11%	4,794	3,435	17,554,248	68.22%	52.60%
Georgia	3,619	3,139	2,443	77.88%	1,998	1,508	8,462,591	71.10%	55.37%
Hawaii	3,949	3,329	2,478	73.74%	1,458	1,004	1,157,906	66.33%	48.91%
Idaho	2,653	2,151	1,842	85.77%	1,429	1,088	1,373,371	74.13%	63.59%
Illinois	7,222	6,310	4,501	71.35%	3,789	2,467	10,702,668	61.81%	44.10%
Indiana	2,560	2,149	1,665	77.38%	1,286	933	5,503,158	69.65%	53.90%
Iowa	2,893	2,461	2,076	84.27%	1,414	1,028	2,607,021	71.71%	60.43%
Kansas	2,522	2,204	1,848	83.82%	1,363	996	2,369,503	71.16%	59.64%
Kentucky	3,162	2,586	2,104	81.27%	1,445	953	3,684,220	62.76%	51.00%
Louisiana	2,946	2,381	1,934	81.24%	1,328	959	3,831,309	70.61%	57.37%
Maine	3,941	3,022	2,473	82.01%	1,394	992	1,154,268	71.53%	58.66%
Maryland	2,418	2,120	1,550	72.57%	1,317	990	5,027,075	73.23%	53.14%
Massachusetts	3,700	3,252	2,365	72.42%	1,596	988	5,849,205	61.77%	44.73%
Michigan	7,090	5,893	4,809	81.40%	3,311	2,420	8,406,442	70.59%	57.46%
Minnesota	2,596	2,278	1,855	81.33%	1,375	962	4,605,050	68.58%	55.78%
Mississippi	2,382	1,949	1,617	83.00%	1,283	934	2,447,209	71.09%	59.00%

See notes at end of table.   (continued)

Table C.3   Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2016 (continued)

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Missouri	2,612	2,247	1,926	85.56%	1,334	938	5,069,324	66.20%	56.65%
Montana	3,217	2,602	2,247	86.51%	1,433	1,018	874,320	71.23%	61.62%
Nebraska	2,696	2,350	1,881	80.01%	1,364	964	1,557,938	68.95%	55.16%
Nevada	2,379	2,095	1,526	72.71%	1,268	966	2,448,780	72.48%	52.70%
New Hampshire	3,244	2,763	2,148	77.51%	1,355	936	1,153,236	67.19%	52.08%
New Jersey	4,370	3,866	2,791	71.09%	2,149	1,433	7,550,513	63.19%	44.92%
New Mexico	2,907	2,023	1,720	84.86%	1,215	980	1,719,897	79.43%	67.41%
New York	12,398	10,716	6,932	63.92%	4,934	3,232	16,748,367	61.44%	39.27%
North Carolina	4,122	3,470	2,832	81.56%	2,089	1,508	8,419,860	71.49%	58.31%
North Dakota	3,511	2,882	2,521	87.70%	1,344	960	617,001	69.08%	60.58%
Ohio	6,804	5,933	4,700	79.21%	3,363	2,377	9,738,448	67.60%	53.55%
Oklahoma	2,654	2,198	1,794	81.39%	1,374	965	3,198,970	68.24%	55.54%
Oregon	3,160	2,765	2,224	80.46%	1,391	1,004	3,478,192	71.05%	57.17%
Pennsylvania	7,825	6,665	5,277	79.17%	3,308	2,360	10,840,710	70.48%	55.80%
Rhode Island	3,072	2,653	2,043	77.12%	1,356	937	905,791	67.37%	51.96%
South Carolina	2,832	2,251	1,849	81.99%	1,326	970	4,133,914	72.46%	59.41%
South Dakota	2,813	2,338	2,037	86.96%	1,338	960	701,645	70.92%	61.67%
Tennessee	3,034	2,416	2,002	82.87%	1,373	993	5,556,863	70.57%	58.48%
Texas	6,793	5,725	4,877	84.53%	4,255	3,293	22,490,422	74.68%	63.13%
Utah	1,483	1,331	1,138	85.78%	1,215	936	2,403,330	74.82%	64.18%
Vermont	3,858	2,992	2,315	77.15%	1,298	896	542,875	71.09%	54.85%
Virginia	3,920	3,376	2,743	81.20%	2,077	1,493	6,961,461	68.86%	55.91%
Washington	2,779	2,421	1,911	78.99%	1,362	934	6,080,095	66.41%	52.45%
West Virginia	3,172	2,630	2,125	80.79%	1,440	962	1,556,861	63.87%	51.60%
Wisconsin	3,531	2,927	2,412	82.32%	1,368	1,018	4,866,705	73.22%	60.27%
Wyoming	2,608	2,083	1,757	84.46%	1,261	964	480,973	75.14%	63.46%

DU = dwelling unit.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2016.

Table C.4   Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2016

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Total U.S.	22,323	17,109	24,896,527	76.95%	22,836	16,573	34,570,728	72.66%	50,448	34,260	209,962,880	66.74%
Northeast	4,417	3,193	4,097,263	70.97%	4,459	3,059	6,052,258	67.96%	9,906	6,459	37,647,967	63.41%
Midwest	5,355	4,105	5,326,597	76.54%	5,444	3,896	7,367,324	71.62%	11,850	8,022	44,050,981	66.38%
South	7,219	5,625	9,530,368	78.55%	7,519	5,623	12,828,550	75.69%	16,724	11,585	78,882,288	68.85%
West	5,332	4,186	5,942,298	78.87%	5,414	3,995	8,322,597	72.31%	11,968	8,194	49,381,644	66.19%
Alabama	304	234	376,632	79.57%	313	243	518,185	76.56%	775	506	3,169,874	63.84%
Alaska	317	236	59,359	75.48%	362	276	77,379	76.69%	646	448	448,287	66.89%
Arizona	316	234	549,195	75.37%	317	237	747,345	74.16%	680	511	4,446,229	74.82%
Arkansas	307	235	236,955	78.47%	347	260	317,177	73.69%	727	497	1,914,160	67.68%
California	1,509	1,187	3,034,119	79.22%	1,517	1,092	4,358,028	71.70%	3,694	2,340	25,297,729	62.56%
Colorado	307	243	423,725	78.45%	303	212	599,128	68.58%	714	465	3,589,152	65.26%
Connecticut	303	224	278,000	75.81%	366	251	388,847	68.19%	723	462	2,385,677	63.36%
Delaware	288	217	69,423	77.17%	344	245	95,867	71.38%	698	466	637,071	66.16%
District of Columbia	292	240	30,940	82.15%	327	251	93,288	76.72%	641	476	456,632	72.98%
Florida	1,107	859	1,404,808	77.61%	1,031	793	1,961,863	76.96%	2,656	1,783	14,187,577	66.26%
Georgia	461	370	859,100	78.55%	432	352	1,107,792	80.49%	1,105	786	6,495,700	68.62%
Hawaii	388	282	96,028	71.79%	326	243	131,256	73.17%	744	479	930,622	64.71%
Idaho	334	270	147,812	79.99%	376	286	175,630	74.50%	719	532	1,049,928	73.19%
Illinois	884	641	1,012,090	72.69%	918	614	1,363,215	66.25%	1,987	1,212	8,327,363	59.80%
Indiana	283	222	538,647	78.86%	317	241	743,072	76.19%	686	470	4,221,440	67.20%
Iowa	349	272	243,421	78.47%	343	243	359,699	71.52%	722	513	2,003,901	70.90%
Kansas	337	258	237,465	75.77%	306	223	325,008	73.30%	720	515	1,807,031	70.19%
Kentucky	345	250	340,245	71.68%	359	233	470,276	65.18%	741	470	2,873,699	61.30%
Louisiana	325	249	367,320	75.79%	307	221	496,651	72.36%	696	489	2,967,339	69.64%
Maine	314	227	90,994	72.99%	312	225	124,447	73.55%	768	540	938,827	71.13%
Maryland	264	209	453,651	79.62%	309	231	612,960	74.02%	744	550	3,960,463	72.40%
Massachusetts	367	228	486,692	62.45%	347	212	793,386	62.16%	882	548	4,569,126	61.63%
Michigan	762	610	774,747	80.16%	800	598	1,104,650	75.06%	1,749	1,212	6,527,045	68.74%
Minnesota	314	239	428,949	76.11%	335	223	574,038	64.59%	726	500	3,602,063	68.38%
Mississippi	305	235	244,408	76.88%	305	235	326,958	78.37%	673	464	1,875,843	69.05%

See notes at end of table.   (continued)

Table C.4 Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2016 (continued)

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Missouri	282	216	468,693	76.84%	309	232	649,195	75.02%	743	490	3,951,436	63.73%
Montana	333	258	74,323	76.38%	371	267	110,690	71.37%	729	493	689,307	70.64%
Nebraska	313	241	153,264	77.62%	350	236	213,572	67.37%	701	487	1,191,102	68.11%
Nevada	291	249	224,692	84.52%	296	230	285,894	77.28%	681	487	1,938,194	70.39%
New Hampshire	321	236	95,915	74.44%	298	203	142,331	68.39%	736	497	914,990	66.22%
New Jersey	483	369	693,040	76.68%	487	333	889,421	67.89%	1,179	731	5,968,052	60.92%
New Mexico	315	269	165,841	87.57%	273	220	221,098	82.25%	627	491	1,332,957	77.94%
New York	1,228	862	1,411,235	66.91%	1,142	779	2,176,812	66.82%	2,564	1,591	13,160,320	60.00%
North Carolina	463	350	787,252	75.62%	486	353	1,042,023	73.36%	1,140	805	6,590,585	70.67%
North Dakota	361	277	52,057	77.94%	326	236	99,863	70.30%	657	447	465,081	67.70%
Ohio	771	581	905,155	73.88%	809	582	1,215,046	72.06%	1,783	1,214	7,618,247	66.19%
Oklahoma	341	264	315,530	77.50%	347	237	425,978	67.58%	686	464	2,457,462	67.17%
Oregon	331	244	291,562	72.28%	310	215	420,001	70.39%	750	545	2,766,628	71.02%
Pennsylvania	814	614	925,024	74.86%	803	571	1,334,425	72.14%	1,691	1,175	8,581,261	69.74%
Rhode Island	295	224	73,856	76.68%	348	237	127,610	69.94%	713	476	704,325	65.94%
South Carolina	288	228	368,554	77.77%	324	240	511,293	75.12%	714	502	3,254,067	71.45%
South Dakota	332	255	66,650	76.73%	311	227	92,952	73.75%	695	478	542,043	69.60%
Tennessee	315	235	508,796	74.37%	315	230	698,244	73.51%	743	528	4,349,823	69.66%
Texas	1,001	826	2,410,422	82.34%	1,060	847	3,086,091	79.55%	2,194	1,620	16,993,908	72.64%
Utah	286	240	297,786	81.97%	266	206	390,726	79.39%	663	490	1,714,818	72.56%
Vermont	292	209	42,507	72.18%	356	248	74,978	72.38%	650	439	425,389	70.74%
Virginia	492	391	628,350	79.49%	539	394	880,842	72.90%	1,046	708	5,452,270	66.92%
Washington	324	253	533,613	79.36%	338	232	744,179	68.26%	700	449	4,802,304	64.65%
West Virginia	321	233	127,982	74.10%	374	258	183,063	66.48%	745	471	1,245,817	62.43%
Wisconsin	367	293	445,459	80.36%	320	241	627,016	74.85%	681	484	3,794,230	72.12%
Wyoming	281	221	44,244	76.40%	359	279	61,241	76.61%	621	464	375,489	74.74%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2016.

Table C.5   Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2017

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Total U.S.	217,756	184,266	138,061	75.08%	97,667	68,032	272,103,335	67.12%	50.39%
Northeast	48,883	41,502	29,428	69.30%	19,783	13,261	48,090,325	64.33%	44.58%
Midwest	48,605	41,607	32,247	76.92%	23,047	15,922	57,012,053	67.23%	51.71%
South	72,434	60,687	46,289	78.13%	31,954	22,839	102,562,560	69.48%	54.28%
West	47,834	40,470	30,097	72.65%	22,883	16,010	64,438,397	65.30%	47.44%
Alabama	3,168	2,545	2,071	81.43%	1,357	964	4,076,562	67.18%	54.71%
Alaska	3,433	2,665	2,015	75.19%	1,429	978	585,516	67.16%	50.50%
Arizona	2,719	1,990	1,609	80.35%	1,121	860	5,833,518	73.17%	58.79%
Arkansas	2,850	2,392	1,974	82.44%	1,366	990	2,482,628	68.24%	56.25%
California	13,486	12,260	8,250	67.30%	6,962	4,478	33,008,642	61.22%	41.20%
Colorado	2,707	2,310	1,837	80.02%	1,441	1,003	4,681,963	68.04%	54.45%
Connecticut	3,209	2,775	2,021	72.86%	1,483	987	3,069,866	66.95%	48.78%
Delaware	3,610	2,918	2,125	72.25%	1,415	950	812,528	66.35%	47.93%
District of Columbia	7,118	6,086	3,727	58.58%	1,304	975	590,677	73.42%	43.01%
Florida	11,910	9,835	7,339	74.76%	4,810	3,399	17,900,610	67.65%	50.57%
Georgia	4,231	3,648	2,722	74.48%	2,053	1,487	8,585,215	70.11%	52.22%
Hawaii	3,702	3,108	2,107	67.43%	1,408	971	1,159,804	63.70%	42.95%
Idaho	2,372	1,958	1,615	82.08%	1,291	980	1,404,781	74.77%	61.37%
Illinois	7,748	6,775	4,516	66.77%	3,769	2,332	10,721,867	59.76%	39.90%
Indiana	3,004	2,533	1,933	76.23%	1,378	942	5,537,990	67.56%	51.50%
Iowa	2,977	2,500	2,084	83.33%	1,431	971	2,617,650	67.20%	56.00%
Kansas	2,471	2,190	1,762	80.55%	1,365	992	2,377,160	70.97%	57.17%
Kentucky	2,748	2,290	1,810	78.94%	1,431	976	3,701,461	65.55%	51.74%
Louisiana	2,870	2,366	1,948	82.45%	1,371	966	3,836,082	69.04%	56.93%
Maine	3,630	2,804	2,332	83.44%	1,395	985	1,159,844	68.91%	57.50%
Maryland	3,119	2,778	1,964	70.69%	1,340	987	5,064,109	71.96%	50.87%
Massachusetts	3,844	3,424	2,340	67.90%	1,668	986	5,902,164	57.34%	38.93%
Michigan	7,383	6,231	4,956	79.55%	3,396	2,402	8,447,704	67.99%	54.09%
Minnesota	2,780	2,401	1,862	77.68%	1,358	968	4,656,860	71.41%	55.47%
Mississippi	2,490	2,124	1,737	81.66%	1,321	936	2,449,136	67.39%	55.03%

See notes at end of table.   (continued)

Table C.5   Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2017 (continued)

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Missouri	2,934	2,539	2,075	82.03%	1,419	989	5,091,167	69.20%	56.77%
Montana	3,227	2,626	2,161	82.64%	1,324	971	882,133	74.16%	61.29%
Nebraska	2,760	2,422	1,850	76.49%	1,349	961	1,570,654	69.52%	53.18%
Nevada	2,562	2,343	1,559	64.42%	1,394	958	2,503,328	65.28%	42.05%
New Hampshire	3,579	3,008	2,280	74.74%	1,430	1,003	1,162,921	71.63%	53.53%
New Jersey	4,665	4,114	2,928	70.08%	2,364	1,559	7,616,050	64.12%	44.93%
New Mexico	2,910	2,056	1,673	81.46%	1,147	927	1,730,409	79.34%	64.62%
New York	14,111	12,155	7,364	60.31%	5,216	3,352	16,859,209	62.07%	37.44%
North Carolina	4,388	3,769	2,968	78.70%	2,075	1,491	8,557,556	70.14%	55.20%
North Dakota	3,289	2,585	2,210	85.38%	1,397	981	615,426	70.11%	59.86%
Ohio	7,392	6,544	4,974	76.04%	3,441	2,418	9,782,521	68.81%	52.32%
Oklahoma	2,897	2,469	1,899	76.80%	1,392	938	3,209,148	66.95%	51.42%
Oregon	3,438	3,008	2,340	77.80%	1,450	987	3,525,360	67.53%	52.54%
Pennsylvania	7,838	6,669	5,248	78.66%	3,341	2,392	10,866,811	69.17%	54.41%
Rhode Island	3,564	3,087	2,202	71.18%	1,457	995	910,587	67.51%	48.05%
South Carolina	2,736	2,221	1,747	78.77%	1,311	977	4,197,504	70.48%	55.52%
South Dakota	2,609	2,179	1,798	82.64%	1,339	977	705,267	71.94%	59.45%
Tennessee	2,915	2,408	1,933	80.13%	1,341	983	5,617,904	71.44%	57.24%
Texas	7,590	6,355	5,156	81.34%	4,474	3,335	22,910,762	72.14%	58.67%
Utah	1,586	1,392	1,167	83.58%	1,251	946	2,454,802	74.30%	62.09%
Vermont	4,443	3,466	2,713	77.81%	1,429	1,002	542,874	69.35%	53.97%
Virginia	4,377	3,738	2,967	79.40%	2,149	1,521	7,025,154	66.95%	53.16%
Washington	2,856	2,474	1,888	76.63%	1,445	973	6,190,537	64.98%	49.79%
West Virginia	3,417	2,745	2,202	80.11%	1,444	964	1,545,522	65.31%	52.33%
Wisconsin	3,258	2,708	2,227	82.42%	1,405	989	4,887,789	69.26%	57.09%
Wyoming	2,836	2,280	1,876	82.44%	1,220	978	477,603	78.32%	64.57%

DU = dwelling unit.

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

Table C.6 Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2017

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Total U.S.	22,750	17,033	24,942,794	75.07%	23,707	16,618	34,306,312	69.57%	51,210	34,381	212,854,229	65.78%
Northeast	4,621	3,304	4,062,028	70.60%	4,927	3,305	5,997,749	65.87%	10,235	6,652	38,030,549	63.39%
Midwest	5,355	3,976	5,307,422	74.05%	5,578	3,883	7,318,181	69.01%	12,114	8,063	44,386,451	66.11%
South	7,457	5,726	9,604,069	77.73%	7,715	5,548	12,774,000	72.39%	16,782	11,565	80,184,491	68.03%
West	5,317	4,027	5,969,275	74.74%	5,487	3,882	8,216,383	68.40%	12,079	8,101	50,252,739	63.64%
Alabama	317	244	374,631	77.59%	320	240	513,209	73.08%	720	480	3,188,722	64.92%
Alaska	392	292	58,282	75.76%	314	214	74,239	71.77%	723	472	452,995	65.19%
Arizona	309	245	552,984	78.92%	260	209	747,345	79.23%	552	406	4,533,189	71.35%
Arkansas	358	265	236,608	72.58%	312	242	315,393	76.59%	696	483	1,930,627	66.44%
California	1,553	1,135	3,033,709	72.96%	1,596	1,036	4,288,284	64.66%	3,813	2,307	25,686,650	59.22%
Colorado	335	247	428,263	75.43%	311	227	584,837	73.19%	795	529	3,668,863	66.50%
Connecticut	338	232	274,244	68.29%	399	262	389,556	65.66%	746	493	2,406,066	67.01%
Delaware	331	234	69,530	69.60%	310	208	95,131	69.78%	774	508	647,868	65.53%
District of Columbia	353	280	31,388	81.40%	286	216	87,973	78.10%	665	479	471,317	71.97%
Florida	1,145	894	1,426,526	78.31%	1,085	743	1,958,321	69.24%	2,580	1,762	14,515,763	66.37%
Georgia	441	330	865,968	76.79%	508	389	1,104,404	77.43%	1,104	768	6,614,843	68.02%
Hawaii	321	246	95,563	79.00%	324	227	125,577	68.82%	763	498	938,664	61.35%
Idaho	299	242	151,439	82.24%	300	232	178,468	76.57%	692	506	1,074,874	73.48%
Illinois	828	588	1,001,216	70.99%	843	528	1,342,655	63.02%	2,098	1,216	8,377,996	57.86%
Indiana	304	225	538,160	74.09%	298	211	740,720	71.27%	776	506	4,259,110	66.22%
Iowa	313	231	244,636	74.10%	388	263	359,287	65.36%	730	477	2,013,727	66.69%
Kansas	328	248	237,376	74.14%	342	252	323,999	72.23%	695	492	1,815,786	70.33%
Kentucky	331	247	340,219	74.55%	340	239	466,997	71.90%	760	490	2,894,246	63.66%
Louisiana	319	235	363,668	74.34%	340	229	485,824	65.19%	712	502	2,986,591	69.03%
Maine	381	280	90,045	74.34%	341	235	123,946	70.29%	673	470	945,853	68.22%
Maryland	289	228	454,007	78.97%	373	277	605,178	74.99%	678	482	4,004,924	70.64%
Massachusetts	392	272	483,097	71.49%	475	268	791,355	57.79%	801	446	4,627,712	55.75%
Michigan	780	595	766,463	75.47%	840	600	1,097,289	71.93%	1,776	1,207	6,583,952	66.41%
Minnesota	304	236	433,584	78.40%	377	263	574,994	69.78%	677	469	3,648,281	70.80%
Mississippi	301	238	242,287	78.12%	278	193	323,808	69.65%	742	505	1,883,042	65.73%

See notes at end of table.

(continued)

Table C.6   Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2017 (continued)

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Missouri	342	235	466,944	66.93%	321	224	640,581	70.48%	756	530	3,983,641	69.26%
Montana	272	198	74,949	72.39%	327	247	110,136	76.10%	725	526	697,048	74.08%
Nebraska	336	251	155,372	76.05%	346	246	213,260	74.53%	667	464	1,202,023	67.80%
Nevada	308	236	228,207	76.65%	368	257	284,196	69.26%	718	465	1,990,925	63.29%
New Hampshire	361	264	95,120	71.53%	360	236	142,221	64.54%	709	503	925,580	72.72%
New Jersey	508	363	690,173	70.15%	582	402	891,735	68.25%	1,274	794	6,034,143	62.74%
New Mexico	254	214	166,008	84.42%	289	238	220,296	82.77%	604	475	1,344,105	78.10%
New York	1,232	830	1,394,803	65.96%	1,304	862	2,135,231	64.08%	2,680	1,660	13,329,176	61.31%
North Carolina	521	413	791,136	80.86%	524	361	1,053,588	67.77%	1,030	717	6,712,833	69.20%
North Dakota	359	253	52,695	70.80%	315	233	95,075	72.85%	723	495	467,655	69.44%
Ohio	807	607	899,095	74.90%	864	598	1,213,704	69.05%	1,770	1,213	7,669,722	68.07%
Oklahoma	314	222	316,734	68.52%	348	226	421,590	64.45%	730	490	2,470,824	67.20%
Oregon	350	243	293,722	70.71%	423	286	415,641	69.34%	677	458	2,815,997	66.92%
Pennsylvania	727	561	919,394	77.48%	817	583	1,322,903	71.02%	1,797	1,248	8,624,513	68.03%
Rhode Island	323	236	73,443	72.43%	328	232	126,842	72.32%	806	527	710,302	66.20%
South Carolina	295	242	372,484	76.92%	370	286	509,421	77.31%	646	449	3,315,599	68.76%
South Dakota	321	248	67,482	78.59%	326	247	91,812	75.27%	692	482	545,973	70.53%
Tennessee	335	262	511,129	75.44%	295	215	691,269	71.29%	711	506	4,415,506	71.04%
Texas	1,017	810	2,452,451	80.08%	1,105	853	3,087,771	76.19%	2,352	1,672	17,370,540	70.29%
Utah	282	218	303,235	78.26%	325	244	393,415	70.42%	644	484	1,758,153	74.50%
Vermont	359	266	41,710	73.39%	321	225	73,960	70.29%	749	511	427,203	68.78%
Virginia	446	348	628,884	78.90%	580	410	874,910	69.73%	1,123	763	5,521,360	65.01%
Washington	329	245	538,697	73.16%	361	237	735,718	65.09%	755	491	4,916,122	64.06%
West Virginia	344	234	126,421	67.37%	341	221	179,213	64.50%	759	509	1,239,888	65.22%
Wisconsin	333	259	444,400	78.91%	318	218	624,805	68.91%	754	512	3,818,584	68.11%
Wyoming	313	266	44,218	84.65%	289	228	58,232	78.54%	618	484	375,154	77.49%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

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

Table C.7 Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2015 and 2016

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Total U.S.	403,551	338,477	267,398	78.78%	190,106	136,015	268,562,312	68.84%	54.24%
Northeast	89,545	75,780	56,340	72.42%	37,770	25,737	47,803,875	65.12%	47.15%
Midwest	93,119	78,825	64,339	80.59%	45,001	31,913	56,703,618	68.20%	54.96%
South	131,438	108,928	87,417	81.72%	62,382	45,601	100,711,808	70.78%	57.84%
West	89,449	74,944	59,302	77.13%	44,953	32,764	63,343,011	69.15%	53.34%
Alabama	5,793	4,663	3,857	82.65%	2,720	1,936	4,060,554	67.33%	55.65%
Alaska	6,561	4,767	3,793	79.36%	2,698	1,941	583,339	70.31%	55.80%
Arizona	5,943	4,517	3,784	83.81%	2,676	1,978	5,694,340	72.79%	61.01%
Arkansas	5,911	4,847	4,046	83.63%	2,724	1,973	2,462,829	69.23%	57.90%
California	23,474	21,223	15,557	72.90%	13,165	9,290	32,623,357	67.06%	48.89%
Colorado	5,207	4,403	3,552	80.36%	2,652	1,914	4,569,366	69.67%	55.99%
Connecticut	5,852	5,077	3,867	76.19%	2,803	1,901	3,055,331	65.59%	49.98%
Delaware	5,654	4,798	3,636	76.00%	2,653	1,873	798,856	69.45%	52.78%
District of Columbia	11,117	9,460	6,519	68.24%	2,491	1,891	577,705	74.29%	50.70%
Florida	21,812	17,654	13,928	78.86%	9,459	6,821	17,406,100	69.13%	54.51%
Georgia	7,634	6,446	5,046	78.32%	3,990	3,006	8,410,977	71.43%	55.94%
Hawaii	7,088	5,959	4,437	73.99%	2,847	2,024	1,158,228	68.58%	50.74%
Idaho	4,673	3,964	3,372	85.11%	2,706	2,037	1,360,227	73.45%	62.52%
Illinois	14,325	12,596	9,140	72.68%	7,381	4,832	10,719,970	62.47%	45.41%
Indiana	5,289	4,441	3,484	78.35%	2,662	1,906	5,494,678	68.81%	53.91%
Iowa	5,961	5,129	4,341	84.47%	2,771	1,990	2,602,285	70.11%	59.22%
Kansas	5,162	4,487	3,810	84.85%	2,714	1,982	2,368,380	71.29%	60.49%
Kentucky	5,631	4,586	3,799	82.96%	2,716	1,891	3,676,023	67.37%	55.89%
Louisiana	5,564	4,551	3,738	82.47%	2,610	1,916	3,825,536	71.78%	59.20%
Maine	8,218	6,162	5,116	82.99%	2,794	1,986	1,152,976	70.16%	58.23%
Maryland	4,726	4,138	3,063	73.86%	2,607	1,936	5,022,867	71.51%	52.81%
Massachusetts	7,066	6,212	4,496	72.35%	3,187	1,936	5,835,936	59.87%	43.32%
Michigan	14,256	11,680	9,662	82.52%	6,694	4,861	8,399,712	70.01%	57.78%
Minnesota	5,086	4,427	3,621	81.68%	2,661	1,913	4,590,321	70.84%	57.87%
Mississippi	4,936	4,009	3,358	83.89%	2,540	1,855	2,445,529	70.62%	59.25%

See notes at end of table.

(continued)

Table C.7   Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2015 and 2016 (continued)

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Missouri	5,194	4,341	3,772	86.85%	2,676	1,924	5,063,449	68.16%	59.19%
Montana	6,412	5,130	4,406	86.07%	2,762	1,995	870,289	70.32%	60.52%
Nebraska	5,206	4,506	3,675	81.41%	2,665	1,909	1,553,412	70.08%	57.05%
Nevada	5,055	4,382	3,272	74.68%	2,585	1,963	2,428,523	71.30%	53.24%
New Hampshire	6,568	5,526	4,339	78.24%	2,790	1,931	1,150,981	67.72%	52.98%
New Jersey	8,446	7,513	5,598	73.51%	4,396	2,950	7,551,362	64.31%	47.27%
New Mexico	5,475	3,876	3,364	86.94%	2,475	1,939	1,718,723	76.58%	66.58%
New York	24,515	21,212	13,795	64.38%	9,897	6,542	16,764,138	62.50%	40.24%
North Carolina	8,373	7,076	5,822	82.22%	4,214	3,084	8,370,189	70.72%	58.15%
North Dakota	6,936	5,640	5,005	88.76%	2,686	1,948	617,841	70.78%	62.83%
Ohio	13,836	11,832	9,473	80.02%	6,821	4,805	9,735,503	68.04%	54.44%
Oklahoma	5,511	4,483	3,712	82.82%	2,733	1,936	3,192,269	67.92%	56.25%
Oregon	5,686	4,960	4,027	81.27%	2,724	1,966	3,449,136	71.04%	57.74%
Pennsylvania	15,254	12,922	10,331	79.98%	6,540	4,734	10,845,101	71.10%	56.86%
Rhode Island	5,973	5,114	3,958	77.46%	2,710	1,901	904,838	68.42%	53.00%
South Carolina	5,776	4,687	3,889	82.87%	2,630	1,957	4,102,218	72.49%	60.07%
South Dakota	5,167	4,306	3,836	89.29%	2,537	1,864	698,802	72.83%	65.03%
Tennessee	5,704	4,588	3,848	83.93%	2,725	1,997	5,532,419	70.14%	58.87%
Texas	13,020	10,909	9,415	86.01%	8,613	6,601	22,320,973	73.98%	63.63%
Utah	2,989	2,647	2,314	87.51%	2,419	1,904	2,377,053	76.12%	66.62%
Vermont	7,653	6,042	4,840	79.94%	2,653	1,856	543,211	70.02%	55.97%
Virginia	7,854	6,786	5,497	80.99%	4,190	3,019	6,945,044	69.29%	56.12%
Washington	5,471	4,844	3,778	77.87%	2,668	1,878	6,029,145	68.19%	53.10%
West Virginia	6,422	5,247	4,244	80.85%	2,767	1,909	1,561,719	65.27%	52.78%
Wisconsin	6,701	5,440	4,520	83.20%	2,733	1,979	4,859,267	70.85%	58.95%
Wyoming	5,415	4,272	3,646	85.26%	2,576	1,935	481,287	73.68%	62.82%

DU = dwelling unit.

NOTE: To compute the pooled 2015-2016 weighted response rates, two samples were combined, and the individual year weights were used for the pooled sample. Thus, the response rates presented here are weighted across 2 years of data rather than being a simple average of the 2015 and 2016 individual response rates. The 2015-2016 population estimate is the average of the 2015 and the 2016 population.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015 and 2016.

Table C.8   Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2015 and 2016

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Total U.S.	44,182	34,064	24,894,972	77.31%	46,047	33,788	34,738,945	73.57%	99,877	68,163	208,928,395	67.05%
Northeast	8,725	6,421	4,110,839	71.98%	9,110	6,292	6,084,918	68.31%	19,935	13,024	37,608,119	63.84%
Midwest	10,651	8,060	5,338,955	75.24%	10,953	8,002	7,391,290	72.87%	23,397	15,851	43,973,374	66.56%
South	14,486	11,392	9,506,846	79.09%	15,015	11,299	12,893,966	76.05%	32,881	22,910	78,310,996	68.91%
West	10,320	8,191	5,938,333	79.97%	10,969	8,195	8,368,771	74.15%	23,664	16,378	49,035,907	66.96%
Alabama	593	463	378,330	78.87%	651	494	522,750	75.65%	1,476	979	3,159,474	64.66%
Alaska	639	463	59,083	72.56%	693	523	80,112	75.10%	1,366	955	444,143	69.16%
Arizona	612	473	548,504	78.00%	641	485	746,271	75.11%	1,423	1,020	4,399,565	71.77%
Arkansas	630	491	236,654	78.06%	676	505	317,993	74.15%	1,418	977	1,908,182	67.28%
California	2,920	2,335	3,039,214	80.03%	3,120	2,316	4,399,955	74.31%	7,125	4,639	25,184,187	64.18%
Colorado	627	512	421,468	81.37%	630	453	596,535	71.18%	1,395	949	3,551,363	67.84%
Connecticut	608	465	279,545	77.63%	713	478	388,177	66.27%	1,482	958	2,387,609	64.09%
Delaware	590	455	69,164	78.47%	669	466	97,254	69.48%	1,394	952	632,438	68.45%
District of Columbia	556	450	30,813	81.46%	584	441	93,701	75.27%	1,351	1,000	453,192	73.60%
Florida	2,179	1,703	1,405,801	78.08%	2,190	1,682	1,971,645	77.06%	5,090	3,436	14,028,654	67.21%
Georgia	985	790	855,245	79.58%	879	710	1,112,080	80.07%	2,126	1,506	6,443,651	68.89%
Hawaii	674	508	96,573	73.86%	686	518	135,482	74.95%	1,487	998	926,174	67.07%
Idaho	615	490	146,791	80.19%	722	546	175,145	75.43%	1,369	1,001	1,038,291	72.10%
Illinois	1,771	1,289	1,015,317	72.82%	1,727	1,175	1,372,755	67.41%	3,883	2,368	8,331,898	60.42%
Indiana	599	464	539,568	76.49%	669	497	743,107	74.81%	1,394	945	4,212,004	66.73%
Iowa	695	525	243,253	75.83%	689	492	359,178	71.88%	1,387	973	1,999,854	69.06%
Kansas	684	509	237,647	73.41%	602	465	327,480	78.33%	1,428	1,008	1,803,253	69.73%
Kentucky	641	482	339,903	74.44%	656	457	471,060	70.15%	1,419	952	2,865,061	66.07%
Louisiana	636	493	367,464	77.59%	626	454	503,266	72.73%	1,348	969	2,954,805	70.84%
Maine	696	520	91,487	74.37%	621	442	124,761	71.44%	1,477	1,024	936,729	69.58%
Maryland	571	447	453,674	79.16%	635	478	617,785	74.75%	1,401	1,011	3,951,408	70.20%
Massachusetts	704	456	487,249	65.06%	722	433	792,216	59.97%	1,761	1,047	4,556,470	59.29%
Michigan	1,560	1,211	779,507	77.10%	1,647	1,251	1,108,537	76.52%	3,487	2,399	6,511,669	68.05%
Minnesota	633	486	427,687	76.43%	639	453	572,944	71.18%	1,389	974	3,589,691	70.14%
Mississippi	592	466	244,221	79.24%	594	461	331,045	77.89%	1,354	928	1,870,263	68.22%

See notes at end of table.   (continued)

Table C.8   Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2015 and 2016 (continued)

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Missouri	590	460	469,494	77.31%	693	525	652,575	75.74%	1,393	939	3,941,380	65.89%
Montana	633	488	74,427	76.77%	673	496	111,264	72.71%	1,456	1,011	684,598	69.27%
Nebraska	602	461	152,704	77.18%	688	484	213,106	69.37%	1,375	964	1,187,602	69.31%
Nevada	615	520	224,147	84.33%	630	484	287,409	76.48%	1,340	959	1,916,967	68.90%
New Hampshire	643	474	96,774	74.72%	623	438	142,696	71.64%	1,524	1,019	911,511	66.35%
New Jersey	1,010	756	694,182	74.78%	1,075	744	892,114	68.78%	2,311	1,450	5,965,066	62.45%
New Mexico	570	484	165,412	86.00%	577	457	223,662	80.57%	1,328	998	1,329,649	74.82%
New York	2,293	1,628	1,416,226	68.42%	2,444	1,688	2,197,628	67.30%	5,160	3,226	13,150,285	61.05%
North Carolina	1,002	788	783,879	78.87%	1,001	750	1,053,931	75.40%	2,211	1,546	6,532,379	68.98%
North Dakota	679	508	52,111	74.85%	654	495	102,161	74.02%	1,353	945	463,569	69.53%
Ohio	1,574	1,170	909,989	73.36%	1,636	1,181	1,220,151	72.62%	3,611	2,454	7,605,364	66.70%
Oklahoma	690	524	314,698	76.44%	636	452	428,910	69.76%	1,407	960	2,448,662	66.47%
Oregon	612	458	291,584	74.83%	645	459	417,950	71.50%	1,467	1,049	2,739,602	70.57%
Pennsylvania	1,556	1,188	928,154	76.13%	1,597	1,167	1,344,620	74.15%	3,387	2,379	8,572,327	70.06%
Rhode Island	581	452	74,286	78.17%	680	472	127,975	70.53%	1,449	977	702,577	66.98%
South Carolina	632	510	367,649	80.27%	598	459	515,200	77.38%	1,400	988	3,219,369	70.86%
South Dakota	632	485	66,117	76.96%	608	460	92,977	75.58%	1,297	919	539,708	71.77%
Tennessee	610	465	508,573	75.94%	729	548	700,709	74.02%	1,386	984	4,323,137	68.83%
Texas	1,960	1,606	2,395,358	81.38%	2,145	1,696	3,083,498	78.94%	4,508	3,299	16,842,117	71.98%
Utah	585	502	294,912	85.09%	574	456	387,120	80.24%	1,260	946	1,695,021	73.64%
Vermont	634	482	42,936	76.00%	635	430	74,732	69.62%	1,384	944	425,544	69.47%
Virginia	982	783	626,833	79.72%	1,043	751	888,046	71.83%	2,165	1,485	5,430,166	67.62%
Washington	609	480	532,127	79.33%	688	482	745,740	69.76%	1,371	916	4,751,278	66.71%
West Virginia	637	476	128,586	76.36%	703	495	185,094	70.04%	1,427	938	1,248,039	63.35%
Wisconsin	632	492	445,564	76.30%	701	524	626,320	73.57%	1,400	963	3,787,384	69.73%
Wyoming	609	478	44,091	77.18%	690	520	62,125	75.33%	1,277	937	375,070	72.99%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

NOTE: To compute the pooled 2015-2016 weighted response rates, two samples were combined, and the individual year weights were used for the pooled sample. Thus, the response rates presented here are weighted across 2 years of data rather than being a simple average of the 2015 and 2016 individual response rates. The 2015-2016 population estimate is the average of the 2015 and the 2016 population.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015 and 2016.

Table C.9   Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2016 and 2017

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Total U.S.	423,345	357,415	273,249	76.47%	193,274	135,974	270,766,735	67.78%	51.83%
Northeast	94,271	79,990	57,703	70.45%	38,565	25,972	47,943,907	64.48%	45.43%
Midwest	95,455	81,579	64,478	78.29%	45,696	31,945	56,878,478	67.61%	52.94%
South	139,695	116,754	90,642	79.35%	63,416	45,672	101,901,883	70.05%	55.58%
West	93,924	79,092	60,426	74.55%	45,597	32,385	64,042,468	66.74%	49.76%
Alabama	6,164	5,023	4,097	81.73%	2,749	1,947	4,070,626	66.93%	54.71%
Alaska	6,705	5,051	3,916	77.36%	2,754	1,938	585,271	68.11%	52.69%
Arizona	5,640	4,193	3,444	81.91%	2,434	1,842	5,788,143	74.00%	60.61%
Arkansas	5,886	4,895	4,015	82.09%	2,747	1,982	2,475,460	68.84%	56.52%
California	25,678	23,330	16,243	69.62%	13,682	9,097	32,849,259	63.28%	44.06%
Colorado	5,277	4,473	3,594	80.33%	2,765	1,923	4,646,984	67.57%	54.28%
Connecticut	6,189	5,334	3,952	74.12%	2,875	1,924	3,061,195	65.93%	48.87%
Delaware	6,563	5,377	4,005	74.57%	2,745	1,878	807,445	67.01%	49.97%
District of Columbia	13,058	11,205	7,128	61.82%	2,564	1,942	585,768	73.76%	45.60%
Florida	23,192	19,102	14,474	75.93%	9,604	6,834	17,727,429	67.93%	51.58%
Georgia	7,850	6,787	5,165	76.16%	4,051	2,995	8,523,903	70.61%	53.78%
Hawaii	7,651	6,437	4,585	70.58%	2,866	1,975	1,158,855	65.01%	45.89%
Idaho	5,025	4,109	3,457	83.88%	2,720	2,068	1,389,076	74.47%	62.46%
Illinois	14,970	13,085	9,017	69.05%	7,558	4,799	10,712,268	60.78%	41.97%
Indiana	5,564	4,682	3,598	76.80%	2,664	1,875	5,520,574	68.56%	52.65%
Iowa	5,870	4,961	4,160	83.80%	2,845	1,999	2,612,335	69.40%	58.15%
Kansas	4,993	4,394	3,610	82.17%	2,728	1,988	2,373,332	71.07%	58.40%
Kentucky	5,910	4,876	3,914	80.10%	2,876	1,929	3,692,840	64.19%	51.42%
Louisiana	5,816	4,747	3,882	81.84%	2,699	1,925	3,833,696	69.83%	57.15%
Maine	7,571	5,826	4,805	82.72%	2,789	1,977	1,157,056	70.21%	58.08%
Maryland	5,537	4,898	3,514	71.62%	2,657	1,977	5,045,592	72.62%	52.01%
Massachusetts	7,544	6,676	4,705	70.14%	3,264	1,974	5,875,684	59.54%	41.76%
Michigan	14,473	12,124	9,765	80.46%	6,707	4,822	8,427,073	69.30%	55.76%
Minnesota	5,376	4,679	3,717	79.55%	2,733	1,930	4,630,955	70.00%	55.68%
Mississippi	4,872	4,073	3,354	82.31%	2,604	1,870	2,448,173	69.19%	56.95%

See notes at end of table.   (continued)

Table C.9 Sample Sizes, Weighted Screening and Interview Response Rates, and Population Estimates, by State, for Individuals Aged 12 or Older: 2016 and 2017 (continued)

State	Total Selected DUs	Total Eligible DUs	Total Completed Screeners	Weighted DU Screening Response Rate	Total Selected	Total Responded	Population Estimate	Weighted Interview Response Rate	Weighted Overall Response Rate
Missouri	5,546	4,786	4,001	83.81%	2,753	1,927	5,080,245	67.67%	56.71%
Montana	6,444	5,228	4,408	84.54%	2,757	1,989	878,226	72.72%	61.48%
Nebraska	5,456	4,772	3,731	78.27%	2,713	1,925	1,564,296	69.24%	54.19%
Nevada	4,941	4,438	3,085	68.37%	2,662	1,924	2,476,054	68.96%	47.15%
New Hampshire	6,823	5,771	4,428	76.13%	2,785	1,939	1,158,078	69.42%	52.85%
New Jersey	9,035	7,980	5,719	70.58%	4,513	2,992	7,583,282	63.66%	44.93%
New Mexico	5,817	4,079	3,393	83.19%	2,362	1,907	1,725,153	79.39%	66.04%
New York	26,509	22,871	14,296	62.13%	10,150	6,584	16,803,788	61.75%	38.37%
North Carolina	8,510	7,239	5,800	80.12%	4,164	2,999	8,488,708	70.80%	56.73%
North Dakota	6,800	5,467	4,731	86.56%	2,741	1,941	616,213	69.60%	60.25%
Ohio	14,196	12,477	9,674	77.62%	6,804	4,795	9,760,484	68.20%	52.94%
Oklahoma	5,551	4,667	3,693	79.08%	2,766	1,903	3,204,059	67.61%	53.46%
Oregon	6,598	5,773	4,564	79.16%	2,841	1,991	3,501,776	69.27%	54.84%
Pennsylvania	15,663	13,334	10,525	78.91%	6,649	4,752	10,853,760	69.82%	55.10%
Rhode Island	6,636	5,740	4,245	74.08%	2,813	1,932	908,189	67.44%	49.96%
South Carolina	5,568	4,472	3,596	80.38%	2,637	1,947	4,165,709	71.45%	57.44%
South Dakota	5,422	4,517	3,835	84.79%	2,677	1,937	703,456	71.45%	60.58%
Tennessee	5,949	4,824	3,935	81.51%	2,714	1,976	5,587,383	71.02%	57.89%
Texas	14,383	12,080	10,033	82.93%	8,729	6,628	22,700,592	73.39%	60.86%
Utah	3,069	2,723	2,305	84.68%	2,466	1,882	2,429,066	74.56%	63.13%
Vermont	8,301	6,458	5,028	77.48%	2,727	1,898	542,874	70.23%	54.41%
Virginia	8,297	7,114	5,710	80.28%	4,226	3,014	6,993,308	67.90%	54.51%
Washington	5,635	4,895	3,799	77.78%	2,807	1,907	6,135,316	65.68%	51.09%
West Virginia	6,589	5,375	4,327	80.46%	2,884	1,926	1,551,191	64.59%	51.97%
Wisconsin	6,789	5,635	4,639	82.37%	2,773	2,007	4,877,247	71.29%	58.72%
Wyoming	5,444	4,363	3,633	83.46%	2,481	1,942	479,288	76.69%	64.00%

DU = dwelling unit.

NOTE: To compute the pooled 2016-2017 weighted response rates, two samples were combined, and the individual year weights were used for the pooled sample. Thus, the response rates presented here are weighted across 2 years of data rather than being a simple average of the 2016 and 2017 individual response rates. The 2016-2017 population estimate is the average of the 2016 and the 2017 population.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2016 and 2017.

Table C.10   Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2016 and 2017

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Total U.S.	45,073	34,142	24,919,660	76.01%	46,543	33,191	34,438,520	71.12%	101,658	68,641	211,408,555	66.26%
Northeast	9,038	6,497	4,079,645	70.79%	9,386	6,364	6,025,003	66.91%	20,141	13,111	37,839,258	63.40%
Midwest	10,710	8,081	5,317,010	75.29%	11,022	7,779	7,342,752	70.32%	23,964	16,085	44,218,716	66.25%
South	14,676	11,351	9,567,219	78.14%	15,234	11,171	12,801,275	74.04%	33,506	23,150	79,533,389	68.44%
West	10,649	8,213	5,955,787	76.80%	10,901	7,877	8,269,490	70.37%	24,047	16,295	49,817,192	64.89%
Alabama	621	478	375,632	78.56%	633	483	515,697	74.84%	1,495	986	3,179,298	64.35%
Alaska	709	528	58,821	75.62%	676	490	75,809	74.26%	1,369	920	450,641	66.06%
Arizona	625	479	551,089	77.16%	577	446	747,345	76.71%	1,232	917	4,489,709	73.14%
Arkansas	665	500	236,782	75.47%	659	502	316,285	75.16%	1,423	980	1,922,393	67.03%
California	3,062	2,322	3,033,914	76.08%	3,113	2,128	4,323,156	68.21%	7,507	4,647	25,492,189	60.86%
Colorado	642	490	425,994	76.98%	614	439	591,983	70.85%	1,509	994	3,629,008	65.93%
Connecticut	641	456	276,122	72.05%	765	513	389,201	66.88%	1,469	955	2,395,872	65.07%
Delaware	619	451	69,477	73.37%	654	453	95,499	70.58%	1,472	974	642,469	65.84%
District of Columbia	645	520	31,164	81.77%	613	467	90,630	77.37%	1,306	955	463,974	72.47%
Florida	2,252	1,753	1,415,667	77.97%	2,116	1,536	1,960,092	73.00%	5,236	3,545	14,351,670	66.31%
Georgia	902	700	862,534	77.69%	940	741	1,106,098	78.93%	2,209	1,554	6,555,271	68.32%
Hawaii	709	528	95,796	75.53%	650	470	128,416	71.11%	1,507	977	934,643	63.02%
Idaho	633	512	149,626	81.11%	676	518	177,049	75.55%	1,411	1,038	1,062,401	73.34%
Illinois	1,712	1,229	1,006,653	71.82%	1,761	1,142	1,352,935	64.66%	4,085	2,428	8,352,680	58.83%
Indiana	587	447	538,403	76.48%	615	452	741,896	73.80%	1,462	976	4,240,275	66.68%
Iowa	662	503	244,029	76.25%	731	506	359,493	68.50%	1,452	990	2,008,814	68.72%
Kansas	665	506	237,420	74.95%	648	475	324,503	72.78%	1,415	1,007	1,811,408	70.26%
Kentucky	676	497	340,232	73.09%	699	472	468,636	68.48%	1,501	960	2,883,972	62.53%
Louisiana	644	484	365,494	75.08%	647	450	491,237	68.96%	1,408	991	2,976,965	69.33%
Maine	695	507	90,519	73.66%	653	460	124,197	71.91%	1,441	1,010	942,340	69.66%
Maryland	553	437	453,829	79.30%	682	508	609,069	74.50%	1,422	1,032	3,982,694	71.56%
Massachusetts	759	500	484,894	67.05%	822	480	792,371	59.96%	1,683	994	4,598,419	58.67%
Michigan	1,542	1,205	770,605	77.79%	1,640	1,198	1,100,969	73.50%	3,525	2,419	6,555,498	67.59%
Minnesota	618	475	431,266	77.31%	712	486	574,516	67.17%	1,403	969	3,625,172	69.59%
Mississippi	606	473	243,347	77.48%	583	428	325,383	73.93%	1,415	969	1,879,442	67.33%

See notes at end of table.

(continued)

Table C.10 Sample Sizes, Weighted Interview Response Rates, and Population Estimates, by State and Three Age Groups: 2016 and 2017 (continued)

State	12-17 Total Selected	12-17 Total Responded	12-17 Population Estimate	12-17 Weighted Interview Response Rate	18-25 Total Selected	18-25 Total Responded	18-25 Population Estimate	18-25 Weighted Interview Response Rate	26+ Total Selected	26+ Total Responded	26+ Population Estimate	26+ Weighted Interview Response Rate
Missouri	624	451	467,819	71.84%	630	456	644,888	72.72%	1,499	1,020	3,967,539	66.41%
Montana	605	456	74,636	74.38%	698	514	110,413	73.70%	1,454	1,019	693,178	72.40%
Nebraska	649	492	154,318	76.83%	696	482	213,416	70.96%	1,368	951	1,196,562	67.96%
Nevada	599	485	226,449	80.55%	664	487	285,045	73.38%	1,399	952	1,964,559	66.93%
New Hampshire	682	500	95,517	72.97%	658	439	142,276	66.47%	1,445	1,000	920,285	69.48%
New Jersey	991	732	691,607	73.38%	1,069	735	890,578	68.07%	2,453	1,525	6,001,097	61.82%
New Mexico	569	483	165,925	86.04%	562	458	220,697	82.51%	1,231	966	1,338,531	78.02%
New York	2,460	1,692	1,403,019	66.44%	2,446	1,641	2,156,021	65.44%	5,244	3,251	13,244,748	60.63%
North Carolina	984	763	789,194	78.26%	1,010	714	1,047,806	70.55%	2,170	1,522	6,651,709	69.92%
North Dakota	720	530	52,376	74.31%	641	469	97,469	71.52%	1,380	942	466,368	68.59%
Ohio	1,578	1,188	902,125	74.38%	1,673	1,180	1,214,375	70.53%	3,553	2,427	7,643,985	67.12%
Oklahoma	655	486	316,132	72.98%	695	463	423,784	65.99%	1,416	954	2,464,143	67.18%
Oregon	681	487	292,642	71.49%	733	501	417,821	69.85%	1,427	1,003	2,791,313	68.95%
Pennsylvania	1,541	1,175	922,209	76.15%	1,620	1,154	1,328,664	71.59%	3,488	2,423	8,602,887	68.88%
Rhode Island	618	460	73,649	74.55%	676	469	127,226	71.12%	1,519	1,003	707,314	66.07%
South Carolina	583	470	370,519	77.34%	694	526	510,357	76.19%	1,360	951	3,284,833	70.07%
South Dakota	653	503	67,066	77.65%	637	474	92,382	74.53%	1,387	960	544,008	70.09%
Tennessee	650	497	509,963	74.91%	610	445	694,756	72.44%	1,454	1,034	4,382,664	70.37%
Texas	2,018	1,636	2,431,437	81.21%	2,165	1,700	3,086,931	77.86%	4,546	3,292	17,182,224	71.43%
Utah	568	458	300,510	80.08%	591	450	392,070	74.87%	1,307	974	1,736,486	73.52%
Vermont	651	475	42,109	72.77%	677	473	74,469	71.34%	1,399	950	426,296	69.76%
Virginia	938	739	628,617	79.18%	1,119	804	877,876	71.35%	2,169	1,471	5,486,815	65.96%
Washington	653	498	536,155	76.20%	699	469	739,948	66.72%	1,455	940	4,859,213	64.35%
West Virginia	665	467	127,201	70.80%	715	479	181,138	65.52%	1,504	980	1,242,852	63.83%
Wisconsin	700	552	444,929	79.63%	638	459	625,910	71.90%	1,435	996	3,806,407	70.18%
Wyoming	594	487	44,231	80.49%	648	507	59,736	77.55%	1,239	948	375,321	76.07%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

NOTE: To compute the pooled 2016-2017 weighted response rates, two samples were combined, and the individual year weights were used for the pooled sample. Thus, the response rates presented here are weighted across 2 years of data rather than being a simple average of the 2016 and 2017 individual response rates. The 2016-2017 population estimate is the average of the 2016 and the 2017 population.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2016 and 2017.

Table C.11   Sample Sizes, Weighted Interview Response Rates, and Population Estimates among Individuals Aged 12 to 20, by State: 2015, 2016, and 2017

State	2015 Total Selected	2015 Total Responded	2015 Population Estimate	2015 Weighted Interview Response Rate	2016 Total Selected	2016 Total Responded	2016 Population Estimate	2016 Weighted Interview Response Rate	2017 Total Selected	2017 Total Responded	2017 Population Estimate	2017 Weighted Interview Response Rate
Total U.S.	29,838	23,169	37,885,089	78.03%	30,054	22,949	37,615,301	76.42%	30,946	23,001	37,826,079	74.21%
Northeast	5,906	4,435	6,451,797	73.79%	5,933	4,290	6,355,243	70.86%	6,326	4,504	6,196,921	70.45%
Midwest	7,212	5,457	8,034,193	75.02%	7,226	5,501	8,080,261	76.02%	7,312	5,412	8,101,681	73.59%
South	9,864	7,822	14,395,593	79.87%	9,697	7,541	14,134,174	78.21%	10,102	7,666	14,454,990	76.53%
West	6,856	5,455	9,003,507	80.76%	7,198	5,617	9,045,622	77.87%	7,206	5,419	9,072,487	73.65%
Alabama	432	339	614,743	78.20%	415	319	570,942	78.53%	454	347	623,472	76.38%
Alaska	442	316	89,171	71.95%	442	339	90,222	77.38%	491	362	85,526	75.51%
Arizona	392	314	760,931	79.70%	409	307	818,860	76.22%	405	322	851,823	78.72%
Arkansas	428	333	340,447	76.62%	421	329	338,779	79.12%	472	362	370,680	76.49%
California	1,988	1,612	4,728,513	81.28%	2,038	1,593	4,711,205	78.42%	2,118	1,537	4,736,697	72.00%
Colorado	422	351	635,534	83.50%	424	326	688,842	75.70%	427	314	609,264	74.03%
Connecticut	437	337	454,732	77.38%	422	319	428,681	77.41%	466	315	404,880	67.27%
Delaware	417	317	105,967	76.38%	413	311	107,994	76.98%	435	301	101,672	69.41%
District of Columbia	326	264	58,167	82.81%	369	303	55,479	81.29%	417	332	56,880	81.85%
Florida	1,473	1,171	2,168,609	79.65%	1,463	1,144	2,126,021	78.47%	1,512	1,154	2,179,015	76.31%
Georgia	672	542	1,239,168	81.30%	596	482	1,240,615	79.69%	608	464	1,271,553	78.13%
Hawaii	415	322	149,563	75.82%	509	374	145,477	73.57%	417	314	129,575	76.89%
Idaho	387	297	205,902	80.07%	461	372	218,580	79.50%	387	308	206,652	80.00%
Illinois	1,186	869	1,554,110	72.36%	1,203	860	1,537,523	72.44%	1,114	787	1,512,952	71.09%
Indiana	417	320	794,923	74.93%	406	319	876,721	79.17%	394	282	747,076	70.86%
Iowa	439	321	338,260	73.31%	461	354	366,248	77.14%	437	323	373,723	74.00%
Kansas	466	350	372,398	75.71%	466	358	384,433	76.71%	462	352	353,102	74.45%
Kentucky	392	303	491,135	76.70%	464	330	503,081	69.67%	458	346	548,045	76.16%
Louisiana	427	339	572,954	79.92%	423	330	551,525	78.20%	418	299	519,800	70.58%
Maine	504	383	144,861	74.75%	437	320	142,045	74.29%	508	370	136,642	74.34%
Maryland	417	325	697,838	79.23%	369	289	674,376	77.37%	405	306	645,964	75.41%
Massachusetts	451	302	762,945	66.67%	532	334	920,942	63.83%	586	393	846,090	69.42%
Michigan	1,085	831	1,181,367	76.19%	1,043	828	1,185,394	79.47%	1,076	821	1,208,711	75.78%
Minnesota	422	330	623,094	78.55%	419	311	633,924	72.50%	460	348	682,965	76.23%
Mississippi	394	317	369,439	81.70%	396	307	353,258	78.49%	402	310	360,474	76.81%

See notes at end of table.

(continued)

Table C.11 Sample Sizes, Weighted Interview Response Rates, and Population Estimates among Individuals Aged 12 to 20, by State: 2015, 2016, and 2017 (continued)

State	2015 Total Selected	2015 Total Responded	2015 Population Estimate	2015 Weighted Interview Response Rate	2016 Total Selected	2016 Total Responded	2016 Population Estimate	2016 Weighted Interview Response Rate	2017 Total Selected	2017 Total Responded	2017 Population Estimate	2017 Weighted Interview Response Rate
Missouri	440	347	707,841	78.13%	387	298	703,573	77.96%	465	327	742,690	69.79%
Montana	411	315	121,408	76.44%	470	351	111,958	73.38%	385	289	115,633	75.36%
Nebraska	432	340	243,776	79.28%	414	314	228,204	75.92%	458	338	231,189	75.89%
Nevada	429	352	328,354	82.07%	387	322	328,651	82.43%	441	335	334,801	75.53%
New Hampshire	449	336	162,150	76.55%	421	312	154,632	75.27%	485	343	141,957	68.68%
New Jersey	749	552	1,053,116	73.28%	644	479	984,942	74.19%	713	523	1,036,955	72.46%
New Mexico	355	299	249,393	85.28%	400	337	238,580	86.11%	346	291	239,351	84.66%
New York	1,472	1,086	2,225,741	72.22%	1,611	1,122	2,110,349	66.82%	1,648	1,118	2,077,765	66.53%
North Carolina	699	568	1,144,808	81.59%	616	463	1,144,882	74.81%	712	552	1,223,483	78.03%
North Dakota	456	343	97,216	74.74%	495	389	97,876	80.44%	461	331	86,113	72.85%
Ohio	1,086	806	1,380,951	73.71%	1,042	781	1,354,514	73.66%	1,094	812	1,339,799	73.50%
Oklahoma	455	339	482,049	75.21%	436	335	444,359	76.95%	418	282	432,163	65.12%
Oregon	383	286	428,705	75.19%	424	305	418,178	71.58%	517	353	454,274	69.59%
Pennsylvania	1,023	793	1,461,386	78.06%	1,090	822	1,436,509	75.56%	985	751	1,358,691	75.84%
Rhode Island	393	314	118,022	80.14%	384	294	111,874	77.37%	474	349	129,538	74.36%
South Carolina	430	357	556,176	84.04%	410	318	560,534	76.72%	434	357	585,789	78.35%
South Dakota	411	321	103,040	79.00%	434	327	96,080	75.11%	444	349	102,088	79.32%
Tennessee	455	356	801,826	76.98%	435	325	792,000	74.77%	440	338	741,197	73.37%
Texas	1,350	1,102	3,629,329	81.14%	1,370	1,123	3,549,674	81.47%	1,425	1,136	3,685,040	79.49%
Utah	392	337	407,524	85.58%	371	313	433,075	83.27%	390	303	461,460	76.30%
Vermont	428	332	68,842	75.76%	392	288	65,269	74.85%	461	342	64,405	73.91%
Virginia	644	508	909,340	78.71%	659	509	921,301	77.04%	625	469	921,487	75.22%
Washington	406	318	832,648	78.18%	430	330	773,901	75.14%	440	320	775,782	70.76%
West Virginia	453	342	213,596	76.74%	442	324	199,354	74.34%	467	311	188,276	65.45%
Wisconsin	372	279	637,216	73.65%	456	362	615,772	78.49%	447	342	721,273	77.56%
Wyoming	434	336	65,860	77.27%	433	348	68,094	77.82%	442	371	71,649	82.44%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015, 2016, and 2017.

Table C.12   Sample Sizes, Weighted Interview Response Rates, and Population Estimates among Individuals Aged 12 to 20, by State: 2015-2016 and 2016-2017

State	2015-2016 Total Selected	2015-2016 Total Responded	2015-2016 Population Estimate	2015-2016 Weighted Interview Response Rate	2016-2017 Total Selected	2016-2017 Total Responded	2016-2017 Population Estimate	2016-2017 Weighted Interview Response Rate
Total U.S.	59,892	46,118	37,750,195	77.23%	61,000	45,950	37,720,690	75.31%
Northeast	11,839	8,725	6,403,520	72.32%	12,259	8,794	6,276,082	70.66%
Midwest	14,438	10,958	8,057,227	75.52%	14,538	10,913	8,090,971	74.80%
South	19,561	15,363	14,264,883	79.04%	19,799	15,207	14,294,582	77.36%
West	14,054	11,072	9,024,564	79.32%	14,404	11,036	9,059,055	75.75%
Alabama	847	658	592,843	78.35%	869	666	597,207	77.42%
Alaska	884	655	89,697	74.65%	933	701	87,874	76.46%
Arizona	801	621	789,896	77.94%	814	629	835,341	77.54%
Arkansas	849	662	339,613	77.86%	893	691	354,729	77.76%
California	4,026	3,205	4,719,859	79.86%	4,156	3,130	4,723,951	75.21%
Colorado	846	677	662,188	79.40%	851	640	649,053	74.93%
Connecticut	859	656	441,707	77.39%	888	634	416,780	72.35%
Delaware	830	628	106,981	76.67%	848	612	104,833	73.20%
District of Columbia	695	567	56,823	82.06%	786	635	56,180	81.57%
Florida	2,936	2,315	2,147,315	79.07%	2,975	2,298	2,152,518	77.37%
Georgia	1,268	1,024	1,239,891	80.50%	1,204	946	1,256,084	78.90%
Hawaii	924	696	147,520	74.72%	926	688	137,526	75.17%
Idaho	848	669	212,241	79.78%	848	680	212,616	79.74%
Illinois	2,389	1,729	1,545,817	72.40%	2,317	1,647	1,525,238	71.76%
Indiana	823	639	835,822	77.19%	800	601	811,898	75.32%
Iowa	900	675	352,254	75.30%	898	677	369,985	75.59%
Kansas	932	708	378,416	76.21%	928	710	368,768	75.59%
Kentucky	856	633	497,108	73.15%	922	676	525,563	72.93%
Louisiana	850	669	562,239	79.07%	841	629	535,662	74.53%
Maine	941	703	143,453	74.53%	945	690	139,343	74.31%
Maryland	786	614	686,107	78.30%	774	595	660,170	76.42%
Massachusetts	983	636	841,944	65.13%	1,118	727	883,516	66.53%
Michigan	2,128	1,659	1,183,381	77.82%	2,119	1,649	1,197,053	77.62%
Minnesota	841	641	628,509	75.55%	879	659	658,444	74.49%
Mississippi	790	624	361,349	80.10%	798	617	356,866	77.64%

See notes at end of table.   (continued)

Table C.12 Sample Sizes, Weighted Interview Response Rates, and Population Estimates among Individuals Aged 12 to 20, by State: 2015-2016 and 2016-2017 (continued)

State	2015-2016 Total Selected	2015-2016 Total Responded	2015-2016 Population Estimate	2015-2016 Weighted Interview Response Rate	2016-2017 Total Selected	2016-2017 Total Responded	2016-2017 Population Estimate	2016-2017 Weighted Interview Response Rate
Missouri	827	645	705,707	78.04%	852	625	723,132	73.74%
Montana	881	666	116,683	74.91%	855	640	113,795	74.36%
Nebraska	846	654	235,990	77.69%	872	652	229,697	75.90%
Nevada	816	674	328,502	82.25%	828	657	331,726	78.95%
New Hampshire	870	648	158,391	75.93%	906	655	148,294	72.00%
New Jersey	1,393	1,031	1,019,029	73.72%	1,357	1,002	1,010,948	73.30%
New Mexico	755	636	243,987	85.70%	746	628	238,965	85.39%
New York	3,083	2,208	2,168,045	69.54%	3,259	2,240	2,094,057	66.68%
North Carolina	1,315	1,031	1,144,845	78.20%	1,328	1,015	1,184,182	76.46%
North Dakota	951	732	97,546	77.54%	956	720	91,995	76.77%
Ohio	2,128	1,587	1,367,732	73.69%	2,136	1,593	1,347,156	73.58%
Oklahoma	891	674	463,204	76.03%	854	617	438,261	70.93%
Oregon	807	591	423,441	73.42%	941	658	436,226	70.53%
Pennsylvania	2,113	1,615	1,448,948	76.81%	2,075	1,573	1,397,600	75.70%
Rhode Island	777	608	114,948	78.84%	858	643	120,706	75.70%
South Carolina	840	675	558,355	80.31%	844	675	573,161	77.55%
South Dakota	845	648	99,560	77.08%	878	676	99,084	77.28%
Tennessee	890	681	796,913	75.88%	875	663	766,599	74.09%
Texas	2,720	2,225	3,589,502	81.30%	2,795	2,259	3,617,357	80.47%
Utah	763	650	420,299	84.41%	761	616	447,267	79.71%
Vermont	820	620	67,055	75.32%	853	630	64,837	74.38%
Virginia	1,303	1,017	915,320	77.87%	1,284	978	921,394	76.12%
Washington	836	648	803,274	76.67%	870	650	774,841	72.94%
West Virginia	895	666	206,475	75.59%	909	635	193,815	69.90%
Wisconsin	828	641	626,494	76.04%	903	704	668,522	78.00%
Wyoming	867	684	66,977	77.55%	875	719	69,871	80.17%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

NOTE: To compute the pooled weighted response rates, the two samples were combined, and the individual-year weights were used for the pooled sample. Thus, the response rates presented here are weighted across 2 years of data rather than being a simple average of the individual response rates. The population estimate is the average of the population across the 2 years.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015, 2016, and 2017.

Table C.13   Sample Sizes, Weighted Interview Response Rates, and Population Estimates among Adults Aged 18 or Older, by State: 2015, 2016, and 2017

State	2015 Total Selected	2015 Total Responded	2015 Population Estimate	2015 Weighted Interview Response Rate	2016 Total Selected	2016 Total Responded	2016 Population Estimate	2016 Weighted Interview Response Rate	2017 Total Selected	2017 Total Responded	2017 Population Estimate	2017 Weighted Interview Response Rate
Total U.S.	72,640	51,118	242,801,072	68.39%	73,284	50,833	244,533,608	67.57%	74,917	50,999	247,160,541	66.31%
Northeast	14,680	9,798	43,685,848	64.90%	14,365	9,518	43,700,225	64.03%	15,162	9,957	44,028,298	63.74%
Midwest	17,056	11,935	51,311,021	67.82%	17,294	11,918	51,418,305	67.13%	17,692	11,946	51,704,631	66.52%
South	23,653	17,001	90,699,086	70.03%	24,243	17,208	91,710,838	69.80%	24,497	17,113	92,958,490	68.63%
West	17,251	12,384	57,105,116	68.94%	17,382	12,189	57,704,240	67.09%	17,566	11,983	58,469,122	64.31%
Alabama	1,039	724	3,676,390	66.92%	1,088	749	3,688,058	65.49%	1,040	720	3,701,931	66.05%
Alaska	1,051	754	522,844	71.80%	1,008	724	525,666	68.32%	1,037	686	527,234	66.17%
Arizona	1,067	757	5,098,098	69.66%	997	748	5,193,574	74.73%	812	615	5,280,534	72.53%
Arkansas	1,020	725	2,221,013	68.03%	1,074	757	2,231,337	68.52%	1,008	725	2,246,021	67.78%
California	5,034	3,523	29,512,527	67.44%	5,211	3,432	29,655,758	63.94%	5,409	3,343	29,974,934	60.00%
Colorado	1,008	725	4,107,515	71.05%	1,017	677	4,188,280	65.76%	1,106	756	4,253,700	67.35%
Connecticut	1,106	723	2,777,048	64.80%	1,089	713	2,774,524	63.98%	1,145	755	2,795,622	66.81%
Delaware	1,021	707	726,446	70.38%	1,042	711	732,938	66.82%	1,084	716	742,998	66.05%
District of Columbia	967	714	543,866	74.11%	968	727	549,919	73.64%	951	695	559,290	72.94%
Florida	3,593	2,542	15,851,157	69.33%	3,687	2,576	16,149,440	67.44%	3,665	2,505	16,474,084	66.71%
Georgia	1,468	1,078	7,507,971	70.76%	1,537	1,138	7,603,492	70.24%	1,612	1,157	7,719,247	69.36%
Hawaii	1,103	794	1,061,433	70.30%	1,070	722	1,061,878	65.85%	1,087	725	1,064,241	62.26%
Idaho	996	729	1,201,314	71.81%	1,095	818	1,225,558	73.38%	992	738	1,253,342	73.91%
Illinois	2,705	1,717	9,718,727	62.12%	2,905	1,826	9,690,578	60.72%	2,941	1,744	9,720,651	58.57%
Indiana	1,060	731	4,945,710	67.38%	1,003	711	4,964,511	68.62%	1,074	717	4,999,830	66.90%
Iowa	1,011	709	2,354,463	68.05%	1,065	756	2,363,600	71.00%	1,118	740	2,373,014	66.49%
Kansas	1,004	735	2,129,427	71.46%	1,026	738	2,132,038	70.66%	1,037	744	2,139,785	70.62%
Kentucky	975	706	3,328,266	71.53%	1,100	703	3,343,975	61.86%	1,100	729	3,361,242	64.73%
Louisiana	971	713	3,452,153	72.29%	1,003	710	3,463,990	70.05%	1,052	731	3,472,415	68.50%
Maine	1,018	701	1,059,704	68.17%	1,080	765	1,063,275	71.40%	1,014	705	1,069,799	68.46%
Maryland	983	708	4,564,964	69.04%	1,053	781	4,573,424	72.61%	1,051	759	4,610,102	71.25%
Massachusetts	1,254	720	5,334,861	57.09%	1,229	760	5,362,512	61.71%	1,276	714	5,419,068	56.05%
Michigan	2,585	1,840	7,608,717	68.93%	2,549	1,810	7,631,694	69.64%	2,616	1,807	7,681,241	67.21%
Minnesota	967	704	4,149,168	72.79%	1,061	723	4,176,101	67.85%	1,054	732	4,223,276	70.66%
Mississippi	970	690	2,199,815	69.02%	978	699	2,202,801	70.41%	1,020	698	2,206,850	66.29%

See notes at end of table.

(continued)

Table C.13 Sample Sizes, Weighted Interview Response Rates, and Population Estimates among Adults Aged 18 or Older, by State: 2015, 2016, and 2017 (continued)

State	2015 Total Selected	2015 Total Responded	2015 Population Estimate	2015 Weighted Interview Response Rate	2016 Total Selected	2016 Total Responded	2016 Population Estimate	2016 Weighted Interview Response Rate	2017 Total Selected	2017 Total Responded	2017 Population Estimate	2017 Weighted Interview Response Rate
Missouri	1,034	742	4,587,280	69.47%	1,052	722	4,600,630	65.21%	1,077	754	4,624,223	69.43%
Montana	1,029	747	791,726	68.78%	1,100	760	799,997	70.74%	1,052	773	807,184	74.33%
Nebraska	1,012	725	1,396,741	70.63%	1,051	723	1,404,674	68.00%	1,013	710	1,415,282	68.81%
Nevada	993	726	2,184,663	68.41%	977	717	2,224,088	71.29%	1,086	722	2,275,121	64.07%
New Hampshire	1,113	757	1,051,093	67.61%	1,034	700	1,057,321	66.51%	1,069	739	1,067,801	71.64%
New Jersey	1,720	1,130	6,856,888	64.65%	1,666	1,064	6,857,473	61.81%	1,856	1,196	6,925,877	63.49%
New Mexico	1,005	744	1,552,567	72.80%	900	711	1,554,056	78.54%	893	713	1,564,401	78.79%
New York	3,898	2,544	15,358,693	63.00%	3,706	2,370	15,337,132	60.94%	3,984	2,522	15,464,407	61.71%
North Carolina	1,586	1,138	7,540,012	68.76%	1,626	1,158	7,632,608	71.04%	1,554	1,078	7,766,421	69.00%
North Dakota	1,024	757	566,516	72.51%	983	683	564,944	68.21%	1,038	728	562,731	70.04%
Ohio	2,655	1,839	8,817,736	68.04%	2,592	1,796	8,833,293	66.97%	2,634	1,811	8,883,426	68.21%
Oklahoma	1,010	711	2,871,703	66.69%	1,033	701	2,883,440	67.23%	1,078	716	2,892,414	66.78%
Oregon	1,052	748	3,128,475	70.44%	1,060	760	3,186,630	70.94%	1,100	744	3,231,638	67.24%
Pennsylvania	2,490	1,800	9,918,209	71.18%	2,494	1,746	9,915,686	70.07%	2,614	1,831	9,947,416	68.42%
Rhode Island	1,068	736	829,169	68.52%	1,061	713	831,935	66.55%	1,134	759	837,144	67.08%
South Carolina	960	705	3,703,779	71.56%	1,038	742	3,765,360	71.95%	1,016	735	3,825,020	69.85%
South Dakota	899	674	630,375	74.49%	1,006	705	634,995	70.24%	1,018	729	637,785	71.23%
Tennessee	1,057	774	4,999,624	68.92%	1,058	758	5,048,067	70.21%	1,006	721	5,106,775	71.07%
Texas	3,399	2,528	19,771,231	72.42%	3,254	2,467	20,080,000	73.74%	3,457	2,525	20,458,311	71.20%
Utah	905	706	2,058,738	75.91%	929	696	2,105,544	73.83%	969	728	2,151,568	73.72%
Vermont	1,013	687	500,184	67.99%	1,006	687	500,367	71.00%	1,070	736	501,164	69.01%
Virginia	1,623	1,134	6,303,312	68.67%	1,585	1,102	6,333,111	67.78%	1,703	1,173	6,396,270	65.66%
Washington	1,021	717	5,447,554	69.10%	1,038	681	5,546,482	65.17%	1,116	728	5,651,840	64.19%
West Virginia	1,011	704	1,437,385	65.62%	1,119	729	1,428,879	62.95%	1,100	730	1,419,101	65.14%
Wisconsin	1,100	762	4,406,160	67.95%	1,001	725	4,421,246	72.50%	1,072	730	4,443,389	68.23%
Wyoming	987	714	437,663	71.68%	980	743	436,729	75.01%	907	712	433,386	77.65%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015, 2016, and 2017.

Table C.14   Sample Sizes, Weighted Interview Response Rates, and Population Estimates among Adults Aged 18 or Older, by State: 2015-2016 and 2016-2017

State	2015-2016 Total Selected	2015-2016 Total Responded	2015-2016 Population Estimate	2015-2016 Weighted Interview Response Rate	2016-2017 Total Selected	2016-2017 Total Responded	2016-2017 Population Estimate	2016-2017 Weighted Interview Response Rate
Total U.S.	145,924	101,951	243,667,340	67.98%	148,201	101,832	245,847,075	66.94%
Northeast	29,045	19,316	43,693,037	64.47%	29,527	19,475	43,864,261	63.89%
Midwest	34,350	23,853	51,364,663	67.47%	34,986	23,864	51,561,468	66.83%
South	47,896	34,209	91,204,962	69.91%	48,740	34,321	92,334,664	69.21%
West	34,633	24,573	57,404,678	68.02%	34,948	24,172	58,086,681	65.69%
Alabama	2,127	1,473	3,682,224	66.18%	2,128	1,469	3,694,995	65.76%
Alaska	2,059	1,478	524,255	70.06%	2,045	1,410	526,450	67.26%
Arizona	2,064	1,505	5,145,836	72.24%	1,809	1,363	5,237,054	73.66%
Arkansas	2,094	1,482	2,226,175	68.27%	2,082	1,482	2,238,679	68.14%
California	10,245	6,955	29,584,142	65.71%	10,620	6,775	29,815,346	61.94%
Colorado	2,025	1,402	4,147,898	68.34%	2,123	1,433	4,220,990	66.60%
Connecticut	2,195	1,436	2,775,786	64.38%	2,234	1,468	2,785,073	65.32%
Delaware	2,063	1,418	729,692	68.59%	2,126	1,427	737,968	66.43%
District of Columbia	1,935	1,441	546,893	73.88%	1,919	1,422	554,604	73.29%
Florida	7,280	5,118	16,000,298	68.36%	7,352	5,081	16,311,762	67.08%
Georgia	3,005	2,216	7,555,731	70.49%	3,149	2,295	7,661,369	69.80%
Hawaii	2,173	1,516	1,061,655	68.11%	2,157	1,447	1,063,059	64.05%
Idaho	2,091	1,547	1,213,436	72.59%	2,087	1,556	1,239,450	73.66%
Illinois	5,610	3,543	9,704,653	61.42%	5,846	3,570	9,705,615	59.65%
Indiana	2,063	1,442	4,955,111	67.98%	2,077	1,428	4,982,171	67.71%
Iowa	2,076	1,465	2,359,031	69.51%	2,183	1,496	2,368,307	68.69%
Kansas	2,030	1,473	2,130,733	71.06%	2,063	1,482	2,135,911	70.64%
Kentucky	2,075	1,409	3,336,120	66.64%	2,200	1,432	3,352,608	63.35%
Louisiana	1,974	1,423	3,458,071	71.13%	2,055	1,441	3,468,202	69.28%
Maine	2,098	1,466	1,061,489	69.80%	2,094	1,470	1,066,537	69.92%
Maryland	2,036	1,489	4,569,194	70.80%	2,104	1,540	4,591,763	71.95%
Massachusetts	2,483	1,480	5,348,686	59.39%	2,505	1,474	5,390,790	58.86%
Michigan	5,134	3,650	7,620,206	69.29%	5,165	3,617	7,656,468	68.44%
Minnesota	2,028	1,427	4,162,634	70.29%	2,115	1,455	4,199,689	69.25%
Mississippi	1,948	1,389	2,201,308	69.70%	1,998	1,397	2,204,825	68.29%

See notes at end of table.   (continued)

Table C.14 Sample Sizes, Weighted Interview Response Rates, and Population Estimates among Adults Aged 18 or Older, by State: 2015-2016 and 2016-2017 (continued)

State	2015-2016 Total Selected	2015-2016 Total Responded	2015-2016 Population Estimate	2015-2016 Weighted Interview Response Rate	2016-2017 Total Selected	2016-2017 Total Responded	2016-2017 Population Estimate	2016-2017 Weighted Interview Response Rate
Missouri	2,086	1,464	4,593,955	67.26%	2,129	1,476	4,612,426	67.27%
Montana	2,129	1,507	795,861	69.74%	2,152	1,533	803,591	72.57%
Nebraska	2,063	1,448	1,400,708	69.32%	2,064	1,433	1,409,978	68.41%
Nevada	1,970	1,443	2,204,376	69.95%	2,063	1,439	2,249,604	67.77%
New Hampshire	2,147	1,457	1,054,207	67.06%	2,103	1,439	1,062,561	69.08%
New Jersey	3,386	2,194	6,857,180	63.26%	3,522	2,260	6,891,675	62.65%
New Mexico	1,905	1,455	1,553,311	75.59%	1,793	1,424	1,559,228	78.66%
New York	7,604	4,914	15,347,913	61.95%	7,690	4,892	15,400,769	61.32%
North Carolina	3,212	2,296	7,586,310	69.87%	3,180	2,236	7,699,515	70.01%
North Dakota	2,007	1,440	565,730	70.40%	2,021	1,411	563,837	69.14%
Ohio	5,247	3,635	8,825,514	67.49%	5,226	3,607	8,858,359	67.58%
Oklahoma	2,043	1,412	2,877,571	66.96%	2,111	1,417	2,887,927	67.00%
Oregon	2,112	1,508	3,157,552	70.69%	2,160	1,504	3,209,134	69.07%
Pennsylvania	4,984	3,546	9,916,947	70.63%	5,108	3,577	9,931,551	69.24%
Rhode Island	2,129	1,449	830,552	67.54%	2,195	1,472	834,539	66.82%
South Carolina	1,998	1,447	3,734,569	71.75%	2,054	1,477	3,795,190	70.88%
South Dakota	1,905	1,379	632,685	72.36%	2,024	1,434	636,390	70.76%
Tennessee	2,115	1,532	5,023,845	69.57%	2,064	1,479	5,077,421	70.65%
Texas	6,653	4,995	19,925,615	73.08%	6,711	4,992	20,269,156	72.44%
Utah	1,834	1,402	2,082,141	74.86%	1,898	1,424	2,128,556	73.77%
Vermont	2,019	1,374	500,275	69.49%	2,076	1,423	500,766	70.01%
Virginia	3,208	2,236	6,318,212	68.23%	3,288	2,275	6,364,691	66.72%
Washington	2,059	1,398	5,497,018	67.14%	2,154	1,409	5,599,161	64.67%
West Virginia	2,130	1,433	1,433,132	64.24%	2,219	1,459	1,423,990	64.04%
Wisconsin	2,101	1,487	4,413,703	70.29%	2,073	1,455	4,432,318	70.43%
Wyoming	1,967	1,457	437,196	73.32%	1,887	1,455	435,057	76.29%

NOTE: Computations in this table are based on a respondent's age at screening. Thus, the data in the Total Responded column(s) could differ from data in other NSDUH tables that use the respondent's age recorded during the interview.

NOTE: To compute the pooled weighted response rates, the two samples were combined, and the individual-year weights were used for the pooled sample. Thus, the response rates presented here are weighted across 2 years of data rather than being a simple average of the individual response rates. The population estimate is the average of the population across the 2 years.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015, 2016, and 2017.

Table C.15   NSDUH Outcomes, by Survey Year, for Which Small Area Estimates Are Available

Measure	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Illicit Drug Use in the Past Month[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Marijuana Use in the Past Year	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marijuana Use in the Past Month	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Perceptions of Great Risk from Smoking Marijuana Once a Month[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
First Use of Marijuana (Marijuana Initiation)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Illicit Drug Use Other Than Marijuana in the Past Month[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Cocaine Use in the Past Year	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Perceptions of Great Risk from Using Cocaine Once a Month	--	--	--	--	--	--	--	--	--	--	--	--	--	X	X
Methamphetamine Use in the Past Year	--	--	--	--	--	--	--	--	--	--	--	--	--	--[2]	X
Pain Reliever Misuse in the Past Year[1]	--[3]	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Heroin Use in the Past Year	--	--	--	--	--	--	--	--	--	--	--	--[4]	X	X	X
Perceptions of Great Risk from Trying Heroin Once or Twice	--	--	--	--	--	--	--	--	--	--	--	--	--	X	X
Alcohol Use in the Past Month	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Underage Past Month Use of Alcohol	--[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Binge Alcohol Use in the Past Month[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Underage Past Month Binge Alcohol Use[1]	--[2]	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Perceptions of Great Risk from Having Five or More Drinks of an Alcoholic Beverage Once or Twice a Week[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Tobacco Product Use in the Past Month	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cigarette Use in the Past Month	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Perceptions of Great Risk from Smoking One or More Packs of Cigarettes per Day[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Alcohol Use Disorder in the Past Year	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Alcohol Dependence in the Past Year	X	X	X	X	X	X	X	X	X	X	X	X	X	--	--
Illicit Drug Use Disorder in the Past Year[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Illicit Drug Dependence in the Past Year	X	X	X	X	X	X	X	X	X	X	X	X	--	--	--
Pain Reliever Use Disorder in the Past Year	--	--	--	--	--	--	--	--	--	--	--	--	--	X	X
Substance Use Disorder in the Past Year[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Needing But Not Receiving Treatment at a Specialty Facility for Illicit Drug Use in the Past Year[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Needing But Not Receiving Treatment at a Specialty Facility for Alcohol Use in the Past Year[1]	X	X	X	X	X	X	X	X	X	X	X	X	--	X	X
Needing But Not Receiving Treatment at a Specialty Facility for Substance Use in the Past Year[1,5]	--	--	--	--	--	--	--	--	X	X	X	X	--	X	X

See notes at end of table.

Table C.15 NSDUH Outcomes, by Survey Year, for Which Small Area Estimates Are Available (continued)

Measure	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Serious Psychological Distress (SPD) in the Past Year[6]	X	X	X	--	--	--	--	--	--	--	--	--	--	--	--
Had at Least One Major Depressive Episode (MDE) in the Past Year[7]	--	--	X	X	X	X	X	X	X	X	X	X	X	X	X
Serious Mental Illness (SMI) in the Past Year	--	--	--	--	--	--	X	X	X	X	X	X	X	X	X
Any Mental Illness (AMI) in the Past Year	--	--	--	--	--	--	X	X	X	X	X	X	X	X	X
Had Serious Thoughts of Suicide in the Past Year	--	--	--	--	--	--	X	X	X	X	X	X	X	X	X
Received Mental Health Services in the Past Year[5]	--	--	--	--	--	--	--	--	X	X	X	X	X	X	X

X = available; -- = not available.

[1] For these outcomes, the 2015-2016 and 2016-2017 small area estimates are not comparable with the 2013-2014 estimates or the estimates from prior years. Because of comparability issues, 2014-2015 small area estimates were not produced for these outcomes. Prior to 2015-2016, "misuse of pain relievers" was referred to as "nonmedical use of pain relievers."

[2] Estimates for this outcome were not included in the 2015-2016 state document at https://www.samhsa.gov/data/, but the 2015-2016 estimates were included in the 2016-2017 state documents as part of the comparison tables. However, the Bayesian confidence intervals associated with these estimates were not published.

[3] Estimates for these outcomes were not included in the 2002-2003 state report (Wright & Sathe, 2005), but the 2002-2003 estimates were included in the 2003-2004 state report as part of the comparison tables (see Wright & Sathe, 2006). However, the Bayesian confidence intervals associated with these estimates were not published.

[4] Estimates for this outcome were not included in the 2013-2014 state documents at https://www.samhsa.gov/data/, but the 2013-2014 estimates were included in the 2014-2015 state documents as part of the comparison tables. However, the Bayesian confidence intervals associated with these estimates were not published.

[5] Estimates for these outcomes were produced for years prior to 2015-2016 and published separately from the main state documents. Starting in 2015-2016, these outcomes are included in the main state documents.

[6] Estimates for SPD in the years 2002-2003 and 2003-2004 are not comparable with the 2004-2005 SPD estimates. For more details, see Section A.7 in Appendix A of the 2004-2005 state report (Wright, Sathe, & Spagnola, 2007). Note that, in 2002-2003, "SPD" was referred to as "serious mental illness."

[7] Questions that were used to determine an MDE were added in 2004. Note that the adult MDE estimates shown in the 2004-2005 state report (Wright & Sathe, 2006) are not comparable with the adult MDE estimates for later years.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2002-2017.

Table C.16   NSDUH Outcomes, by Age Groups, for Which Small Area Estimates Are Available

Measure	Age Group 12+	12-17	12-20	18-25	26+	18+
Illicit Drug Use in the Past Month	X	X	--	X	X	X
Marijuana Use in the Past Year	X	X	--	X	X	X
Marijuana Use in the Past Month	X	X	--	X	X	X
Perceptions of Great Risk from Smoking Marijuana Once a Month	X	X	--	X	X	X
First Use of Marijuana (Marijuana Initiation)	X	X	--	X	X	X
Illicit Drug Use Other Than Marijuana in the Past Month	X	X	--	X	X	X
Cocaine Use in the Past Year	X	X	--	X	X	X
Perceptions of Great Risk from Using Cocaine Once a Month	X	X	--	X	X	X
Methamphetamine Use in the Past Year	X	X	--	X	X	X
Pain Reliever Misuse in the Past Year	X	X	--	X	X	X
Heroin Use in the Past Year	X	X	--	X	X	X
Perceptions of Great Risk from Using Heroin Once or Twice	X	X	--	X	X	X
Alcohol Use in the Past Month	X	X	X	X	X	X
Binge Alcohol Use in the Past Month	X	X	X	X	X	X
Perceptions of Great Risk from Having Five or More Drinks of an Alcoholic Beverage Once or Twice a Week	X	X	--	X	X	X
Tobacco Product Use in the Past Month	X	X	--	X	X	X
Cigarette Use in the Past Month	X	X	--	X	X	X
Perceptions of Great Risk from Smoking One or More Packs of Cigarettes per Day	X	X	--	X	X	X
Alcohol Use Disorder in the Past Year	X	X	--	X	X	X
Alcohol Dependence in the Past Year	X	X	--	X	X	X
Illicit Drug Use Disorder in the Past Year	X	X	--	X	X	X
Illicit Drug Dependence in the Past Year	X	X	--	X	X	X
Pain Reliever Use Disorder in the Past Year	X	X	--	X	X	X
Substance Use Disorder the Past Year	X	X	--	X	X	X
Needing But Not Receiving Treatment at a Specialty Facility for Illicit Drug Use in the Past Year	X	X	--	X	X	X
Needing But Not Receiving Treatment at a Specialty Facility for Alcohol Use in the Past Year	X	X	--	X	X	X
Needing But Not Receiving Treatment at a Specialty Facility for Substance Use in the Past Year	X	X	--	X	X	X
Serious Psychological Distress (SPD) in the Past Year	--	--	--	X	X	X
Had at Least One Major Depressive Episode (MDE) in the Past Year[1]	--	X	--	X	X	X
Serious Mental Illness (SMI) in the Past Year	--	--	--	X	X	X
Any Mental Illness (AMI) in the Past Year	--	--	--	X	X	X
Had Serious Thoughts of Suicide in the Past Year	--	--	--	X	X	X
Received Mental Health Services in the Past Year	--	--	--	X	X	X

X = available; -- = not available.

NOTE: For details on which years small area estimates are available for these outcomes, see Table C.15.

NOTE: Tables containing estimates for adults aged 18 or older were first presented with the 2005-2006 small area estimation tables.

NOTE: Estimates for those aged 18 to 25, 26 or older, and 18 or older are available for all outcomes.

[1] There are minor wording differences in the questions for the adult and adolescent MDE modules. Therefore, data from youths aged 12 to 17 were not combined with data from adults aged 18 or older to get an overall MDE estimate (12 or older).

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2002-2017.

Table C.17 Summary of Milestones Implemented in NSDUH's SAE Production Process, 2002-2017

SAE Production Milestone	Years for Which Pooled 2-Year Small Area Estimates Were Published														
	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Weights Based on Projections from 2000 Census Control Totals	✓	✓	✓	✓	✓	✓	✓	✓	✓[1]	--	--	--	--	--	--
Weights Based on Projections from 2010 Census Control Totals	--	--	--	--	--	--	--	--	✓[1]	✓	✓	✓	✓	✓	✓
Small Area Estimates Produced Based on Variable Selection Done Using 2002-2003 Data[2]	✓	✓	✓	✓	✓	✓	✓	✓	✓[3]	--	--	--	--	--	--
Small Area Estimates Produced Based on Variable Selection Done Using 2010-2011 Data[4]	--	--	--	--	--	--	--	--	✓[3]	✓	✓	✓	✓	--	--
Small Area Estimates Produced Based on Variable Selection Done Using 2015-2016 Data	--	--	--	--	--	--	--	--	--	--	--	--	--	✓	✓
Small Area Estimates Reproduced Using Data Omitting Falsified Data[5]	--	--	--	✓	✓	✓	✓	--	--	--	--	--	--	--	--
SMI and AMI Small Area Estimates Based on Updated 2013 Model[6]	--	--	--	--	--	--	✓	✓	✓	✓	✓	✓	✓	✓	✓
MDE Small Area Estimates Based on Adjusted MDE Variable[7]	--	--	--	✓	✓	✓	✓	--	--	--	--	--	--	--	--

✓ = SAE production milestone implemented; -- = SAE production milestone not implemented; AMI = any mental illness; MDE = major depressive episode; NSDUH = National Survey on Drug Use and Health; SAE = small area estimation; SMI = serious mental illness.

[1] The weight used for 2010 was based on projections from the 2000 census control totals, and the 2011 weight was based on projections from the 2010 census control totals. For SMI and AMI, the weights used for both years were based on the 2010 census control totals.

[2] Variable selection was done using 2002-2003 NSDUH data for all outcomes with the following exception: For SMI, AMI, suicidal thoughts in the past year, and MDE, variable selection was done using 2008-2009 NSDUH data. Note that the 2005-2006, 2006-2007, and 2007-2008 MDE small area estimates were based on the variable selection done in 2008-2009.

[3] For all outcomes except SMI and AMI, the 2010-2011 small area estimates were produced based on 2002-2003 variable selection (see footnote 2 for an exception). For SMI and AMI, variable selection was done using 2010-2011 NSDUH data.

[4] When new variable selection was done using 2010-2011 NSDUH data, one source of predictor data was revised: The American Community Survey (ACS) estimates were used in place of the 2000 long-form census estimates, which resulted in dropping several predictors and adding several new predictors. For past year heroin use, variable selection was done using 2014-2015 data.

[5] The 2005-2006 through 2008-2009 small area estimates were revised and republished with falsified data removed. For more information, see Section A.7 of "2011-2012 NSDUH: Guide to State Tables and Summary of Small Area Estimation Methodology" at https://www.samhsa.gov/data/.

[6] The 2008-2009, 2009-2010, and 2010-2011 small area estimates were revised and republished based on the new SMI and AMI variables. These new variables will continue to be used to produce SMI and AMI small area estimates. For more information, see Section B.11.1 of the document mentioned in this table's footnote 5.

[7] An adjusted MDE variable was created for 2005-2008 that is comparable with the 2009-2013 MDE variables. Hence, MDE small area estimates were produced using the adjusted variable. For more information, see Section B.11.3 of the document mentioned in this table's footnote 5.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2002-2017.

Section D: References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (DSM-IV) (4th ed.)*. Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5) (5th ed.)*. Arlington, VA: Author.

Center for Behavioral Health Statistics and Quality. (2012). *2010 National Survey on Drug Use and Health: Methodological resource book (Section 16b, Analysis of effects of 2008 NSDUH questionnaire changes: Methods to adjust adult MDE and SPD estimates and to estimate SMI in the 2005-2009 surveys)*. Retrieved from https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (2015a). *2014 National Survey on Drug Use and Health: Methodological resource book (Section 2, Sample design report)*. Retrieved from https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (2015b, August). *National Survey on Drug Use and Health: 2014 and 2015 redesign changes.* Retrieved from https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (2016a). *2015 National Survey on Drug Use and Health: Methodological resource book*. Retrieved from https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (2016b). *2015 National Survey on Drug Use and Health: Methodological summary and definitions.* Retrieved from https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (2016c). *2015 National Survey on Drug Use and Health: Summary of the effects of the 2015 NSDUH questionnaire redesign: Implications for data users.* Retrieved from https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. (2016d). *National Survey on Drug Use and Health: 2015 public use file and codebook*. Retrieved from https://datafiles.samhsa.gov/

Center for Behavioral Health Statistics and Quality. (2017). *2016 National Survey on Drug Use and Health: Methodological summary and definitions.* Retrieved from https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (2018). *2017 National Survey on Drug Use and Health: Methodological summary and definitions*. Retrieved from https://www.samhsa.gov/data/

Center for Behavioral Health Statistics and Quality. (in press). *2017 National Survey on Drug Use and Health: Methodological resource book*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Endicott, J., Spitzer, R. L., Fleiss, J. L., & Cohen, J. (1976). The Global Assessment Scale: A procedure for measuring overall severity of psychiatric disturbance. *Archives of General Psychiatry, 33*, 766-771. https://doi.org/10.1001/archpsyc.1976.01770060086012

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2002). *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Non-patient Edition (SCID-I/NP)*. New York, NY: New York State Psychiatric Institute, Biometrics Research.

Folsom, R. E., Shah, B., & Vaish, A. (1999). Substance abuse in states: A methodological report on model based estimates from the 1994-1996 National Household Surveys on Drug Abuse. In *Proceedings of the 1999 Joint Statistical Meetings, American Statistical Association, Survey Research Methods Section, Baltimore, MD* (pp. 371-375). Alexandria, VA: American Statistical Association.

Ghosh, M. (1992). Constrained Bayes estimation with applications. *Journal of the American Statistical Association, 87*, 533-540. https://doi.org/10.2307/2290287

Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., Howes, M. J., Normand, S. L., Manderscheid, R. W., Walters, E. E., & Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry, 60*, 184-189. https://doi.org/10.1001/archpsyc.60.2.184

Leon, A. C., Olfson, M., Portera, L., Farber, L., & Sheehan, D. V. (1997). Assessing psychiatric impairment in primary care with the Sheehan Disability Scale. *International Journal of Psychiatry in Medicine, 27*(2), 93-105. https://doi.org/10.2190/t8em-c8yh-373n-1uwd

Novak, S. (2007, October). *An item response analysis of the World Health Organization Disability Assessment Schedule (WHODAS) items in the 2002-2004 NSDUH* (prepared for the Substance Abuse and Mental Health Services Administration under Contract No. 283-03-9028, RTI/8726). Research Triangle Park, NC: RTI International.

Office of Applied Studies. (2001). *Development of computer-assisted interviewing procedures for the National Household Survey on Drug Abuse* (HHS Publication No. SMA 01-3514, Methodology Series M-3). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Office of Applied Studies. (2005). *Results from the 2004 National Survey on Drug Use and Health: National findings* (HHS Publication No. SMA 05-4062, NSDUH Series H-28). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Raftery, A. E., & Lewis, S. (1992). How many iterations in the Gibbs sampler? In J. M. Bernardo, J. O. Berger, A. P. Dawid, & A. F. M. Smith (Eds.), *Bayesian statistics 4* (pp. 763-774). London, England: Oxford University Press.

Rao, J. N. K. (2003). *Small area estimation* (Wiley Series in Survey Methodology). Hoboken, NJ: John Wiley & Sons.

Scheuren, F. (2004, June). *What is a survey?* (2nd ed.). Retrieved from
https://www.whatisasurvey.info/overview.htm 🔗

Shah, B. V., Barnwell, B. G., Folsom, R., & Vaish, A. (2000). Design consistent small area estimates using Gibbs algorithm for logistic models. In *Proceedings of the 2000 Joint Statistical Meetings, American Statistical Association, Survey Research Methods Section, Indianapolis, IN* (pp. 105-111). Alexandria, VA: American Statistical Association.

Singh, A. C., & Folsom, R. E. (2001, April 11-14). *Hierarchical Bayes calibrated domain estimation via Metropolis-Hastings Step in MCMC with application to small areas.* Presented at the International Conference on Small Area Estimation and Related Topics, Potomac, MD.

Wright, D. (2003a). *State estimates of substance use from the 2001 National Household Survey on Drug Abuse: Volume I. Findings* (HHS Publication No. SMA 03-3775, NHSDA Series H-19). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Wright, D. (2003b). *State estimates of substance use from the 2001 National Household Survey on Drug Abuse: Volume II. Individual state tables and technical appendices* (HHS Publication No. SMA 03-3826, NHSDA Series H-20). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Wright, D., & Sathe, N. (2005). *State estimates of substance use from the 2002-2003 National Surveys on Drug Use and Health* (HHS Publication No. SMA 05-3989, NSDUH Series H-26). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Wright, D., & Sathe, N. (2006). *State estimates of substance use from the 2003-2004 National Surveys on Drug Use and Health* (HHS Publication No. SMA 06-4142, NSDUH Series H-29). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Wright, D., Sathe, N., & Spagnola, K. (2007). *State estimates of substance use from the 2004-2005 National Surveys on Drug Use and Health* (HHS Publication No. SMA 07-4235, NSDUH Series H-31). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Section E: List of Contributors

This National Survey on Drug Use and Health (NSDUH) document was prepared by the Center for Behavioral Health Statistics and Quality (CBHSQ), Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services (HHS), and by RTI International (a registered trademark and a trade name of Research Triangle Institute), Research Triangle Park, North Carolina. Work by RTI was performed under Contract No. HHSS283201300001C.

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The following staff were responsible for generating the estimates and providing other support and analysis: Akhil K. Vaish, Neeraja S. Sathe, Kathryn Spagnola, and Brenda K. Porter. Ms. Spagnola provided oversight for production of the document. Richard S. Straw edited it; Debbie Bond formatted its text and tables; and Teresa F. Bass, Kimberly H. Cone, and Margaret A. Johnson prepared the web versions. Justine L. Allpress, Valerie Garner, and E. Andrew Jessup prepared and processed the maps used in the associated files.