

2014 National Survey on Drug Use and Health

METHODOLOGICAL SUMMARY AND DEFINITIONS

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

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2014 NATIONAL SURVEY ON DRUG USE AND HEALTH: METHODOLOGICAL SUMMARY AND DEFINITIONS

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Introduction

This report summarizes methods and other supporting information that are relevant to estimates of substance use and mental health issues from the 2014 National Survey on Drug Use and Health (NSDUH), an annual survey of the civilian, noninstitutionalized population of the United States aged 12 years old or older. NSDUH is the primary source of statistical information on the use of illegal 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 through face-to-face interviews with a representative sample of the population at the respondent's place of residence. The survey is sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services, and 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.¹

NSDUH collects information from residents of households and noninstitutional group quarters (e.g., shelters, rooming houses, dormitories) and from civilians living on military bases. The survey excludes homeless people who do not use shelters, military personnel on active duty, and residents of institutional group quarters, such as jails and hospitals.

This report is organized into six sections. Section A describes the survey, including information about the sample design, data collection procedures, and key aspects of data processing (e.g., development of analysis weights). Section B presents technical details on the statistical methods and measurement, such as suppression criteria for unreliable estimates, statistical testing procedures, and issues for selected substance use and mental health measures. A glossary that covers key definitions used in NSDUH reports and tables is included in Section C. Section D describes other sources of data on substance use and mental health issues, including data sources for populations outside the NSDUH target population. A list of references cited in the report (Section E) and contributors to this report (Section F) also are provided.

Data and findings for the 2014 NSDUH are presented in a series of reports and in two comprehensive sets of tables that are referred to as "detailed tables" and "mental health detailed tables." The detailed tables focus on substance use issues, and the mental health detailed tables focus on mental health issues. Both sets of tables include estimated numbers of people with a characteristic of interest (e.g., numbers of substance users, numbers of adults with mental illness), corresponding percentages, and standard errors of estimates. Tables for the 2014 NSDUH are available at <http://www.samhsa.gov/data/>.

Reports using the 2014 NSDUH data that focus on specific topics of interest at the national level also are available on SAMHSA's website. These reports include topics such as trends in substance use and mental health issues among people aged 12 or older (CBHSQ, 2015c), suicidal thoughts and behavior among adults aged 18 or older (CBHSQ, 2015f), receipt of services for a substance problem or mental health issue (CBHSQ, 2015d), and substance use prevention and initiation of substance use (CBHSQ, 2015e). State-level estimates for substance

¹ RTI International is a registered trademark and a trade name of Research Triangle Institute.

use and mental health for 2012-2013 and earlier years are available on SAMHSA's website at <http://www.samhsa.gov/data/>.

In addition, CBHSQ makes public use data files available through the Substance Abuse and Mental Health Data Archive (SAMHDA) at <http://www.datafiles.samhsa.gov>. Currently, files are available from the 1979 to 2013 surveys. The 2014 NSDUH public use file will be available by the end of 2015. CBHSQ also makes confidential restricted-use data available in two ways. Restricted-use data, including state codes and other detailed variables, can be included in tables as part of the online Restricted-use Data Analysis System (R-DAS). In R-DAS, data are not available for downloading, but estimates can be generated by state and other restricted variables that are specified by the data user. Estimates that are generated by R-DAS do not require any further review for protection of respondent confidentiality. CBHSQ also makes restricted-use microdata files available through a data portal on the SAMHDA website. More details on both of these programs are available at <http://www.datafiles.samhsa.gov>.

Section A: Description of the Survey

A.1 Sample Design

The respondent universe for the National Survey on Drug Use and Health (NSDUH)² is the civilian, noninstitutionalized population aged 12 years old or older residing within the United States. The survey covers residents of households (individuals living in houses/townhouses, apartments, and condominiums; civilians living in housing on military bases, etc.) and individuals in noninstitutional group quarters (e.g., shelters, rooming/boarding houses, college dormitories, migratory workers' camps, halfway houses). Excluded from the survey are individuals with no fixed household address (e.g., homeless and/or transient people not in shelters), active-duty military personnel, and residents of institutional group quarters, such as correctional facilities, nursing homes, mental institutions, and long-term hospitals.

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. As a result, states are viewed as the first level of stratification and as a variable for reporting estimates. Each state was further stratified into approximately equally populated state sampling regions (SSRs). Creation of the multistage area probability sample then involved selecting census tracts within each SSR, census block groups within census tracts, and area segments (i.e., a collection of census blocks) within census block groups. Finally, dwelling units (DUs) were selected within segments, and within each selected DU, up to two residents who were at least 12 years old were selected for the interview.

The coordinated design for 2014 through 2017 includes a 50 percent overlap in third-stage units (area segments) within each successive 2-year period from 2014 through 2017. In addition to reducing costs, this designed sample overlap slightly increases the precision of estimates of year-to-year trends because of the expected small but positive correlation resulting from the overlapping area segments between successive survey years. There is no planned overlap of sampled DUs or residents.

The 2014 through 2017 design allocates more interviews to the largest 12 states (compared with the 1999 to 2013 design).³ Making the 2014 sample sizes more proportional to the 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 by either direct methods (by pooling multiple years of data) or using small area estimation (SAE).⁴ Population

² Prior to 2002, the survey was known as the National Household Survey on Drug Abuse (NHSDA).

³ In the 1999 to 2013 design, the eight largest states each had a target sample size of 3,600. The remaining states and the District of Columbia each had a sample size of 900. In 2014, the sample design was modified so that the sample size per state was relatively more proportional to the state population. For a full list of target sample size per state in 2013 and 2014, see [Table A.1](#) at the end of this section.

⁴ SAE is a hierarchical Bayes modeling technique used to make state-level estimates for 25 measures related to substance use and mental health. For more details, see "2011-2012 NSDUH: Model-Based Prevalence Estimates (50 States and the District of Columbia)" (Tables 1 to 26, by Age Group) at <http://www.samhsa.gov/data/>.

projections based on the 2010 census and data from the 2006 to 2010 American Community Surveys (ACS) were used to construct the sampling frame for the 2014 to 2017 NSDUHs. In contrast, projections based on the 2000 census were used in constructing the sampling frame for the 2005 to 2013 NSDUHs.

[Table A.1](#) at the end of Section A shows the targeted numbers of completed interviews in selected states for the 2014 sample. For Hawaii, the sample was designed to yield a minimum of 200 completed interviews in Kauai County, Hawaii, over a 3-year period. To achieve this goal while maintaining precision at the state level, the annual sample in Hawaii consists of 67 completed interviews in Kauai County and 900 completed interviews in the remainder of the state, for a total of 967 completed interviews each year for 2014 onward. The sample design also targeted 960 completed interviews in each of the remaining 37 states and the District of Columbia that are not listed individually in [Table A.1](#).

In 2014, the actual sample sizes in the 12 largest states in [Table A.1](#) (i.e., not including Hawaii) ranged from 1,533 to 4,664. In the remaining states, the actual sample sizes ranged from 909 to 1,008 in 2014.

As mentioned previously, states were first stratified into SSRs. The number of SSRs varied by state and was related to the state's sample size. SSRs were contiguous geographic areas designed to yield approximately the same number of interviews within a given state.⁵ There were a total of 750 SSRs for 2014. [Table A.1](#) also shows the number of SSRs for different states.

Similar to the 2005 through 2013 NSDUHs, the first stage of selection for the 2014 through 2017 NSDUHs was census tracts.⁶ Within each SSR, 48 census tracts⁷ were selected with probability proportional to a composite measure of size.⁸ Within sampled census tracts, adjacent census block groups were combined as necessary to meet the minimum DU size requirements.⁹ One census block group or second-stage sampling unit then was selected within each sampled census tract with probability proportional to population size. Compared with the selection process used for the 2005 through 2013 NSDUHs, the selection of census block groups is an additional stage of selection that was included to facilitate possible transitioning to an address-based sampling (ABS) design in a future survey year. For the third stage of selection, adjacent blocks were combined within each sampled census block group to form area segments.

⁵ Sampling areas were defined using 2010 census geography. Counts of DUs and population totals were obtained from the 2010 decennial census data supplemented with revised population projections from Nielsen Claritas.

⁶ Census tracts are relatively permanent statistical subdivisions of counties and parishes and provide a stable set of geographic units across decennial census periods.

⁷ Some census tracts had to be aggregated in order to meet the minimum DU requirement. In California, Florida, Georgia, Illinois, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Texas, and Virginia, this minimum size requirement was 250 DUs in urban areas and 200 DUs in rural areas. In the remaining states and the District of Columbia, the minimum requirement was 150 DUs in urban areas and 100 DUs in rural areas.

⁸ The composite measure of size is a weighted population size where the weights are the sampling rates defined for specified age groups.

⁹ The minimum DU size requirements for census tracts also were applied to census block groups. The purpose of the minimum DU size is to ensure that each sampled area has a sufficient number of DUs to field two NSDUH samples and one field test.

One area segment was selected within each sampled census block group with probability proportionate to a composite measure of size. Although only 20 segments per SSR were needed to support the coordinated 4-year sample for the 2014 through 2017 NSDUHs, an additional 28 segments per SSR were selected to support any supplemental studies that the Substance Abuse and Mental Health Services Administration (SAMHSA) may choose to field.¹⁰ Eight sample segments per SSR were fielded during the 2014 survey year. Four of these segments were selected for the 2014 survey only; four were selected for the 2014 survey and will be used again in the 2015 survey. Starting in 2005, the first stage of sampling was census tracts. This stage was included to contain sample segments within a single census tract to the extent possible in order to facilitate merging to external data sources.

These sampled segments were allocated equally into four separate samples, one for each 3-month period (calendar quarter) during the year. That is, a sample of addresses was selected from two segments in each calendar quarter so that field data collection occurred relatively year-round. In each of the area segments, a listing of all addresses was made, from which a national sample of 185,013 addresses was selected. Of the selected addresses, 154,533 were determined to be eligible sample units. In these sample units (which can be either households or units within group quarters), sampled individuals were randomly selected using an automated screening procedure programmed in a handheld computer carried by the interviewers. The number of sample units completing the screening was 127,605.

In the 2005 to 2013 NSDUHs, the sample was allocated equally between three age groups: 12 to 17, 18 to 25, and 26 or older. 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). [Table A.2](#) at the end of Section A provides a comparison of the target sample allocations for the 2013 and 2014 NSDUHs. Adolescents aged 12 to 17 years and young adults aged 18 to 25 years continued to be oversampled in 2014, but at a lower rate than in 2013.

Adolescents aged 12 to 17 were sampled at an actual rate of 83.0 percent, and young adults aged 18 to 25 were sampled at a rate of 65.5 percent on average, when they were present in the sampled households or group quarters. As shown in [Table A.2](#), adults aged 26 or older in 2014 were sampled at a higher rate than in the 2013 NSDUH. Adults were sampled at rates of 36.3 percent for adults aged 26 to 34, 30.5 percent for adults aged 35 to 49, and 14.1 percent for adults aged 50 or older on average. The overall population sampling rates were 0.068 percent for 12 to 17 year olds, 0.047 percent for 18 to 25 year olds, 0.027 percent for 26 to 34 year olds, 0.023 percent for 35 to 49 year olds, and 0.010 percent for those 50 or older. Nationwide, 91,640 individuals were selected. Consistent with previous surveys in this series, the final respondent sample of 67,901 individuals was representative of the U.S. general population (since 1991, the civilian, noninstitutionalized population) aged 12 or older. In addition, state samples were representative of their respective state populations. More detailed information on the disposition of the national screening and interview sample can be found in Section B of this

¹⁰ Eight segments per SSR are needed to field the 2014 through 2017 NSDUHs (8 segments × 4 years = 32 segments per SSR). For the 2015 through 2017 NSDUHs, half of the segments are carried over from the prior year (4 segments × 3 years = 12 segments per SSR). Thus, 20 unique segments per SSR are needed to field the 4-year sample (32 – 12 = 20).

report. More information about the sample design can be found in the 2014 NSDUH sample design report (Center for Behavioral Health Statistics and Quality [CBHSQ], 2015b).

A.2 Data Collection Methodology

The data collection methods that are used in NSDUH to conduct in-person interviews with sampled individuals incorporate procedures to increase respondents' cooperation and willingness to report honestly about sensitive topics, such as illicit drug use behavior and mental health issues. Confidentiality is stressed in all written and oral communications with potential respondents. Respondents' names are not collected with the data, and computer-assisted interviewing (CAI) methods are used to provide a private and confidential setting to complete the interview.

Introductory letters are sent to sampled addresses, followed by an interviewer visit. When contacting a DU, the field interviewer (FI) asks to speak with an adult resident (aged 18 or older) of the household who can serve as the screening respondent. Using a handheld computer, the FI completes a 5-minute procedure with the screening respondent that involves listing all household members along with their basic demographic data. The computer uses the demographic data in a preprogrammed selection algorithm to select zero to two individuals for the interview, depending on the composition of the household. This selection process is designed to provide the necessary sample sizes for the specified population age groupings. In areas where a third or more of the households contain Spanish-speaking residents, the initial introductory letters written in English are mailed with a Spanish version printed on the back. All interviewers carry copies of this letter in Spanish. If the interviewer is not certified bilingual, he or she will use preprinted Spanish cards to attempt to find someone in the household who speaks English and who can serve as the screening respondent or who can translate for the screening respondent. If no one is available, the interviewer's field supervisor will schedule a time when a certified Spanish-speaking interviewer can come to the address. In households where a language other than Spanish is encountered, another language card is used to attempt to find someone who speaks English to complete the screening.

The NSDUH interview can be completed in English or Spanish, and both versions have the same content. If the sampled person prefers to complete the interview in Spanish, a certified bilingual interviewer is sent to the address to conduct the interview. Because the interview is not translated into any other language, if a sampled person does not speak English or Spanish, the interview is not conducted.

Immediately after completion of the screener, interviewers attempt to conduct the NSDUH interview with each sampled person in the household. The interviewer requests that the sampled respondent identify a private area in the home to conduct the interview away from other household members. The interview averages about an hour and includes a combination of CAPI (computer-assisted personal interviewing) and ACASI (audio computer-assisted self-interviewing). In the CAPI portion of the interview, the interviewer reads the questions to the respondent and records the answers. In the ACASI portion of the interview, the respondent reads questions on screen or listens to questions through headphones, then records his or her answers without the interviewer knowing the response.

The NSDUH interview consists of core and noncore (i.e., supplemental) sections. A core set of questions critical for basic trend measurement of prevalence estimates remains in the survey every year and comprises the first part of the interview. Noncore questions or modules (which can be revised, dropped, or added from year to year) make up the remainder of the interview. The core consists of initial demographic items (which are interviewer-administered) and self-administered questions pertaining to the use of tobacco, alcohol, marijuana, cocaine, crack cocaine, heroin, hallucinogens, inhalants, pain relievers, tranquilizers, stimulants, and sedatives.

Questions about mental illness and the utilization of mental health services are included in noncore self-administered sections of the interview. Although many of the questions are asked both of youths aged 12 to 17 and adults, some are asked only of adults and others are asked only of youths. In separate age-specific modules, adults and youths each are asked questions about major depressive episode (MDE) and mental health service utilization. Mental health service utilization questions for both youths and adults cover receipt of mental health services in inpatient settings in the past 12 months, the number of nights that respondents received inpatient treatment, receipt of mental health services in outpatient settings in the past 12 months, and the number of visits to outpatient mental health service providers in that period. Questions that are asked only of adults include symptoms of psychological distress in the past 30 days and past 12 months, impairment with daily activities because of psychological distress, use of prescribed medication to treat a mental or emotional condition in the past 12 months, and perceived unmet need for mental health care in that period. All adults also are asked questions about suicidal thoughts and behavior; youths do not receive these same questions on suicidal thoughts and behavior. Both youths and adults are asked about suicidal thoughts and behavior as a symptom of MDE. However, this symptom is assessed only if respondents reported having a period in their life lasting 2 weeks or longer in which they had feelings associated with being depressed (i.e., feeling sad, empty, or depressed; feeling discouraged or hopeless; or losing interest with most things). Questions that are asked of youths but not adults include reasons for receiving mental health services from specific sources, receipt of school-based mental health services, and receipt of mental health services in juvenile detention, prison, or jail in the past year. Definitions for many of these terms are included in the glossary in Section C of this report.

Additional topics in noncore self-administered sections include (but are not limited to) injection drug use, perceived risks of substance use, substance dependence or abuse, arrests, treatment for substance use problems, pregnancy, and other health care issues. Noncore demographic questions (which are interviewer-administered and follow the ACASI questions) address such topics as immigration, current school enrollment, employment and workplace issues, health insurance coverage, and income. In practice, some of the noncore portions of the interview have remained in the survey, relatively unchanged, from year to year (e.g., current health insurance coverage, employment).

The interview begins in CAPI mode with the FI reading the questions from the computer screen and entering the respondent's replies into the computer. The interview then transitions to the ACASI mode for the sensitive questions. In this mode, the respondent can read the questions silently on the computer screen and/or listen to the questions read through headphones and enter his or her responses directly into the computer. At the conclusion of the ACASI section, the interview returns to the CAPI mode with the FI completing the questionnaire. Each respondent

who completes a full interview is given \$30 cash incentive as a token of appreciation for his or her time.

No personal identifying information about the respondent is captured in the CAI record. FIs transmit the completed interview data to RTI in Research Triangle Park, North Carolina. Screening and interview data are encrypted while they reside on laptops and mobile computers. Data are transmitted back to RTI on a regular basis using either a direct dial-up connection or the Internet. All data are encrypted while in transit across dial-up or Internet connections. In addition, the screening and interview data are transmitted back to RTI in separate data streams and are kept physically separate (on different devices) before transmission occurs.

After the data are transmitted to RTI, certain cases are selected for verification. The respondents are contacted by RTI to verify the quality of an FI's work based on information that respondents provide at the end of screening (if no one is selected for an interview at the DU or the entire DU is ineligible for the study) or at the end of the interview. For the screening, the adult DU member who served as the screening respondent provides his or her first name and telephone number to the FI, who enters the information into a handheld computer and transmits the data to RTI. For completed interviews, respondents write their home telephone number and mailing address on a quality control form and seal the form in a preaddressed envelope that FIs mail back to RTI. All contact information is kept completely separate from the answers provided during the screening or interview.

Samples of respondents who completed screenings or interviews are randomly selected for verification. These cases are called by telephone interviewers who ask scripted questions designed to determine the accuracy and quality of the data collected. Any cases discovered to have a problem or discrepancy are flagged and routed to a small specialized team of telephone interviewers who recontact respondents for further investigation of the issue(s). Depending on the amount of an FI's work that cannot be verified through telephone verification, including bad telephone numbers (e.g., incorrect number, disconnected, not in service), a field verification may be conducted. Field verification involves another FI returning in person to the sampled DU to verify the accuracy and quality of the data. If the verification procedures identify situations in which an FI has falsified data, the FI is terminated. All cases completed that quarter by the falsifying FI are verified and reworked by the FI conducting the field verification.

A.3 Data Processing

Data that FIs transmit to RTI are processed to create a raw data file in which no logical editing of the data has been done. The raw data file consists of one record for each transmitted interview. Cases are eligible to be treated as final respondents only if they provided data on lifetime use of cigarettes and at least 9 out of 13 of the other substances in the core section of the questionnaire. Even though editing and consistency checks are done by the CAI program during the interview, additional, more complex edits and consistency checks are completed at RTI. Additionally, statistical imputation is used to replace missing or ambiguous values after editing for some key variables. Analysis weights are created so that estimates will be representative of the target population. Details of the editing, imputation, and weighting procedures for 2014 will appear in the *2014 NSDUH Methodological Resource Book*, which is in process. Until that

volume becomes available, refer to the *2013 NSDUH Methodological Resource Book* (CBHSQ, 2015a).

A.3.1 Data Coding and Editing

With the exception of industry and occupation data, coding of written answers that respondents or interviewers typed was performed at RTI for the 2014 NSDUH. These written answers include mentions of drugs that respondents had used or other responses that did not fit a previous response option (subsequently referred to as "OTHER, Specify" data). For example, the "OTHER, Specify" data for mental health issues in 2014 included (but were not limited to) such topics as outpatient settings in which adults aged 18 or older received mental health services in the past 12 months and reasons for the most recent visit or stay in outpatient or inpatient mental health service settings in the past 12 months for adolescents aged 12 to 17.

Written responses in "OTHER, Specify" data were assigned numeric codes through computer-assisted survey procedures and the use of a secure website that allowed for coding and review of the data. The computer-assisted procedures entailed a database check for a given "OTHER, Specify" variable that contained typed entries and the associated numeric codes. If an exact match was found between the typed response and an entry in the system, the computer-assisted procedures assigned the appropriate numeric code. Typed responses that did not match an existing entry were coded through the web-based coding system.

As noted above, the CAI program included checks that alerted respondents or interviewers when an entered answer was inconsistent with a previous answer in a given module. In this way, the inconsistency could be resolved while the interview was in progress. However, not every inconsistency was resolved during the interview, and the CAI program did not include checks for every possible inconsistency that might have occurred in the data.

Therefore, the first step in processing the raw NSDUH data was logical editing of the data. Logical editing involved using data from within a respondent's record to (a) reduce the amount of item nonresponse (i.e., missing data) in interview records, including identification of items that were legitimately skipped; (b) make related data elements consistent with each other; and (c) identify ambiguities or inconsistencies to be resolved through statistical imputation procedures (see Section A.3.2).

For example, if respondents reported that they never used a given drug, the CAI logic skipped them out of all remaining questions about use of that drug. In the editing procedures, the skipped variables were assigned specific codes to indicate that the respondents were lifetime nonusers. Similarly, respondents were instructed in the prescription psychotherapeutics modules (i.e., pain relievers, tranquilizers, stimulants, and sedatives) not to report the use of over-the-counter (OTC) drugs. Therefore, if a respondent's only report of lifetime use of a particular type of "prescription" psychotherapeutic drug was for an OTC drug, the respondent was logically inferred never to have been a nonmedical user of the prescription drugs in that psychotherapeutic category.

In addition, respondents could report that they were lifetime users of a drug but not provide specific information on when they last used it. In this situation, a temporary "indefinite"

value for the most recent period of use was assigned to the edited recency-of-use variable (e.g., "Used at some point in the lifetime LOGICALLY ASSIGNED"), and a final, specific value was statistically imputed. The editing procedures for key drug use variables also involved identifying inconsistencies between related variables so that these inconsistencies could be resolved through statistical imputation. For example, if a respondent reported last using a drug more than 12 months ago and also reported first using it at his or her current age, both of those responses could not be true. In this example, the inconsistent period of most recent use was replaced with an "indefinite" value, and the inconsistent age at first use was replaced with a missing data code. These indefinite or missing values were subsequently imputed through statistical procedures to yield consistent data for the related measures, as discussed in the next section.

An important aspect of editing the mental health variables was documentation of situations in which it was known unambiguously that respondents legitimately skipped out of the corresponding questions. These included situations in which respondents were not asked questions based on their age and those that were based on routing logic within a given set of mental health questions. For example, if adult respondents reported that they did not stay overnight or longer in a hospital or other facility to receive mental health services in the past 12 months, the CAI logic skipped them out of all remaining adult mental health treatment utilization questions about inpatient mental health services. In the editing procedures, the skipped variables were assigned codes to indicate that these additional inpatient adult mental health services variables did not apply.

In the 2014 NSDUH data, all adult respondents with item nonresponse for psychological distress items (based on the Kessler-6 [K6] distress scale) or functional impairment (based on the abridged World Health Organization Disability Assessment Schedule [WHODAS]) had their scores assigned as zeros.¹¹ In addition, respondents who were not administered the WHODAS because their total K6 score was zero were assigned a zero value for the individual WHODAS items. In particular, respondents who reported in the K6 questions that they had all six symptoms of psychological distress "none of the time" in the past 30 days or their worst period in the past 12 months (if applicable) were defined as not having psychological distress and therefore were not administered the WHODAS questions. Similarly, if respondents answered some of the K6 questions as "don't know" or "refused" and the remainder as "none of the time" (i.e., with no indication of having symptoms at least a little of the time), then there was no evidence of symptoms of psychological distress to warrant the respondents being asked the WHODAS questions about difficulty carrying out activities during their "worst" period.

Of the 50,894 final adult respondents in the 2014 NSDUH, slightly fewer than 700 had at least one of the six past month K6 item scores missing.¹² Of those, slightly fewer than 200 had all six item scores missing. Approximately 10,400 respondents were skipped out of the WHODAS questions because the sum of all imputation-revised K6 item scores¹³ was zero. Of these respondents who were skipped out of the WHODAS questions because of a zero total

¹¹ The content of the K6 and WHODAS in the 2014 NSDUH and procedures for scoring these scales are described further in Section B.4.3 in Section B.

¹² The number of final adult respondents differs from the number of interviews for adults presented in Section B because data in Section B are based on initial demographic information obtained from screener data.

¹³ Missing values in individual K6 items were assigned a value of zero for computing the imputation-revised K6 item scores.

K6 score, more than 10,000 responded to all K6 items. Of the approximately 40,500 final adult respondents who were asked the WHODAS questions in the 2014 NSDUH, about 2,200 had at least one of the eight WHODAS item scores missing, and about 100 had all eight item scores missing. As a result of assigning zeros to the K6 and WHODAS scores in these situations, there were no missing values in the 2014 survey for measures of adult serious mental illness (SMI) and other mental illness measures that were created from a model using K6 and WHODAS scores. Further details on the creation of these mental illness measures can be found in Section B.4.4 of this report's Section B.

A.3.2 Statistical Imputation

For substance use, demographic, and other key variables that still had missing or ambiguous values after editing, statistical imputation was used to replace these values with appropriate response codes. For estimates of substance use disorders (i.e., illicit drug or alcohol dependence and abuse) presented in reports and tables, missing values in the dependence or abuse variables were treated as though respondents did not meet the relevant criteria (i.e., they were treated the same as a response of "no"). The mental health variables related to mental health service utilization, suicidal thoughts and behavior, and MDE used in reports and tables were not imputed.

The remainder of this section discusses procedures for substance use and other variables that underwent statistical imputation to replace missing or ambiguous values. For example, a response is ambiguous if the editing procedures assigned a respondent's most recent use of a drug to "Used at some point in the lifetime," with no definite period within the lifetime. In this case, the imputation procedure assigns a value for when the respondent last used the drug (e.g., in the past 30 days, more than 30 days ago but within the past 12 months, more than 12 months ago). Similarly, if a response is completely missing, the imputation procedures replace missing values with nonmissing ones.

For most variables, missing or ambiguous values are imputed in NSDUH using a methodology called predictive mean neighborhoods (PMN), which was developed specifically for the 1999 survey and has been used in all subsequent survey years. PMN allows for the following: (1) the ability to use covariates to determine donors is greater than that offered in the hot-deck imputation procedure, (2) the relative importance of covariates can be determined by standard modeling techniques, (3) the correlations across response variables can be accounted for by making the imputation multivariate, and (4) sampling weights can be easily incorporated in the models. The PMN method has some similarity with the predictive mean matching method of Rubin (1986) except that, for the donor records, Rubin used the observed variable value (not the predictive mean) to compute the distance function. Also, the well-known method of nearest neighbor imputation is similar to PMN, except that the distance function is in terms of the original predictor variables and often requires somewhat arbitrary scaling of discrete variables. PMN is a combination of a model-assisted imputation methodology and a random nearest neighbor hot-deck procedure. The hot-deck procedure within the PMN method ensures that missing values are imputed to be consistent with nonmissing values for other variables. Whenever feasible, the imputation of variables using PMN is multivariate, in which imputation is accomplished on several response variables at once. Variables imputed using PMN are the core demographic variables, core drug use variables (recency of use, frequency of use, and age

at first use), income, health insurance, and noncore demographic variables for work status, immigrant status, and the household roster. [Table A.3](#) at the end of Section A summarizes the distribution of weighted statistical imputation rates of these variables by interview section.

In the modeling stage of PMN, the model chosen depends on the nature of the response variable. In the 2014 NSDUH, the models included binomial logistic regression, multinomial logistic regression, Poisson regression, time-to-event (survival) regression, and ordinary linear regression, where the models incorporated the sampling design weights.

In general, hot-deck imputation replaces an item nonresponse (missing or ambiguous value) with a recorded response that is donated from a "similar" respondent who has nonmissing data. For random nearest neighbor hot-deck imputation, the missing or ambiguous value is replaced by a responding value from a donor randomly selected from a set of potential donors. Potential donors are those defined to be "close" to the unit with the missing or ambiguous value according to a predefined function called a distance metric. In the hot-deck procedure of PMN, the set of candidate donors (the "neighborhood") consists of respondents with complete data who have a predicted mean close to that of the item nonrespondent. The predicted means are computed both for respondents with and without missing data, which differs from Rubin's method where predicted means are not computed for the donor respondent (Rubin, 1986). In particular, the neighborhood consists of either the set of the closest 30 respondents or the set of respondents with a predicted mean (or means) within 5 percent of the predicted mean(s) of the item nonrespondent, whichever set is smaller. If no respondents are available who have a predicted mean (or means) within 5 percent of the item nonrespondent, the respondent with the predicted mean(s) closest to that of the item nonrespondent is selected as the donor.

In the univariate case (where only one variable is imputed using PMN), the neighborhood of potential donors is determined by calculating the relative distance between the predicted mean for an item nonrespondent and the predicted mean for each potential donor, then choosing those means defined by the distance metric. The pool of donors is restricted further to satisfy logical constraints whenever necessary (e.g., age at first crack use must not be less than age at first cocaine use).

Whenever possible, missing or ambiguous values for more than one response variable are considered together. In this (multivariate) case, the distance metric is a Mahalanobis distance, which takes into account the correlation between variables (Manly, 1986), rather than a Euclidean distance. The Euclidean distance is the square root of the sum of squared differences between each element of the predictive mean vector for the respondent and the predictive mean vector for the nonrespondent. The Mahalanobis distance standardizes the Euclidean distance by the variance-covariance matrix, which is appropriate for random variables that are correlated or have heterogeneous variances. Whether the imputation is univariate or multivariate, only missing or ambiguous values are replaced, and donors are restricted to be logically consistent with the response variables that are not missing. Furthermore, donors are restricted to satisfy "likeness constraints" whenever possible. That is, donors are required to have the same values for variables highly correlated with the response. For example, donors for the age at first use variable are required to be of the same age as recipients, if at all possible. If no donors are available who meet these conditions, these likeness constraints can be loosened. Further details on the PMN methodology are provided by Singh, Grau, and Folsom (2002).

Although statistical imputation could not proceed separately within each state due to insufficient pools of donors, information about each respondent's state of residence was incorporated in the modeling and hot-deck steps. For most drugs, respondents were separated into three "state usage" categories as follows: respondents from states with high usage of a given drug were placed in one category, respondents from states with medium usage into another, and the remainder into a third category. This categorical "state rank" variable was used as one set of covariates in the imputation models. In addition, eligible donors for each item nonrespondent were restricted to be of the same state usage category (i.e., the same "state rank") as the nonrespondent.

Typically, approximately 90 percent of variables that underwent statistical imputation required less than 5 percent of their records to be logically assigned or statistically imputed. Variables for measures that are highly sensitive or that may not be known to younger respondents (e.g., family income) often have higher rates of item nonresponse. In addition, certain variables that are subject to a greater number of skip patterns and consistency checks (e.g., frequency of use in the past 12 months and past 30 days) often require greater amounts of imputation.

A.3.3 Development of Analysis Weights

The general approach to developing and calibrating analysis weights involved developing design-based weights as the product of the inverse of the selection probabilities at each selection stage. Since 2005, NSDUH has used a four-stage sample selection scheme in which an extra selection stage of census tracts was added before the selection of a segment. Thus, the design-based weights, d_k , incorporate an extra layer of sampling selection to reflect the sample design change. Adjustment factors, $a_k(\lambda)$, then were applied to the design-based weights to adjust for nonresponse, to poststratify to known population control totals, and to control for extreme weights when necessary. In view of the importance of state-level estimates with the 50-state design, it was necessary to control for a much larger number of known population totals. Several other modifications to the general weight adjustment strategy that had been used in past surveys also were implemented for the first time beginning with the 1999 CAI sample.

Weight adjustments were based on a generalization of Deville and Särndal's (1992) logit model. This generalized exponential model (GEM) (Folsom & Singh, 2000) incorporates unit-specific bounds, $(\ell_k, u_k), k \in s$, for the adjustment factor $a_k(\lambda)$ as follows:

$$a_k(\lambda) = \frac{\ell_k(u_k - c_k) + u_k(c_k - \ell_k)\exp(A_k x_k' \lambda)}{(u_k - c_k) + (c_k - \ell_k)\exp(A_k x_k' \lambda)},$$

where c_k are prespecified centering constants, such that $\ell_k < c_k < u_k$ and $A_k = (u_k - \ell_k) / (u_k - c_k)(c_k - \ell_k)$. The variables ℓ_k , c_k , and u_k are user-specified bounds, and λ is the column vector of p model parameters corresponding to the p covariates x . The λ parameters are estimated by solving

$$\sum_s x_k d_k a_k(\lambda) - \tilde{T}_x = 0,$$

where \tilde{T}_x denotes control totals that could be either nonrandom, as is generally the case with poststratification, or random, as is generally the case for nonresponse adjustment.

The final weights $w_k = d_k a_k(\lambda)$ minimize the distance function $\Delta(w, d)$ defined as

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

This general approach was used at several stages of the weight adjustment process, including (1) adjustment of household weights for nonresponse at the screener level, (2) poststratification of household weights to meet population controls for various household-level demographics by state, (3) adjustment of household weights for extremes, (4) poststratification of selected person weights, (5) adjustment of responding person weights for nonresponse at the questionnaire level, (6) poststratification of responding person weights, and (7) adjustment of responding person weights for extremes.

Every effort was made to include as many relevant state-specific covariates (typically defined by demographic domains within states) as possible in the multivariate models used to calibrate the weights (nonresponse adjustment and poststratification steps). Because further subdivision of state samples by demographic covariates often produced small cell sample sizes, it was not possible to retain all state-specific covariates (even after meaningful collapsing of covariate categories) and still estimate the necessary model parameters with reasonable precision. Therefore, a hierarchical structure was used in grouping states with covariates defined at the national level, at the census division level within the nation, at the state group within the census division, and, whenever possible, at the state level. In every case, the controls for the total population within a state and the five age groups (12 to 17, 18 to 25, 26 to 34, 35 to 49, 50 or older) within a state were maintained except that, in the last step of poststratification of person weights, six age groups (12 to 17, 18 to 25, 26 to 34, 35 to 49, 50 to 64, 65 or older) were used. Census control totals by age, race, gender, and Hispanic origin were required for the civilian, noninstitutionalized population of each state. Beginning with the 2002 NSDUH, the Population Estimates Branch of the U.S. Census Bureau has produced the necessary population estimates for the same year as each NSDUH survey in response to a special request.

Census control totals for the 2014 NSDUH weights were based on population estimates from the 2010 decennial census as for the 2011 through 2013 NSDUHs, whereas the control totals for the 2010 NSDUH weights were still based on the 2000 census. This shift to the 2010 census data for the 2011 NSDUH could have affected comparisons between substance use and mental health estimates in 2011 and onward and those from prior years. Section B.4.3 in Appendix B of the 2011 NSDUH national findings report (CBHSQ, 2012d) discusses the results of an investigation using data from 2010 and 2011 that assessed the effects of using control totals based on the 2010 census instead of the 2000 census for estimating substance use in 2010. Section B.4.5 in Appendix B of the 2011 NSDUH mental health findings report (CBHSQ,

2012c) discusses the results of a similar assessment of the effects of using control totals based on the 2010 census instead of the 2000 census for making mental health estimates for 2010.

Consistent with the surveys from 1999 onward, control of extreme weights through separate bounds for adjustment factors was incorporated into the GEM calibration processes for both nonresponse and poststratification. This is unlike the traditional method of winsorization in which extreme weights are truncated at prespecified levels and the trimmed portions of weights are distributed to the nontruncated cases. In GEM, it is possible to set bounds around the prespecified levels for extreme weights. Then the calibration process provides an objective way of deciding the extent of adjustment (or truncation) within the specified bounds. A step was included to poststratify the household-level weights to obtain census-consistent estimates based on the household rosters from all screened households. An additional step poststratified the selected person sample to conform to the adjusted roster estimates. This additional step takes advantage of the inherent two-phase nature of the NSDUH design. The respondent poststratification step poststratified the respondent person sample to external census data (defined within the state whenever possible, as discussed above).

For certain populations of interest, 2 years of NSDUH data were combined to obtain annual averages. The person-level weights for estimates based on the annual averages were obtained by dividing the analysis weights for the 2 specific years by a factor of 2.

Table A.1 Target Number of Completed Interviews and Number of State Sampling Regions in the 2013 and 2014 NSDUHs, by State

State	Target Number of Completed Interviews, 2013	Target Number of Completed Interviews, 2014	Number of SSRs, 2013	Number of SSRs, 2014
California	3,600	4,560	48	36
Florida	3,600	3,300	48	30
New York	3,600	3,300	48	30
Texas	3,600	3,300	48	30
Illinois	3,600	2,400	48	24
Michigan	3,600	2,400	48	24
Ohio	3,600	2,400	48	24
Pennsylvania	3,600	2,400	48	24
Georgia	900	1,500	12	15
New Jersey	900	1,500	12	15
North Carolina	900	1,500	12	15
Virginia	900	1,500	12	15
Hawaii	900	967	12	12
Remaining States, Each	900	960	12	12

NSDUH = National Survey on Drug Use and Health; SSR = State sampling region.

Table A.2 Target Sample Allocation, by Age Group, for the 2013 and 2014 NSDUHs

Year	12 to 17	18 to 25	26 or Older, Total	26 to 34	35 to 49	50 or Older
2013	22,500 (33%)	22,500 (33%)	22,500 (33%)	6,000 (9%)	9,000 (13%)	7,500 (11%)
2014	16,877 (25%)	16,877 (25%)	33,753 (50%)	10,126 (15%)	13,501 (20%)	10,126 (15%)

NSDUH = National Survey on Drug Use and Health.

Note: Percentages of the total sample are shown in parentheses.

Table A.3 Weighted Statistical Imputation Rates (Percentages) for the 2014 NSDUH, by Interview Section

Interview Section	Number of Variables	Mean	Minimum	25th Percentile	Median	75th Percentile	Maximum
Core Demographics	14	2.37	0.02	0.42	3.51	3.57	3.70
Core Drug Use ¹	98	1.96	0.01	0.17	1.09	2.66	9.95
Income and Health Insurance	17	1.99	0.31	0.41	0.71	2.21	10.46
Other Noncore Demographics ²	12	0.22	0.07	0.12	0.16	0.33	0.41

¹Core drug use variables do not include initiation variables beyond age at first use because these additional questions are asked only if respondents first used within 1 year of their current age.

²Other noncore demographic variables include work status, immigrant status, and household roster variables.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2014.

Section B: Statistical Methods and Measurement

B.1 Target Population

The estimates of the prevalence of substance use and mental health issues from the National Survey on Drug Use and Health (NSDUH) are designed to describe the target population of the survey—the civilian, noninstitutionalized population aged 12 or older living in the United States. This population covers residents of households (individuals living in houses or townhouses, apartments, condominiums; civilians living in housing on military bases, etc.) and individuals in noninstitutional group quarters (e.g., shelters, rooming or boarding houses, college dormitories, migratory workers' camps, halfway houses). In particular, the 2010 census reported that there were 308.7 million people of all ages living in the United States in 2010, of whom 300.8 million were living in households, or about 97 percent of the total population of the United States (Lofquist, Lugaila, O'Connell, & Feliz, 2012). Thus, the civilian, noninstitutionalized population aged 12 or older would be expected to include *at least* 97 percent of the total U.S. population aged 12 or older.

However, the civilian, noninstitutionalized population excludes some small subpopulations that may have very different estimates of mental disorders and substance use and therefore may have specific issues or needs. For example, the survey excludes active military personnel, who may be exposed to combat situations or stressors associated with extended overseas deployment. In addition, military personnel have been shown to have significantly lower rates of illicit drug use but higher rates of heavy alcohol use compared with their counterparts in the civilian population. The survey also excludes people living in institutional group quarters, such as prisons, residential substance abuse treatment or mental health facilities, nursing homes, and long-term hospitals. People in some of these institutional settings may have higher rates of mental or substance use disorders compared with the general population. Another subpopulation excluded from NSDUH consists of people with no fixed address (e.g., homeless and/or transient people not living in shelters); they are another population shown to have higher than average rates of mental disorders and illicit drug use. Section D in this report describes other surveys that provide substance use and mental health data for these populations.

B.2 Sampling Error and Statistical Significance

The sampling error of an estimate is the error caused by the selection of a sample instead of conducting a census of the population. The sampling error may be reduced by selecting a large sample, by using efficient sample design and estimation strategies (such as stratification, optimal allocation, and ratio estimation), or by taking both approaches. The use of probability sampling methods in NSDUH allows estimation of sampling error from the survey data.

Estimates based on NSDUH data are presented in reports and in sets of tables referred to as "detailed tables" and "mental health detailed tables" that are available at <http://www.samhsa.gov/data/>. The national estimates, along with the associated standard errors (SEs, which are the square roots of the variances), were computed for all detailed tables and mental health detailed tables using a multiprocedure package, SUDAAN[®] Software for Statistical Analysis of Correlated Data. This software uses a Taylor series linearization approach

that accounts the effects of NSDUH's complex design features in estimating the SEs (RTI International, 2012). The SEs are used to identify unreliable estimates and to test for the statistical significance of differences between estimates. The final, nonresponse-adjusted, and poststratified analysis weights were used in SUDAAN to compute unbiased design-based estimates.

B.2.1 Variance Estimation for Totals

The variances and SEs of estimates of means and proportions can be calculated reasonably well in SUDAAN using a Taylor series linearization approach. Estimates of means or proportions, \hat{p}_d , such as drug use prevalence estimates for a domain d , can be expressed as a ratio estimate:

$$\hat{p}_d = \frac{\hat{Y}_d}{\hat{N}_d},$$

where \hat{Y}_d is a linear statistic estimating the number of substance users in the domain d and \hat{N}_d is a linear statistic estimating the total number of individuals in domain d (including both users and nonusers). The SUDAAN software package is used to calculate direct estimates of \hat{Y}_d and \hat{N}_d (and, therefore, \hat{p}_d) and also can be used to estimate their respective SEs. A Taylor series approximation method implemented in SUDAAN provides the estimate for the SE of \hat{p}_d .

When the domain size, \hat{N}_d , is free of sampling error, an appropriate estimate of the SE for the total number of substance users is

$$SE(\hat{Y}_d) = \hat{N}_d SE(\hat{p}_d).$$

This approach is theoretically correct when the domain size estimates, \hat{N}_d , are among those forced to match their respective U.S. Census Bureau population estimates through the weight calibration process. In these cases, \hat{N}_d is not subject to a sampling error induced by the NSDUH design. That is, the Census Bureau population estimates are assumed to be free of sampling error induced by the NSDUH design. Section A.3.3 in Section A contains further information about the weight calibration process. In addition, more detailed information about the weighting procedures for 2014 will appear in the *2014 NSDUH Methodological Resource Book*, which is in process. Until that volume becomes available, refer to the *2013 NSDUH Methodological Resource Book* (Center for Behavioral Health Statistics and Quality [CBHSQ], 2015a).

For estimated domain totals, \hat{Y}_d , where \hat{N}_d is not fixed (i.e., where domain size estimates are not forced to match the U.S. Census Bureau population estimates), this formulation still may provide a good approximation if it can be assumed that the sampling variation in \hat{N}_d is

negligible relative to the sampling variation in \hat{p}_d . This is a reasonable assumption for many cases in this study.

For some subsets of domain estimates, the above approach can yield an underestimate of the SE of the total when \hat{N}_d was subject to considerable variation. Because of this underestimation, alternatives for estimating SEs of totals were implemented. Since the 2005 NSDUH report (Office of Applied Studies [OAS], 2006), a "mixed" method approach has been implemented for all detailed tables to improve the accuracy of SEs and to better reflect the effects of poststratification on the variance of total estimates. This approach assigns the methods of SE calculation to domains (i.e., subgroups for which the estimates were calculated) within tables so that all estimates among a select set of domains with fixed \hat{N}_d were calculated using the prior formula, and all other estimates were calculated directly in SUDAAN, regardless of what the other estimates are within the same table. The set of domains considered controlled (i.e., those with a fixed \hat{N}_d) was restricted to main effects and two-way interactions in order to maintain continuity between years. Domains consisting of three-way interactions may be controlled in a single year but not necessarily in preceding or subsequent years. The use of such SEs for the totals did not affect the SE estimates for the corresponding proportions presented in the same sets of tables because all SEs for means and proportions are calculated directly in SUDAAN. As a result of the use of this mixed-method approach, the SEs for the estimates of totals within many detailed tables were calculated differently from those in NSDUH reports prior to the 2005 report.

Table B.1 at the end of this section contains a partial list of domains with a fixed \hat{N}_d that were used in the weight calibration process, including all of the domains that were used in computing SEs for published NSDUH estimates. This table includes both the main effects and two-way interactions and may be used to identify the method of SE calculation employed for estimates of totals. For example, Tables 1.2 and 1.7 in the mental health detailed tables present estimates of any mental illness (AMI) and serious mental illness (SMI), respectively, among adults aged 18 or older within the domains of gender, Hispanic origin and race, and current employment. Estimates among the total population (age main effect), males and females (age by gender interaction), and Hispanics and non-Hispanics (age by Hispanic origin interaction) were treated as controlled in these tables, and the formula described earlier was used to calculate the SEs. The SEs for all other estimates, including white and black or African American (age by Hispanic origin by race interaction) were calculated directly from SUDAAN. Published NSDUH estimates for racial groups are for non-Hispanics. Thus, the domain for whites by age group in the weight calibration process in Table B.1 is a two-way interaction. However, published estimates for whites by age group for the 2014 NSDUH actually represent a three-way interaction: white by Hispanic origin (i.e., not Hispanic) by age group.

B.2.2 Suppression Criteria for Unreliable Estimates

As has been done in past survey years, direct estimates from NSDUH that are designated as unreliable are not shown in reports or tables and are noted by asterisks (*). The criteria used to define unreliability of direct estimates from NSDUH are based on the prevalence (for proportion estimates), relative standard error (RSE) (defined as the ratio of the SE over the estimate),

nominal (actual) sample size, and effective sample size for each estimate. These suppression criteria for various NSDUH estimates are summarized in [Table B.2](#) at the end of this section.

Proportion estimates (\hat{p}), or rates, within the range $[0 < \hat{p} < 1]$, and the corresponding estimated numbers of users were suppressed if

$$\text{RSE}[-\ln(\hat{p})] > .175 \text{ when } \hat{p} \leq .5$$

or

$$\text{RSE}[-\ln(1 - \hat{p})] > .175 \text{ when } \hat{p} > .5 .$$

The threshold of .175 in the above rule was chosen because it equates with a suppression threshold based on an effective sample size of 68 when $\hat{p} = .05, .50, \text{ or } .95$ (i.e., if the threshold were increased, then that would equate with a lower suppression threshold based on effective sample size, and vice versa).

Using a first-order Taylor series approximation to estimate $\text{RSE}[-\ln(\hat{p})]$ and $\text{RSE}[-\ln(1 - \hat{p})]$, the following equation was derived and used for computational purposes when applying a suppression rule dependent on effective sample size:

$$\frac{\text{SE}(\hat{p}) / \hat{p}}{-\ln(\hat{p})} > .175 \text{ when } \hat{p} \leq .5$$

or

$$\frac{\text{SE}(\hat{p}) / (1 - \hat{p})}{-\ln(1 - \hat{p})} > .175 \text{ when } \hat{p} > .5 .$$

The separate formulas for $\hat{p} \leq .5$ and $\hat{p} > .5$ produce a symmetric suppression rule; that is, if \hat{p} is suppressed, $1 - \hat{p}$ will be suppressed as well (see [Figure B.1](#) following [Table B.2](#)). [Figure B.1](#) also illustrates how this suppression rule can equivalently be expressed as a suppression rule based on the effective sample size as a function of \hat{p} . The figure illustrates that when $.05 < \hat{p} < .95$, the symmetric properties of the rule produce a local minimum effective sample size of 50 at $\hat{p} = .2$ and at $\hat{p} = .8$, but as \hat{p} moves away from these two points then the suppression threshold increases to a maximum of an effective sample size of 68 reached at $\hat{p} = .05$ or $.95$, or at the local maximum, $\hat{p} = .50$. Therefore, to simplify requirements and maintain a conservative suppression rule, estimates of \hat{p} between .05 and .95 were suppressed if they had an effective sample size below 68 (indicated by a horizontal line at 68 in [Figure B.1](#)); the suppression rule was left unchanged for estimates of \hat{p} outside of this range, which will require increasingly larger effective sample sizes in order to avoid suppression. For example, an effective sample size of 153, 232, and 684 is needed when $\hat{p} = .01, .005, \text{ and } .001$, respectively.

In addition, a minimum nominal sample size suppression criterion ($n = 100$) that protects against unreliable estimates caused by small design effects and small nominal sample sizes was employed; [Table B.2](#) shows a formula for calculating design effects. Prevalence estimates also were suppressed if they were close to 0 or 100 percent (i.e., if $\hat{p} < .00005$ or if $\hat{p} \geq .99995$).

Beginning with the 1991 survey, the suppression rule for proportions based on $RSE[-\ln(\hat{p})]$ described previously replaced a rule in which data were suppressed whenever $RSE(\hat{p}) > .5$. This rule was changed because the rule prior to 1991 imposed a very stringent application for suppressing estimates when \hat{p} is small but imposed a very lax application for large \hat{p} . The new rule ensured a more uniformly stringent application across the whole range of \hat{p} (i.e., from 0 to 1). The previous rule also was asymmetric in the sense that suppression only occurred in terms of \hat{p} . That is, there was no complementary rule for $(1 - \hat{p})$, which the current NSDUH suppression criteria for proportions take into account.

Estimates of totals were suppressed if the corresponding prevalence rates were suppressed. Estimates of means that are not bounded between 0 and 1 (e.g., mean of age at first use) were suppressed if the RSEs of the estimates were larger than .5 or if the nominal sample size was smaller than 10 respondents. This rule was based on an empirical examination of the estimates of mean age of first use and their SEs for various empirical sample sizes. Although arbitrary, a sample size of 10 appeared to provide sufficient precision and still allow reporting by year of first use for many substances.

B.2.3 Statistical Significance of Differences

This section describes the methods used to compare prevalence estimates in this report. Customarily, the observed difference between estimates is evaluated in terms of its statistical significance. Statistical significance is based on the p value of the test statistic and refers to the probability that a difference as large as that observed would occur due to random variability in the estimates if there were no differences in the prevalence estimates being compared. The significance of observed differences in this report is reported at the .05 level. When comparing prevalence estimates, the null hypothesis (no difference between prevalence estimates) was tested against the alternative hypothesis (there is a difference in prevalence estimates) using the standard t test (with the appropriate degrees of freedom) for the difference in proportions test, expressed as

$$t_{df} = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\text{var}(\hat{p}_1) + \text{var}(\hat{p}_2) - 2\text{cov}(\hat{p}_1, \hat{p}_2)}}$$

where df = the appropriate degrees of freedom, \hat{p}_1 = the first prevalence estimate, \hat{p}_2 = the second prevalence estimate, $\text{var}(\hat{p}_1)$ = the variance of the first prevalence estimate, $\text{var}(\hat{p}_2)$ = the variance of the second prevalence estimate, and $\text{cov}(\hat{p}_1, \hat{p}_2)$ = covariance between \hat{p}_1 and \hat{p}_2 . In cases where significance tests between years were performed, the prevalence estimate from the earlier year becomes the first prevalence estimate, and the prevalence estimate from the

later year becomes the second prevalence estimate (e.g., 2013 is the first estimate and 2014 the second).

Under the null hypothesis, the test statistic t is a random variable that asymptotically follows a t -distribution. Therefore, calculated values of t , along with the appropriate degrees of freedom, can be used to determine the corresponding probability level (i.e., p value). Whether testing for differences between years or from different populations within the same year, the covariance term in the formula for t will, in general, not be equal to 0. SUDAAN was used to compute estimates of t along with the associated p values using the analysis weights and accounting for the sample design as described in Section A of this report. A similar procedure and formula for t were used for estimated totals. Whenever it was necessary to calculate the SE outside of SUDAAN (i.e., when domains were forced by the weighting process to match their respective U.S. Census Bureau population estimates), the corresponding test statistics also were computed outside of SUDAAN.

Under the null hypothesis, the test statistic with known variances asymptotically follows a standard normal (Z) distribution. However, because the variances of the test statistic are estimated, its distribution is more accurately described by the t -distribution for finite sample sizes. As the degrees of freedom approach infinity, the t -distribution approaches the Z distribution. Because most tests that were performed for the 2014 NSDUH have 750 degrees of freedom,¹⁴ the t tests performed produce approximately the same numerical results as if a Z test had been performed.

When comparing population subgroups across three or more levels of a categorical variable, log-linear chi-square tests of independence of the subgroups and the prevalence variables were conducted using SUDAAN in order to first control the error level for multiple comparisons. If, and only if, Shah's Wald F test (transformed from the standard Wald chi-square) indicated overall significant differences, the significance of each particular pairwise comparison of interest was tested using SUDAAN analytic procedures to properly account for the sample design (RTI International, 2012). This two-step procedure protected against inappropriate inferences being drawn due to the number of pairwise differences that were tested.¹⁵ Using the published estimates and SEs to perform independent t tests for the difference of proportions will typically provide similar results as tests performed in SUDAAN. However, results may differ for two reasons: (1) the covariance term is included in SUDAAN tests, whereas it is not included in independent t tests; and (2) the reduced number of significant digits shown in the published estimates may cause rounding errors in the independent t tests.

¹⁴ The degrees of freedom for most statistical tests are calculated as the number of primary sampling units (variance replicates) minus the number of strata. Because there are two replicates per stratum, 750 degrees of freedom equal the number of strata in the national sample for 2014. However, the degrees of freedom are smaller for some statistical comparisons in five tables on initiation for the 2014 NSDUH.

¹⁵ Other statistical methods have been used for comparisons of pairwise differences across three or more levels of a categorical variable once an overall test (such as Shah's F) suggests there are differences. Although a Bonferroni adjustment can be applied to every pairwise difference (i.e., and not just to the pairwise difference with the lowest p value, which is sometimes recommended instead of Shah's F as an alternative overall test), this is an overly conservative procedure. For example, if a p value of .05 is set as the criterion for statistical significance and there are three pairwise comparisons, then the Bonferroni-adjusted p value for statistical significance becomes .017 (i.e., .05 divided by 3 equals .017).

A caution in interpreting trends in totals (e.g., estimated numbers of users) is that respondents with large analysis weights can greatly influence the estimated total in a given year when the number of individuals in the population with the characteristic of interest is relatively small. For example, the numbers of individuals aged 12 or older who were past year heroin users in 2005 and 2006 (379,000 and 580,000, respectively) were not significantly different. In contrast, the estimate in 2007 (366,000) was significantly different from the estimated number in 2006, but it was not significantly different from the estimate in 2005. The estimate for 2006 was determined to be affected by large analysis weights for a small number of heroin users and suggests that the estimated numbers of past year and past month heroin users in 2006 were statistical anomalies. This finding also underscores the importance of reviewing trends across a larger range of years especially for outcome measures that correspond to a relatively small proportion of the total population.

B.3 Other Information on Data Accuracy

The accuracy of survey estimates can be affected by nonresponse, coding errors, computer processing errors, errors in the sampling frame, reporting errors, and other errors not due to sampling. They are sometimes referred to as "nonsampling errors." These types of errors and their impact are reduced through data editing, statistical adjustments for nonresponse, close monitoring and periodic retraining of interviewers, and improvement in various quality control procedures.

Although these types of errors often can be much larger than sampling errors, measurement of most of these errors is difficult. However, some indication of the effects of some types of these errors can be obtained through proxy measures, such as response rates, and from other research studies.

B.3.1 Screening and Interview Response Rate Patterns

Starting in 2002, respondents received a \$30 incentive in an effort to maximize response rates. The weighted screening response rate (SRR) is defined as the weighted number of successfully screened households¹⁶ divided by the weighted number of eligible households (as defined in [Table B.3](#)), 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 and excludes all adjustments for nonresponse and poststratification defined in Section A.3.3 of Section A. Of the 154,533 eligible households sampled for the 2014 NSDUH, 127,605 were screened successfully, for a weighted screening response rate of 81.9 percent ([Table B.3](#)). At the person level, the weighted interview response rate (IRR) is defined as the weighted

¹⁶ 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.

number of respondents divided by the weighted number of selected individuals (see [Table B.4](#)), or

$$IRR = \frac{\sum w_i \text{complete}_i}{\sum w_i \text{selected}_i},$$

where w_i is the inverse of the probability of selection for the person and includes household-level nonresponse and poststratification adjustments (adjustments 1, 2, and 3 in Section A.3.3 of Section A). To be considered a completed interview, a respondent must provide enough data to pass the usable case rule.¹⁷ In the 127,605 screened households, a total of 91,640 sampled individuals were selected, and completed interviews were obtained from 67,901 of these sampled individuals, for a weighted IRR of 71.2 percent ([Table B.4](#)). A total of 17,492 sampled individuals (21.0 percent) were classified as refusals or parental refusals, 3,210 (3.2 percent) were not available or never at home, and 3,037 (4.6 percent) did not participate for various other reasons, such as physical or mental incompetence or language barrier (see [Table B.4](#), which also shows the distribution of the selected sample by interview code and age group). Among demographic subgroups, the weighted IRR was higher among 12 to 17 year olds (80.0 percent), females (72.8 percent), blacks (76.5 percent), individuals in the South (72.4 percent), and residents of nonmetropolitan areas (73.8 percent) than among other related groups ([Table B.5](#)).

The overall weighted response rate, defined as the product of the weighted screening response rate and weighted interview response rate or

$$ORR = SRR \times IRR,$$

was 58.3 percent in 2014. Nonresponse bias can be expressed as the product of the nonresponse rate ($1 - R$) and the difference between the characteristic of interest between respondents and nonrespondents in the population ($P_r - P_{nr}$). By maximizing NSDUH response rates, it is hoped that the bias due to the difference between the estimates from respondents and nonrespondents is minimized. Drug use surveys are particularly vulnerable to nonresponse because of the difficult nature of accessing heavy drug users. However, in a study that matched 1990 census data to 1990 National Household Survey on Drug Abuse (NHSDA) nonrespondents,¹⁸ it was found that populations with low response rates did not always have high drug use rates. For example, although some populations were found to have low response rates and high drug use rates (e.g., residents of large metropolitan areas and males), other populations had low response rates and low drug use rates (e.g., older adults and high-income populations). Therefore, many of the potential sources of bias tend to cancel each other in estimates of overall prevalence (Gfroerer, Lessler, & Parsley, 1997a). However, this study has not been conducted again in recent years to determine whether these earlier findings can be replicated.

¹⁷ 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.

¹⁸ Prior to 2002, NSDUH was known as the National Household Survey on Drug Abuse (NHSDA).

B.3.2 Inconsistent Responses and Item Nonresponse

Among survey participants, item response rates were generally very high for most mental health and drug use items. For example, 0.3 percent of the adult respondents in 2014 had missing data (i.e., responses other than "yes" or "no") for whether they received mental health services in the past 12 months as an inpatient, and 0.5 percent had missing data for whether they received outpatient mental health services in this period. Also, about 0.6 percent of adults had missing data for questions about suicidal thoughts and behavior. About 0.9 to 1.2 percent of adults had missing data for questions about specific lifetime symptoms of depression; the highest percentage of missing data (1.2 percent) occurred in the question about the specific number of pounds that respondents lost without trying to lose weight (question AD26f in the adult depression module). In addition, about 0.8 to 1.0 percent of adults had missing data for these lifetime depression symptom questions because they had missing data (e.g., answers of "don't know" or "refused") for preceding questions that needed to be answered affirmatively in order for them to be asked the questions about depression symptoms. Information on item nonresponse for questions used to measure psychological distress and functional impairment among adults is presented in Section A.3.1 in Section A of this report.

For respondents aged 12 to 17 in the 2014 NSDUH, 0.6 to 1.4 percent had missing data for whether they received mental health services from specific sources in the past 12 months. About 1.6 to 2.2 percent had missing data for questions about specific lifetime symptoms of depression; as in the case of adults, the highest percentage of missing data for the depression items (2.2 percent) occurred in the question about the specific number of pounds that youths lost without trying (question YD26f in the adolescent depression module). About 1.4 to 1.8 percent of youths had missing data for these lifetime depression symptom questions because they had missing data for preceding questions that youths needed to answer affirmatively in order to be asked the questions about depression symptoms.

In order to minimize respondent confusion, inconsistent responses, and item nonresponse, the NSDUH computer-assisted interviewing (CAI) instrumentation is programmed to skip respondents out of the mental health and other questions that would not apply based on their answers to previous questions. This skip logic reduced the potential for inconsistent data by limiting respondents' opportunity to provide answers that were inconsistent with previous answers. For example, if adult respondents did not report that they stayed overnight in a hospital or other facility to receive mental health services in the past 12 months, they were not asked questions about the type of inpatient facility where they received mental health services, the number of nights they spent in inpatient facilities, or the payment sources for their inpatient mental health services in that period. Thus, respondents could not report that they did not receive inpatient mental health services in the past 12 months and then answer one or more of these additional questions as though they had.

However, programming of skip patterns within the CAI instrument did not eliminate all occurrences of missing or inconsistent data. Respondents could give inconclusive or inconsistent information about whether they ever used a given drug (i.e., "yes" or "no") and, if they had used a drug, when they last used it; the latter information is needed to identify those lifetime users of a drug who used it in the past year or past month. These missing or inconsistent responses first are resolved where possible through a logical editing process. Additionally, missing or inconsistent

responses are imputed using statistical methodology. These imputation procedures in NSDUH are based on responses to multiple questions, so that all of the relevant information is used in determining whether a respondent is classified as a user or nonuser, and if the respondent is classified as a user, whether the respondent is classified as having used in the past year or the past month. For example, ambiguous data on the most recent use of cocaine are statistically imputed based on a respondent's data for use (or most recent use) of tobacco products, alcohol, inhalants, marijuana, hallucinogens, and nonmedical use of prescription psychotherapeutic drugs. Nevertheless, editing and imputation of missing responses are potential sources of measurement error.

As was the case with the drug use variables, the CAI skip logic also did not eliminate all opportunities for inconsistent reports in the mental health questions. Consequently, the logical editing procedures for the mental health data could slightly increase the amount of missing data when inconsistent answers were given. For example, if adult or adolescent respondents who met the criteria for a lifetime major depressive episode (MDE) (see Section B.4.5) reported an age at onset for depression symptoms¹⁹ that was greater than their current age, the inconsistent age-at-onset variable was set to a missing value. However, the number of respondents in 2014 with this inconsistency was small (i.e., fewer than 10 respondents aged 12 or older).

For more information on editing and statistical imputation, see Sections A.3.1 and A.3.2 of Section A. Details of the editing and imputation procedures for 2014 also will appear in the *2014 NSDUH Methodological Resource Book*, which is in process. Until that volume becomes available, refer to the *2013 NSDUH Methodological Resource Book* (CBHSQ, 2015a).

B.3.3 Reliability of NSDUH Measures

As noted previously, measurement of most types of nonsampling errors can be difficult. However, reliability studies that involve reinterviewing survey respondents provide a direct measure of error due to response variance. Stated another way, the capability of a survey to provide accurate data, and consequent population estimates, can be examined by assessing the consistency of respondents' answers from separate administrations of the survey at two different time points. Low reliability of answers at different time points can raise concerns about the validity of estimates, especially when respondents are asked questions on sensitive topics.

Therefore, a study was conducted as part of the 2006 NSDUH to assess the reliability of responses to the NSDUH questionnaire. An interview/reinterview method was employed in which 3,136 individuals who had participated in the 2006 NSDUH were reinterviewed between 5 to 15 days after their initial NSDUH interview. The reliability of the responses was assessed by comparing the responses of the first interview with the responses from the reinterview. Responses from the first interview and reinterview that were analyzed for response consistency

¹⁹ Adults were asked to report the age when they first had a period of 2 weeks or longer when they were sad or discouraged or lost interest in most things for most of the day nearly every day and also reported that they had some symptoms of depression. Adolescents were asked to report the age when they first had a period of 2 weeks or longer when they were sad, discouraged, or really bored and also reported that they had some symptoms of depression.

were data that had been only minimally edited for ease of analysis and had not been imputed (raw data) (see Sections A.3.1 and A.3.2 of Section A).

This section summarizes results for the reliability of selected variables related to substance use, mental health, and demographic characteristics. Reliability is expressed by estimates of Cohen's kappa (κ), which ranges from -1.00 to 1.00 (Cohen, 1960). Cohen's kappa can be interpreted according to benchmarks proposed by Landis and Koch (1977, p. 165): (1) *poor* agreement for kappas less than 0.00, (2) *slight* agreement for kappas of 0.00 to 0.20, (3) *fair* agreement for kappas of 0.21 to 0.40, (4) *moderate* agreement for kappas of 0.41 to 0.60, (5) *substantial* agreement for kappas of 0.61 to 0.80, and (6) *almost perfect* agreement for kappas of 0.81 to 1.00.

The kappa values for the lifetime and past year substance use variables for marijuana use, alcohol use, and cigarette use among individuals aged 12 or older all showed almost perfect response consistency, ranging from 0.82 for past year marijuana use to 0.93 for lifetime marijuana use and past year cigarette use. The value obtained for the substance dependence or abuse measure in the past year showed substantial agreement (0.67), while the substance abuse treatment variable showed almost perfect consistency in both the lifetime (0.89) and past year (0.87).

Among adults, the values for past year outpatient mental health services and use of prescription medication for a mental health issue showed almost perfect consistency (0.85 each). Reliability statistics for the adult MDE measures were moderate to substantial (lifetime: 0.67; past year: 0.52). The values for the lifetime and past year substance use variables (marijuana use, alcohol use, and cigarette use) also showed almost perfect response consistency, ranging from 0.82 for past year marijuana use to 0.93 for lifetime marijuana use and past year cigarette use.

The value obtained for the substance dependence or abuse measure in the past year showed substantial agreement (0.67), while the substance abuse treatment variable showed almost perfect consistency in both the lifetime (0.89) and past year (0.87). The variables for age at first use of marijuana and perceived great risk of smoking marijuana once a month showed substantial agreement (0.74 and 0.68, respectively).

A dichotomous measure of whether adults had scores of less than 13 or scores of 13 or higher based on six items (the Kessler-6 or K6 scale; see Section B.4.3 in this report for more information on the K6 scale) was used to estimate symptoms of psychological distress during the one month in the past 12 months when respondents were at their worst emotionally.²⁰ This measure showed substantial agreement (0.64) between the first interview and the reinterview. The kappa for the K6 score, which ranged from 0 to 24, was weak (0.21) when exact agreement was required between the scores from the first interview and the reinterview. When the K6 scores were allowed to differ by no more than three points between the two interviews, however, the kappa increased to 0.63.

The demographic variables showed almost perfect agreement, ranging from 0.95 for current enrollment in school to 1.00 for gender. For further information on the reliability of a

²⁰ In NSDUHs prior to 2008, a score of 13 or higher on the K6 scale was used to define a measure of serious psychological distress (SPD) among adults.

wide range of measures contained in NSDUH, see the complete methodology report (Chromy et al., 2010).

B.3.4 Validity of Self-Reported Substance Use

Most estimates of substance use, including those produced for NSDUH, are based on self-reports of use. Although studies generally have supported the validity of self-report data, it is well documented that these data may be biased (underreported or overreported). The bias varies by several factors, including the mode of administration, the setting, the population under investigation, and the type of drug (Aquilino, 1994; Brener et al., 2006; CBHSQ, 2012b; Harrison & Hughes, 1997; Tourangeau & Smith, 1996; Turner, Lessler, & Gfroerer, 1992). NSDUH utilizes widely accepted methodological practices for increasing the accuracy of self-reports, such as encouraging privacy through audio computer-assisted self-interviewing (ACASI) and providing assurances that individual responses will remain confidential. Comparisons using these methods within NSDUH have shown that they reduce reporting bias (Gfroerer, Eyerman, & Chromy, 2002). Various procedures have been used to validate self-report data, such as biological specimens (e.g., urine, hair, saliva), proxy reports (e.g., family member, peer), and repeated measures (e.g., to identify recanting of previous reports of use) (Fendrich, Johnson, Sudman, Wislar, & Spiehler, 1999). However, these procedures often are impractical or too costly for general population epidemiological studies (SRNT Subcommittee on Biochemical Verification, 2002).

A study cosponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA) and the National Institute on Drug Abuse (NIDA) examined the validity of NSDUH self-report data on drug use among people aged 12 to 25. The study found that it is possible to collect urine and hair specimens with a relatively high response rate in a general population survey, and that most youths and young adults reported their recent drug use accurately in self-reports (Harrison, Martin, Enev, & Harrington, 2007). However, there were some reporting differences in either direction, with some respondents not reporting use but testing positive, and some reporting use but testing negative. Technical and statistical problems related to the hair tests precluded presenting comparisons of self-reports and hair test results, while small sample sizes for self-reports and positive urine test results for opiates and stimulants precluded drawing conclusions about the validity of self-reports of these drugs. Furthermore, inexactness in the window of detection for drugs in biological specimens and biological factors affecting the window of detection could account for some inconsistency between self-reports and urine test results.

B.3.5 Revised Estimates for 2006 to 2010

During regular data collection and processing checks for the 2011 NSDUH, data errors were identified. These errors resulted from fraudulent cases submitted by field interviewers and affected the data for Pennsylvania (2006 to 2010) and Maryland (2008 and 2009). Although all fraudulent interview cases were removed from the data files, the sample dwelling units (SDUs) that were associated with the falsified interviews were not removed because they were part of the assigned sample. Instead, at the household screening stage, these SDUs were assigned a final screening code of 39 ("Fraudulent Case") and were treated as incomplete with unknown eligibility. The screening eligibility status for these cases then was imputed. Those cases that

were imputed to be eligible were treated as unit nonrespondents for weighting purposes; however, these cases were not treated differently from other unit nonrespondents in the weighting process in 2006 to 2010 (see Section A.3.3 in Section A).

Table B.3 in Appendix B of the 2011 mental health findings report (CBHSQ, 2012c) presents screening results for 2010, the last year that was affected by these errors. Cases that were imputed to be eligible are classified with a final code of 39 ("Fraudulent Case"; see Table B.3 in this report). The cases that were imputed to be ineligible did not contribute to the weights and were reported as "Other, Ineligible" in the affected years. Because any cases with falsified screening or interview data were treated either as ineligible or as unit nonrespondents at the screening level, they did not have any associated interview data (see Table B.4). However, some estimates for 2006 to 2010 in the national reports from the 2014 NSDUH, as well as other new reports, may differ from corresponding estimates found in some previous reports. Similarly, some estimates for 2006 to 2010 in the 2014 detailed tables or mental health detailed tables may differ from estimates found in previous tables.

These errors had minimal impact on the national estimates and no effect on direct estimates for the other 48 states and the District of Columbia. In reports where model-based small area estimation techniques are used, estimates for all states may be affected, even though the errors were concentrated in only two states. In reports that do not use model-based estimates, the only estimates appreciably affected are estimates for Pennsylvania, Maryland, the mid-Atlantic division, and the Northeast region. Tables and estimates based only on data since 2011 are unaffected by these data errors.

The 2014 national reports do not include region-level, division-level, state-level, or model-based estimates. However, national NSDUH reports through the 2013 NSDUH show estimates for the Northeast region or mid-Atlantic division (or both). Corrected single-year estimates based on 2006 to 2010 data and estimates based on pooled data including any of these years may differ from previously published estimates.

Caution is advised when comparing data from older reports with data from more recent reports that are based on corrected data files. As discussed previously, comparisons of estimates for Pennsylvania, Maryland, the mid-Atlantic division, and the Northeast region are of most concern, while comparisons of national data or data for other states and regions are essentially still valid. CBHSQ within SAMHSA has produced a selected set of corrected versions of reports and tables. In particular, CBHSQ has released a set of modified detailed tables that include revised 2006 to 2010 estimates for the mid-Atlantic division and the Northeast region for certain key measures. CBHSQ does not recommend making comparisons between unrevised 2006 to 2010 estimates and estimates based on data for 2011 and subsequent years for the geographic areas of greatest concern.

B.4 Measurement Issues

Several measurement issues associated with the 2014 NSDUH are discussed in this section. Specifically, these issues include the methods for measuring incidence (i.e., initiation) of substance use, substance dependence and abuse, and mental health issues.

B.4.1 Incidence of Substance Use

In epidemiological studies, incidence is defined as the number of new cases of a disease occurring within a specific period of time. Similarly, in substance use studies, incidence refers to the first use of a particular substance.

In the 2004 NSDUH national findings report (OAS, 2005), a new measure related to incidence was introduced. The incidence measure is termed as "past year initiation" and refers to respondents whose date of first use of a substance was within the 12 months prior to their interview date. This measure is determined by self-reported past year use, age at first use, year and month of recent new use, and the interview date.

Since 1999, the survey questionnaire has collected year and month of first use for recent initiates (i.e., individuals who used a particular substance for the first time in a given survey year). Month, day, and year of birth also are obtained directly or are imputed for item nonrespondents as part of the data postprocessing. Additionally, the CAI instrument records and provides the date of the interview. By imputing a day of first use within the year and month of first use, a specific date of first use can be used for estimation purposes.

Past year initiation among individuals using a substance in the past year can be viewed as an indicator variable defined as follows:

$$I_{(\text{Past Year Initiate})} \text{ if } [(\text{MM/DD/YYYY})_{\text{Interview}} - (\text{MM/DD/YYYY})_{\text{First Use of Substance}}] \leq 365$$

where $(\text{MM/DD/YYYY})_{\text{Interview}}$ denotes the month, day, and year of the interview, and $(\text{MM/DD/YYYY})_{\text{First Use of Substance}}$ denotes the date of first use. The total number of past year initiates can be used in the estimation of different percentages. Denominators for these percentages vary according to whether rates are being estimated for (1) all individuals in the population (or all individuals in a subgroup of the population, such as individuals in a given age group); (2) individuals who are at risk for initiation because they have not used the substance of interest prior to the past 12 months; or (3) past year users of the substance. The detailed tables show all three of these percentages.

Calculation of estimates of past year initiation do not take into account whether a respondent initiated substance use while a resident of the United States. This method of calculation allows for direct comparability with other standard measures of substance use because the populations of interest for the measures will be the same (i.e., both measures examine all possible respondents and are not restricted to those initiating substance use only in the United States).

One important note for incidence estimates is the relationship between main categories and subcategories of substances (e.g., illicit drugs would be a main category, and inhalants and marijuana would be subcategories in relation to illicit drugs). For most measures of substance use, any member of a subcategory is by necessity a member of the main category (e.g., if a respondent is a past month user of a particular drug, then he or she is also a past month user of illicit drugs in general). However, this is not the case with regard to incidence statistics. Because an individual can only be an initiate of a particular substance category (main or sub) a single

time, a respondent with lifetime use of multiple substances may not, by necessity, be included as a past year initiate of a main category, even if he or she were a past year initiate for a particular subcategory because his or her first initiation of other substances within the main category could have occurred earlier.

In addition to estimates of the number of individuals initiating use of a substance in the past year, estimates of the mean age of past year initiates of these substances are computed. Unless specified otherwise, estimates of the mean age at initiation in the past 12 months have been restricted to people aged 12 to 49 so that the mean age estimates reported are not influenced by those few respondents who were past year initiates and were aged 50 or older. As a measure of central tendency, means are influenced heavily by the presence of extreme values in the data, and this constraint should increase the utility of these results to health researchers and analysts by providing a better picture of the substance use initiation behaviors among the civilian, noninstitutionalized population in the United States. This constraint was applied only to estimates of mean age at first use and does not affect estimates of the numbers of new users or the incidence rates.

Although past year initiates aged 26 to 49 are assumed not to be as likely as past year initiates aged 50 or older to influence mean ages at first use, caution still is advised in interpreting trends in these means. Sampling error in initiation estimates for people aged 26 to 49 can affect year-to-year interpretation of trends (see Section B.2). Consequently, review of substance initiation trends across a larger range of years is especially advised for this age group. See Section B.4.1 in Appendix B of the 2013 national findings report for further discussion of data on trends for past year initiates aged 26 to 49 (CBHSQ, 2014d).

Because NSDUH is a survey of people aged 12 years old or older at the time of the interview, younger individuals in the SDUs are not eligible for selection into the NSDUH sample. Some of these younger individuals may have initiated substance use during the past year. As a result, past year initiate estimates suffer from undercoverage if a reader assumes that these estimates reflect all initial users instead of reflecting only those above the age of 11. For earlier years, data can be obtained retrospectively based on the age at and date of first use. As an example, individuals who were 12 years old on the date of their interview in the 2014 survey may report having initiated use of cigarettes between 1 and 2 years ago; these individuals would have been past year initiates reported in the 2013 survey had individuals who were 11 years old on the date of the 2013 interview been allowed to participate in the survey. Similarly, estimates of past year use by individuals aged 10 or younger can be derived from the current survey, but they apply to initiation in prior years and not the survey year.

To get a rough estimate of the potential undercoverage in the current year, reports of substance use initiation reported by individuals aged 12 or older were estimated for the years in which these individuals would have been 1 to 11 years younger. These estimates do not necessarily reflect behavior by individuals 1 to 11 years younger in the current survey. Instead, the data for the 11 year olds reflect initiation in the year prior to the current survey, the data for the 10 year olds reflect behavior between the 12th and 23rd months prior to this year's survey, and so on. A crude way to adjust for the difference in the years that the estimate pertains to without considering changes in the population is to apply an adjustment factor to each age-based estimate of past year initiates. This adjustment factor can be based on a ratio of lifetime users

aged 12 to 17 in the current survey year to the same estimate for the prior applicable survey year. To illustrate the calculation, consider past year use of alcohol in 2014 based on data from the 2014 NSDUH. In 2014, 58,041 individuals who were 12 years old were estimated to have initiated use of alcohol between 1 and 2 years earlier. These individuals would have been past year initiates in the 2013 survey conducted on the same dates had the 2013 survey covered younger people. The estimated number of lifetime users currently aged 12 to 17 was 7,375,125 for 2014 and 7,669,220 for 2013, indicating fewer overall initiates of alcohol use among individuals aged 17 or younger in 2014. Thus, an adjusted estimate of initiation of alcohol use by individuals who were 11 years old in 2014 is given by

$$(\text{Estimated Past Year Initiates Aged 11})_{2013} \times \frac{(\text{Estimated Lifetime Users Aged 12 to 17})_{2014}}{(\text{Estimated Lifetime Users Aged 12 to 17})_{2013}}$$

This yielded an adjusted estimate of 55,815 individuals who were 11 years old on a 2014 survey date and initiating use of alcohol in the past year:

$$58,041 \times \frac{7,375,125}{7,669,220} = 55,815.$$

A similar procedure was used to adjust the estimated number of past year initiates among individuals who would have been 10 years old on the date of the interview in 2012 and for younger individuals in earlier years. The overall adjusted estimate for past year initiates of alcohol use by individuals 11 years of age or younger on the date of the interview was 112,059, or about 2.4 percent of the estimate based on past year initiation only by individuals aged 12 or older ($112,059 \div 4,655,448 = 0.0241$). Based on similar analyses, the estimated undercoverage of past year initiates in 2014 was 2.7 percent for cigarettes, 0.7 percent for marijuana, and 19.7 percent for inhalants.

The undercoverage of past year initiates aged 11 or younger also affects the mean age at first use estimate. An adjusted estimate of the mean age at first use was calculated using a weighted estimate of the mean age at first use based on the current survey and the numbers of individuals aged 11 or younger in the past year obtained in the aforementioned analysis for estimating undercoverage of past year initiates. Analysis results on 2014 data showed that the mean age at first use was changed from 17.3 to 17.1 for alcohol, from 18.6 to 18.3 for cigarettes, from 18.5 to 18.4 for marijuana, and from 18.2 to 16.5 for inhalants.

B.4.2 Illicit Drug and Alcohol Dependence and Abuse

The 2014 NSDUH CAI instrumentation continued to include questions that were designed to measure alcohol and illicit drug dependence and abuse. For these substances,²¹ dependence and abuse questions were based on the criteria in the American Psychiatric Association (APA) *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) (APA, 1994).

²¹ Substances include alcohol, marijuana, cocaine, heroin, hallucinogens, inhalants, pain relievers, tranquilizers, stimulants, and sedatives.

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:

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, pain relievers, sedatives, and 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.

Criteria used to determine whether a respondent was asked about the dependence and abuse questions during the interview included the core substance use questions (i.e., past year

use), the frequency of substance use questions (for alcohol and marijuana only), and the noncore substance use questions (for cocaine, heroin, and stimulants, including methamphetamine, such as for past year needle use). Missing or incomplete responses in the core substance use and frequency of substance use questions were imputed. However, the imputation process did not take into account reported data in the noncore (i.e., substance dependence and abuse) CAI modules because of the complexity of doing this and to avoid disrupting trends for imputed variables as a result of any changes to the noncore questions. Very infrequently, this may result in responses to the dependence and abuse questions that are inconsistent with the imputed substance use or frequency of substance use.

For alcohol and marijuana, respondents were asked the dependence and abuse questions if they reported substance use on more than 5 days in the past year, or if they reported any substance use in the past year but did not report their frequency of past year use (i.e., they had missing frequency data). These missing frequency data were subsequently imputed after data collection processing. Therefore, inconsistencies could have occurred where the imputed frequency of use response indicated less frequent use than required for respondents to be asked the dependence and abuse questions originally (i.e., the imputed frequency value was 5 or fewer days). For alcohol, for example, about 42,000 respondents were past year alcohol users in 2014. Of these, fewer than 100 respondents were missing their frequency data, but were still asked the alcohol dependence and abuse questions; however, their final imputed frequency of use indicated that they used alcohol on 5 or fewer days in the past year.

For cocaine, heroin, and stimulants, respondents were asked the dependence and abuse questions if they reported past year use in a core drug module or past year use in the noncore special drugs module. Thus, the CAI logic allowed some respondents to be asked the dependence and abuse questions for these drugs even if they did not report past year use in the corresponding core module. For cocaine, for example, fewer than 1,400 respondents in 2014 were asked the questions about cocaine dependence and abuse because they reported past year use of cocaine or crack in the core section of the interview. Fewer than 20 additional respondents were asked these questions because they reported past year use of cocaine with a needle in the special drugs module despite not having previously reported past year use of cocaine or crack.

In 2005, two new questions were added to the noncore special drugs module about past year methamphetamine use: "Have you ever, even once, used methamphetamine?" and "Have you ever, even once, used a needle to inject methamphetamine?" In 2006, an additional follow-up question was added to the noncore special drugs module confirming prior responses about methamphetamine use: "Earlier, the computer recorded that you have never used methamphetamine. Which answer is correct?" The responses to these new questions were used in the skip logic for the stimulant dependence and abuse questions. Based on the decisions made during the methamphetamine analysis,²² respondents who indicated past year methamphetamine use solely from these new special drug use questions (i.e., did not indicate methamphetamine use from the core drug module or other questions in the special drugs module) were categorized as NOT having past year stimulant dependence or abuse regardless of how they answered the dependence and abuse questions. Furthermore, if these same respondents were categorized as not

²² See Section B.4.8 in the *Results from the 2008 National Survey on Drug Use and Health: National findings* (OAS, 2009b) for the methamphetamine analysis decisions.

having past year dependence or abuse of any other psychotherapeutic drug (e.g., pain relievers, tranquilizers, or sedatives), then they were categorized as NOT having past year dependence or abuse of psychotherapeutics. Also, if these respondents were not classified as having dependence or abuse for other substances (e.g., alcohol, marijuana, other illicit drugs), then they were categorized as not having dependence or abuse for illicit drugs, illicit drugs or alcohol, or illicit drugs and alcohol. However, analysts can identify respondents who were routed to the stimulant dependence and abuse questions solely because of their reports of past year methamphetamine use from these noncore questions. If these respondents' answers to the stimulant dependence or abuse questions indicated that they had dependence or abuse, analysts would have the option to classify these cases as having dependence or abuse.

In 2008, questionnaire logic for determining who would be administered the items that establish hallucinogen, stimulant, and sedative dependence or abuse was modified. The revised skip logic used information collected in the noncore special drugs module in addition to that collected in questions from the core drug modules. Respondents were asked about hallucinogen dependence and abuse if they additionally reported in the special drugs module using ketamine, dimethyltryptamine (DMT), alpha-methyltryptamine (AMT), Foxy, or *Salvia divinorum*; stimulant dependence and abuse if they additionally reported nonmedical use of Adderall®; and sedative dependence and abuse if they additionally reported nonmedical use of Ambien®. Consistent with the previous decision to exclude respondents whose methamphetamine use was based solely on responses to noncore questions from being classified as having stimulant dependence or abuse, respondents who indicated past year use or nonmedical use of hallucinogens, stimulants, or sedatives based solely on these special drug questions were categorized as NOT having past year dependence or abuse of the relevant substance regardless of how they answered the dependence and abuse questions. Again, however, analysts can identify these cases and could reclassify their dependence or abuse status according to how they answered the questions for dependence or abuse.

Respondents might have provided ambiguous information about past year use of any individual substance, in which case these respondents were not asked the dependence and abuse questions for that substance. For example, respondents could report lifetime use of a substance but not know or refuse to report when they last used it, in which case it is not known whether their lifetime use included use in the past year. Also, respondents could report that they last used a substance "more than 12 months ago" but also report first use of the substance at their current age, which would imply use at some point in the past 12 months. Subsequently, respondents in these examples or in other situations could have been imputed to be past year users of the respective substance (see Sections A.3.1 and A.3.2). If respondents were not asked the dependence or abuse questions based on their previous answers in the interview but they were imputed to be past year users, the dependence and abuse data were unknown; thus, these respondents were classified as not having dependence or abuse of the respective substance. However, these respondents never actually were asked the dependence and abuse questions.

B.4.3 Effects of Questionnaire Changes on Mental Health Measures

Changes were made to the mental health questions in the 2008 and 2009 NSDUH questionnaires. These changes are summarized as follows:

1. For adults aged 18 or older, changes were made to the K6 questions for measuring serious psychological distress (SPD). In 2007, a single set of six K6 items asked adult respondents to report how often they experienced certain emotions or feelings during the one month in the past 12 months that they were the most depressed, anxious, or stressed. In 2008, adult respondents first were asked about these feelings in the past 30 days. If 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, they then were asked the same K6 items about this month as well.
2. For adults aged 18 or older, a split-sample study was embedded within the 2008 NSDUH, such that a reduced set of questions from the World Health Organization Disability Assessment Schedule (WHODAS) or the Sheehan Disability Scale (SDS) were randomly assigned to respondents. The WHODAS questions were retained for use in the 2009 NSDUH and future surveys. The SDS items were no longer included after 2008.
3. For youths aged 12 to 17, a total of five questions that were in the youth mental health service utilization (YMHSU) module in 2008 were no longer included in 2009. These questions were replaced with seven questions that asked about receipt of mental health services in the education and justice system sectors.

For the first change, the past year K6 score in 2008 was created for each adult aged 18 or older based on responses to items regarding either the past 30 days (if an adult said that he or she did not have any other month that was worse) or the worst month in the past 12 months. This change in questionnaire structure was evaluated to determine whether this change may have affected K6 scores and estimates of SPD that were created from the K6 items for the worst month in the past year.

The remaining changes to questions between survey years also could have affected how respondents answer questions in subsequent modules (i.e., context effects). A context effect may be said to take place when the response to a question is affected by information that is not part of the question itself. For example, the content of a preceding question may affect the interpretation of a subsequent question. Or a respondent may answer a subsequent question in a manner that is consistent with responses to a preceding question if the two questions are closely related to each other.²³ Therefore, the possible impact of these changes was evaluated as well.

Effects of Changes to the Questions for Adults. For adults aged 18 or older, estimates of past year K6 scores and the percentage of adults with SPD based on the entire 2008 sample, as well as the WHODAS and SDS subsamples, were compared with estimates based on 2007 data. Significant differences in the mean past year K6 scores were observed between 2008 and 2007, thus suggesting a lack of comparability between the 2 years. Across each of the six items

²³ The errors that were discussed in Section B.3.5 were identified for 2007 and 2008 after the effects of changes to the questionnaire for 2008 had been investigated. As noted in Section B.3.5, however, these errors had minimal impact on the national estimates. Therefore, the data errors that affected the data for 2007 and 2008 were unlikely to change the overall conclusions that were reached about the effects of these questionnaire changes on estimates for 2008. Nevertheless, because of the data errors that were identified, actual estimates for 2007 and 2008 are not presented in this report.

forming the past year K6 score, estimates of adults reporting that they had a given problem "none of the time" (e.g., "how often felt restless in worst month") were higher in 2008 based on the full sample of adults compared with the estimates for 2007. The estimate of past year SPD was slightly lower from the full sample of adults in 2008 than in 2007.

The split-sample design in 2008 for adults (item 2 above) affected reporting of MDE, depending on whether adult respondents received the WHODAS or SDS. Both lifetime and past year MDE estimates based on the WHODAS half sample were lower than corresponding estimates from 2007. In turn, lifetime and past year MDE estimates based on the entire sample in 2008 were lower than corresponding estimates from 2007. However, estimates of lifetime and past year MDE based on the SDS half sample in 2008 were not significantly different from the estimates in 2007. Also, the estimate of past year MDE in 2008 based on the WHODAS half sample was lower than the estimate based on the SDS half sample.

Therefore, CBHSQ decided to publish estimates of adult MDE in 2008 that were based on the half sample of adults who received the WHODAS because it was decided that the WHODAS would be retained in subsequent surveys. However, subsequent adjustment procedures were developed for adult MDE from the SDS half sample to allow data from all adult respondents in 2008 to be used for estimating MDE among adults. These adjustment procedures are described further in Section B.4.5 in this report.

Administration of the WHODAS or SDS in 2008 did not appear to differentially affect responses to the questions for adults about suicidal thoughts and behavior that also were added in 2008. Therefore, further investigation was not done to examine the effects on estimates of suicidal thoughts and behavior in 2009 due to the removal of the SDS items.

Effects of Changes to the Questions for Youths. The changes to the YMHSU module (item 3) in 2009 could have affected how adolescents answered the items at the beginning of the adolescent depression module (i.e., due to context effects). The adolescent depression module follows the YMHSU module for youths. In turn, changes in youths' answers to these introductory adolescent depression items could affect estimates of adolescent MDE.

Adolescents aged 12 to 17 could be asked up to three questions (YDS21, YDS22, and YDS23) to determine whether they should be asked further questions about lifetime and past year MDE. All adolescents were asked question YDS21 ("Have you ever in your life had a period of time lasting several days or longer when most of the day you felt sad, empty, or depressed?"). Those who did not answer question YDS21 as "yes" then were asked question YDS22 ("Have you ever had a period of time lasting several days or longer when most of the day you felt very discouraged or hopeless about how things were going in your life?"). Youths who did not answer either question YDS21 or YDS22 as "yes" then were asked question YDS23 ("Have you ever had a period of time lasting several days or longer when you lost interest and became bored with most things you usually enjoy, like work, hobbies, and personal relationships?"). Any adolescents who gave an affirmative answer in questions YDS21, YDS22, or YDS23 then were administered additional depression-related items that also were used to determine lifetime and past year MDE.

The effects of these changes to the YMHSU module on subsequent reports in the adolescent depression module were investigated using data from the first 6 months of the 2009 NSDUH. This analysis sought to determine whether changes in the YMHSU module affected responses to the first three adolescent depression questions and the lifetime and past year MDE estimates. To assess whether any differences in estimates between 2008 and 2009 could be due to more than just true changes in the population, comparisons between consecutive years beginning in 2005 also were carried out. For consistency with the 2009 data, comparisons were limited to the first 6 months of data from other survey years.

The changes to the YMHSU module in 2009 did not appear to affect estimates for the variables based on the lead adolescent depression questions or estimates of adolescent MDE between 2008 and 2009. None of the differences in estimated responses to the three lead adolescent MDE items or estimates of adolescent lifetime and past year MDE between 2008 and 2009 was statistically significant. No apparent trend was observed between 2005 and 2009 for the lifetime and past year MDE estimates or for the variable corresponding to question YDS23. Therefore, it was determined that the youth depression items could continue to be compared between 2009 and prior years.

B.4.4 Estimation of Serious and Other Levels of Mental Illness

Background. The 1992 Alcohol, Drug Abuse, and Mental Health Administration Reorganization Act that created SAMHSA also required SAMHSA to develop a definition and methodology for estimating SMI among adults for use by states in developing their plans for use of block grant funds distributed by SAMHSA. SAMHSA convened a technical advisory group that developed a definition of SMI, which was published in the *Federal Register* in 1993 (SAMHSA, 1993):

Pursuant to Section 1912(c) of the Public Health Service Act, as amended by Public Law 102-321, "adults with serious mental illness" are defined as the following:

- Individuals aged 18 and over, who currently or at any time during the past year, have had diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within DSM-III-R [sic] that has resulted in functional impairment, which substantially interferes with or limits one or more major life activities.
- These disorders include any mental disorders (including those of biological etiology) listed in DSM-III-R or their ICD-9-CM equivalent (and subsequent revisions), with the exception of DSM-III-R "V" codes, substance use disorders, and developmental disorders, which are excluded unless they co-occur with other diagnosable serious mental illness.
- All of these disorders have episodic, recurrent, or persistent features; however, they vary in terms of severity or disabling effects. Functional impairment is defined as difficulties that substantially interfere with or limit role functioning in one or more major life activities including basic daily living skills (e.g., eating, bathing, dressing); instrumental living skills (e.g., maintaining a household, managing money, getting

around the community, taking prescribed medication); and functioning in social, family, and vocational/educational contexts.

- Adults who would have met functional impairment criteria during the referenced year without benefit of treatment or other support services are considered to have serious mental illness.

In NSDUH reports prior to 2004, the K6 psychological distress scale was used to measure SMI. In 2004, yearly estimation of SMI ceased temporarily because of concerns about the validity of using only the K6 distress scale to measure SMI without including a functional impairment scale (see Section B.4.4 of Appendix B in the 2004 NSDUH national findings report [OAS, 2005] for a discussion). 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. To accomplish this, SAMHSA's CBHSQ initiated a Mental Health Surveillance Study (MHSS) in 2007 as part of NSDUH to develop and implement methods to estimate SMI. Models using the short scales for psychological distress and impairment to predict mental illness status were developed from a subsample of adult respondents who had completed the NSDUH interview and were administered a psychological diagnostic interview. For the clinical interview data, individuals were defined as having SMI if they had a diagnosable mental, behavioral, or emotional disorder in the past 12 months, other than a developmental or substance use disorder, that met DSM-IV criteria (APA, 1994) and resulted in substantial functional impairment. This estimation methodology was implemented in the 2008 NSDUH.

Historical Summary of the 2008 Model. A randomly selected subsample of approximately 1,500 adults in 2008 who had completed the NSDUH interview was recruited for a follow-up clinical interview consisting of a diagnostic assessment for mental disorders.²⁴ Also, in order to determine the optimal scale for measuring functional impairment in NSDUH, a split-sample design was incorporated into the full 2008 NSDUH data collection. Roughly half of the adult respondents were assigned to receive an abbreviated eight-item version of the WHODAS (Novak, Colpe, Barker, & Gfroerer, 2010), and the other half were assigned to receive the SDS (Leon, Olfson, Portera, Farber, & Sheehan, 1997).

Weighted logistic regression models that predicted mental illness were developed for each half sample using the data from the subsample of MHSS respondents. The short scales

²⁴ 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).

(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. For more detailed information on the 2008 MHSS design and analysis, see Colpe, Epstein, Barker, and Gfroerer (2009) and OAS (2009a). Information about the 2008 model is available in Appendix B of the 2012 mental health findings report (CBHSQ, 2013b).

Based on an analysis of the 2008 MHSS data, it was determined that the WHODAS was the better predictor of SMI and that this scale would be used in combination with the K6 scale to predict SMI. It also was decided that the WHODAS would continue to be administered as the sole impairment scale in the 2009 and subsequent NSDUHs (OAS, 2009a). This model that had been developed using the 2008 data (subsequently referred to as the "2008 model") was used in the 2008 through 2011 NSDUHs to produce a predicted probability of having SMI for each clinical interview respondent.

Based on the accumulated MHSS clinical data that were collected from 2008 to 2012, however, 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 sample. Specifically, estimates of SMI and AMI among young adults based on the NSDUH main study data and prediction model were higher than the estimates for this age group based on the clinical interview data. In addition, improvements were needed in the weighting procedures for the MHSS clinical data to account better for undercoverage and nonresponse (i.e., because only NSDUH respondents who answered their surveys in English were eligible for the clinical follow-up and because individuals with mental illness appeared to be more likely to participate in the follow-up). Therefore, using the combined 2008 to 2012 clinical data, SAMHSA fit a more accurate model for the 2012 estimates with revised weights (subsequently referred to as the "2012 model"). In particular, to reduce bias and improve prediction, additional mental health-related variables and an age variable were added in the 2012 model. In addition, to protect against potential coverage and nonresponse error, alternatives for the weights were applied to the clinical sample data for the model development. To provide consistent data for trend assessment, mental illness estimates for 2008 to 2011 were revised using the new 2012 model. The 2012 model was used in 2013 and continued to be used for the 2014 mental illness estimates.

The next subsections 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, and suicidal thoughts).²⁵ Next, procedures for the MHSS clinical interview sampling and weighting and for developing the 2012 model are described. The final subsection in Section B.4.4 discusses SEs for the mental illness estimates based on the 2012 model.

Clinical Measurement of Mental Illness. Mental illness was measured in the MHSS clinical interviews using an adapted version of the SCID (First et al., 2002) and was

²⁵ MDE also was included in the 2012 model and is discussed in more detail in Section B.4.5.

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. Substance use disorders 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 substance use disorders), regardless of the level of functional impairment.
- Respondents were defined as having low (mild) mental illness if they had any of the mental disorders assessed in the SCID (not including substance use disorders), but these disorders resulted in no more than mild impairment, based on GAF scores of greater than 59.
- Respondents were defined as having moderate mental illness if they had any of the mental disorders assessed in the SCID (not including substance use disorders), and these disorders resulted in moderate impairment, based on GAF scores of 51 to 59.
- Respondents were defined as having serious mental illness (SMI) if they had any of the mental disorders assessed in the SCID (not including substance use disorders), 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.

K6. The K6 in the main NSDUH interview 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 as 4, "most of the time" as 3, "some of the time" as 2, "a little of the time" as 1, and "none of the time" as 0. Responses of "don't know" and "refused" also were 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 previously for the past 30 days. 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 was created in which K6 scores of less than 8 were recoded as 0. A score of 8 was recoded as 1, a score of 9 was recorded as 2, and so on, until a score of 24 was recoded as 17. The rationale for creating the alternative past year K6 score was that SMI prevalence typically was 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. This 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 2013 NSDUH public use file codebook (CBHSQ, 2014c).

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: (1) serious thoughts of suicide in the past year; (2) having a past year MDE; and (3) 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 about serious thoughts of suicide: "At any time in the past 12 months, that is from [DATEFILL] up to and including today, did you seriously think about killing yourself?"²⁶ Definitions for MDE in the lifetime and past year periods are discussed in Section B.4.5. 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.

Sampling and Weighting. The target annual respondent sample sizes for the MHSS clinical interviews were 1,500 in 2008 (750 of which received the WHODAS and were used in developing the 2008 model), 500 in 2009 and 2010, and 1,500 in 2011 and 2012. Respondent sample sizes were roughly equal across quarters.

A stratified Bernoulli selection process was used in which each eligible NSDUH respondent was given an independent probability of selection based on his or her stratum. In 2008 and the first two quarters in 2009, stratification was based on K6 scores in an attempt to minimize the variance of the estimate for SMI prevalence. In the last two quarters in 2009, stratification attempted to minimize the variance of the AMI prevalence estimate rather than the variance of the SMI estimate. This change reduced the probability that a respondent with an extremely large weight would be selected. Starting from 2010, stratification for the MHSS sample incorporated information on functional impairment levels (WHODAS scores) and age in addition to K6 scores. Younger age groups were undersampled for the MHSS clinical sample to

²⁶ 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.

reverse the impact of the oversampling of younger adults aged 18 to 25 in the main survey (see Section A.1 in Appendix A in the 2012 NSDUH mental health findings report [CBHSQ, 2013b]). This resulted in a more equally allocated clinical sample by age. More details about the sample design for the MHSS clinical study can be found in the 2012 NSDUH's sample design report (CBHSQ, 2013a).

Special clinical sample analysis weights were created. Each was the product of the following seven weight components: (1) the NSDUH analysis weight; (2) a coverage adjustment for Hispanics completing the main NSDUH interview in English to account for Hispanics who completed it in Spanish and thus were not eligible for the English-language clinical follow-up interview; (3) the inverse of the selection probability for clinical follow-up; (4) a refusal adjustment to account for NSDUH respondents who were selected for the MHSS but declined to be contacted for the clinical interview; (5) another nonresponse adjustment to account for MHSS nonresponse among NSDUH respondents who had originally agreed to be recontacted for the clinical interview but did not complete the interview; (6) poststratification adjustments to reduce the variance of the resulting estimates by matching the weighted main NSDUH interview sample by age, gender, race/ethnicity, alternative K6 score, alternative WHODAS score, having had serious thoughts of suicide in the past year, and having had an MDE;²⁷ and (7) a yearly scaling factor. The first six weight components were created separately for each year.

Separate sets of analysis weights were computed for (1) MHSS respondents from the 2008 half sample assigned to impairment questions derived from the WHODAS and (2) MHSS respondents from the half sample assigned to the alternative scale for measuring impairment based on the SDS. Only the MHSS respondents from the WHODAS half sample were used in determining and fitting the 2012 model.

The 2012 model was fit under the assumption that the relationship between SMI and the covariates of the model stayed the same from 2008 through 2012. Because the sample size, sampling allocation, and weight adjustments for the MHSS clinical samples differed across years, gains in statistical efficiency were realized by scaling the weights in each year using the following scaling factors: 12 percent for 2008, 4 percent for 2009, 14 percent for 2010, 35 percent for 2011, and 35 percent for 2012. The scaling factors were determined based on the relative sizes of the estimated variances for estimates of SMI, AMI, and past year MDE made directly from SCID diagnoses.²⁸

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 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 $\pi = \Pr(Y = 1 | \mathbf{X})$, the 2012 SMI prediction model was

²⁷ Both the lifetime and past year measures of MDE in adults (see Section B.4.5) were used in poststratification.

²⁸ Past year MDE was estimated based on responses to the SCID from the MHSS respondents and on responses from all adults to the main survey (see Section B.4.5). These two measures were created independently. The reference here is to the SCID measure from the MHSS.

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

or

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

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

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

- $X_k = \text{Alternative Past Year K6 Score}$: Past year K6 score of less than 8 recoded as 0; past year K6 score of 8 to 24 recoded as 1 to 17.
- $X_w = \text{Alternative WHODAS Score}$: 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.
- $X_s = \text{Serious Thoughts of Suicide in the Past Year}$: Coded as 1 if "yes"; coded as 0 otherwise.
- $X_m = \text{Past Year MDE}$: Coded as 1 if the criteria for past year MDE were met (see Section B.4.5);²⁹ coded as 0 otherwise.
- $X_a = \text{Adjusted Age}$: 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 numbers 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 prevalence estimates of SMI.

A second cut point probability (0.0192519810) was determined so that any respondent with an SMI probability greater than or equal to the cut point was 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.

Estimates of SMMI (serious or moderate mental illness; GAF score below 60) were analogously computed with the SMI method; the cut point was 0.077686285365. Estimates of low (mild) mental illness and moderate mental illness were derived by a process of subtraction. Respondents were classified as belonging to the moderate mental illness category if they belonged to the SMMI category, but they did not belong to the SMI category. Respondents were

²⁹ In this situation, the past year MDE measure is from the main NSDUH interview (i.e., not from the SCID).

classified as belonging to the low (mild) mental illness category if they belonged to the AMI category but not to the SMMI category.

Alternative 2012 Model for the SDS Half Sample. In 2008, approximately half of the respondents in the adult NSDUH sample were assigned to receive questions about impairment based on the WHODAS (referred to as the 2008A sample), and the other half were assigned to receive questions based on the SDS (referred to as the 2008B sample). As noted previously, the purpose of this split sample was to determine whether the SDS or WHODAS impairment scale was a better predictor of SMI. The WHODAS scale was identified as the better predictor.

For the clinical interview respondents who had been administered the SDS in the main survey, an alternative SMI model was fit using the complete MHSS dataset of clinical interviews from 2008 through 2012. SMI, AMI, and SMMI estimates were obtained using the same cut point methodology described previously but applied to the alternative model. Mental illness estimates based on the predicted values for the 2008B sample were compared with the ones based on the 2008A sample using the 2012 model described previously. The model-based estimates from the 2008A and 2008B samples were similar, and the predicted values for the two half samples in 2008 were deemed to be comparable. For example, the AMI estimates for the 2008A and 2008B half samples were 17.69 and 17.78 percent, respectively. Therefore, the predicted values from the 2008B sample were combined with predicted values from the complete WHODAS sample for 2008A and for 2009 through 2012.

In fitting the alternative 2012 model for the SDS half sample, weights for the clinical interview respondents who had been assigned to the SDS were developed separately using the same steps as in other years. The 2008 sample of clinical interview respondents who had received WHODAS questions in NSDUH was treated as being equivalent to a sample in a different year. When data from clinical interview respondents were combined from the 2008A, 2008B, 2009, 2010, 2011, and 2012 samples, the 2008A and 2008B weights were each scaled by 6 percent (0.06). Weights for the other years were scaled as described previously.

The modified 2012 SMI prediction model for the SDS half sample was

$$\text{logit}(\hat{\pi}) = \log[\hat{\pi} / (1 - \hat{\pi})] = -5.7736246 + 0.1772067X_k + 1.8392433X_s + 1.6428623X_m + 0.1231266X_a \quad (2)$$

or

$$\hat{\pi} = \frac{1}{1 + \exp[-(-5.7736246 + 0.1772067X_k + 1.8392433X_s + 1.6428623X_m + 0.1231266X_a)]}$$

All of the covariates in equation (2) appeared in equation (1) as well.

The estimates of the parameters of the models displayed in equations (1) and (2) are given in [Table B.6](#) shown at the end of Section B.

Standard Errors for Mental Illness Estimates. For this report and the mental health detailed tables, SEs for mental illness estimates (SMI, AMI, SMMI, moderate mental illness, and low [mild] mental illness) were computed using the NSDUH dichotomous variable values

without taking into account any variance introduced through using a model based on the clinical subsample data. This ignores the added error resulting from fitting the 2012 SMI model, which can be very large (see CBHSQ, 2014a). These *conditional* SEs (conditional on the model predictions being correct) are useful when making comparisons across years and across subpopulations (except those involved in modeling) within years because the errors due to model fitting are nearly the same across the estimates being compared and consequently roughly cancel each other out.

B.4.5 Major Depressive Episode (Depression)

Beginning in 2004, modules related to MDE were included in the questionnaire. These modules were derived from DSM-IV (APA, 1994) criteria for major depression. Questions on depression permit estimates to be calculated for the occurrence of MDE in the population and receipt of treatment for MDE. 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).³⁰ To make the modules 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 their length and to modify the NCS questions, which are interviewer-administered, to the ACASI format used in NSDUH. In addition, some revisions, based on cognitive testing, were made to improve comprehension. Furthermore, even though titles similar to those used in the NCS were used for the NSDUH modules, the results of these items may not be directly comparable. This is mainly due to differing modes of administration in each survey (ACASI in NSDUH vs. computer-assisted personal interviewing [CAPI] in the NCS), revisions to wording necessary to maintain the logical processes of the ACASI environment, and possible context effects resulting from deleting questions not explicitly pertinent to severe depression.

According to DSM-IV, 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 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, 1994): (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; (6) fatigue or loss of energy; (7) feelings of worthlessness; (8) diminished ability to think or concentrate or indecisiveness; and (9) recurrent thoughts of death or suicidal ideation. Respondents who have had 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. Those reporting that they have had 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). Note that the

³⁰ For details, see <http://www.hcp.med.harvard.edu/ncs/>.

responses to the SDS questions are not used as predictors of SMI in NSDUH after 2008; for more information, see Section B.4.4.

NSDUH measures the nine attributes associated with MDE as defined in DSM-IV with the following questions. Note that the questions shown are taken from the adult depression module. A few of the questions in the youth module were modified slightly to use wording more appropriate for youths aged 12 to 17. It should be noted that no exclusions were made for MDE caused by medical illness, bereavement, or substance use disorders.

1. Depressed mood most of the day

The following questions refer to the worst or most recent period of time when the respondent experienced any or all of the following: sadness, discouragement, or lack of interest in most things.

During that [worst/most recent] period of time...

- a. ... did you feel sad, empty, or depressed **most of the day nearly every day**?
- b. ... did you feel discouraged about how things were going in your life **most of the day nearly every day**?

2. Markedly diminished interest or pleasure in all or almost all activities most of the day

- a. ... did you lose interest in almost all things like work and hobbies and things you like to do for fun?
- b. ... did you lose the ability to take pleasure in having good things happen to you, like winning something or being praised or complimented?

3. Weight

In answering the next questions, think about the [worst/most recent] period of time.

- a. Did you have a much smaller appetite than usual nearly every day during that time?
- b. Did you have a much **larger** appetite than usual nearly every day?
- c. Did you gain weight without trying to during that [worst/most recent] period of time?
 - a. ... because you were growing?
 - b. ... because you were pregnant?
 - c. How many pounds did you gain?
- d. Did you lose weight without trying to?
 - a. ... because you were sick or on a diet?
 - b. How many pounds did you lose?

4. Insomnia or hypersomnia

- a. Did you have a lot more trouble than usual falling asleep, staying asleep, or waking too early nearly every night during that [worst/most recent] period of time?
- b. During that [worst/most recent] period of time, did you sleep a lot more than usual nearly every night?

5. Psychomotor agitation or retardation

- a. Did you talk or move more slowly than is normal for you nearly every day?
- b. Were you so restless or jittery nearly every day that you paced up and down or couldn't sit still?

6. Fatigue or loss of energy

- a. During that [worst/most recent] period of time, did you feel tired or low in energy nearly every day even when you had not been working very hard?

7. Feelings of worthlessness

- a. Did you feel that you were not as good as other people nearly every day?
- b. Did you feel totally worthless nearly every day?

8. Diminished ability to think or concentrate or indecisiveness

- a. During that [worst/most recent] time period, did your thoughts come much more slowly than usual or seem confused nearly every day?
- b. Did you have a lot more trouble concentrating than usual nearly every day?
- c. Were you unable to make decisions about things you ordinarily have no trouble deciding about?

9. Recurrent thoughts of death or recurrent suicidal ideation

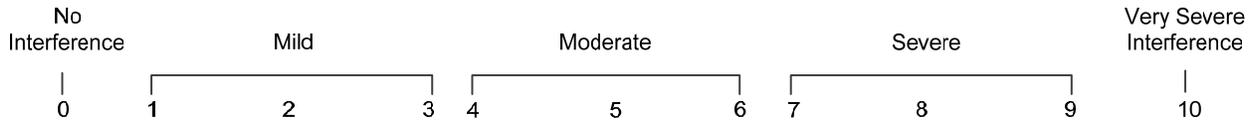
- a. Did you often think about death, either your own, someone else's, or death in general?
- b. During that period, did you ever think it would be better if you were dead?
- c. Did you think about committing suicide?

NSDUH also collects data on impairment using the SDS, which is a measure of impairment because of mental health issues in four major life activities or role domains. These four domains are defined separately for adults aged 18 or older and youths aged 12 to 17 to reflect the different roles associated with the two age groups. Each module consists of four questions, and each item uses an 11-point scale ranging from 0 (no interference) to 10 (very severe interference). The impairment score is defined as the single highest severity level of role impairment across the four SDS role domains. Ratings greater than or equal to 7 on the scale were considered severe impairment. In addition to past year MDE, NSDUH shows estimates for past year MDE with severe impairment. Estimates for severe impairment are calculated separately for youths and adults because the four domains are slightly different for the two groups. The questions pertaining to the four domains are listed below for both groups.

Adult Depression Module: Functional Impairment

ASDSHOME Think about the time in the past 12 months when these problems with your mood were **most severe**.

Using the 0 to 10 scale shown below, where 0 means **no** interference and 10 means very **severe** interference, select the number that describes how much these problems interfered with **your ability to do** each of the following activities during that period. You can use any number between 0 and 10 to answer.



How much did your [depression symptoms] interfere with your **ability to do home management tasks**, like cleaning, shopping, and working around the house, apartment, or yard?

ASDSWORK During the time in the past 12 months when your [depression symptoms] were most severe, how much did this interfere with **your ability to work**?

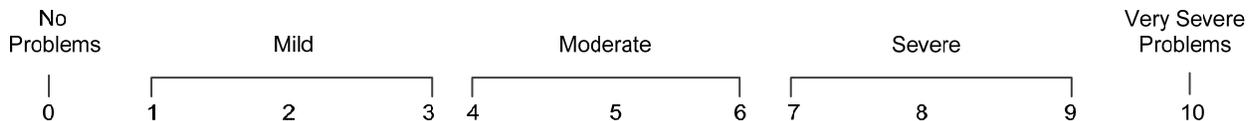
ASDSREL How much did your [depression symptoms] interfere with your **ability to form and maintain close relationships** with other people during that period of time?

ASDSSOC How much did [depression symptoms] interfere with your **ability to have a social life** during that period of time?

Youth Depression Module: Functional Impairment

YSDSHOME Think about the time in the past 12 months when these problems with your mood were the **worst**.

Using the 0 to 10 scale shown below, where 0 means **no** problems and 10 means very **severe** problems, select the number that describes how much your [depression symptoms] caused problems with **your ability to do** each of the following activities during that time. You can use any number between 0 and 10 to answer.



How much did your [depression symptoms] cause problems with your **chores at home**?

YSDSWORK During the time in the past 12 months when your [depression symptoms] were worst, how much did this cause problems with your **ability to do well at school or work**?

YSDSREL How much did your [depression symptoms] cause problems with your **ability to get along with your family** during that time?

YSDSSOC How much did your [depression symptoms] cause problems with your **ability to have a social life** during that time?

Adjustment of MDE Data for Context Effects. 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 (K6, suicide, and impairment) for adults. Questions also were retained in 2009 for the WHODAS impairment scale, and the questions for the SDS impairment scale were deleted; see Sections B.4.3 and B.4.4 of this report for further details about these questionnaire changes. These questionnaire changes in 2008 appear to have affected the reporting on MDE questions among adults. Thus, adult MDE estimates for 2008 and 2009 cannot be directly compared with NSDUH adult MDE estimates based on data prior to 2008. See Sections B.4.4 and B.4.7 of the 2008 NSDUH's national findings report (OAS, 2009b) for a further discussion. In addition, estimates of adult MDE in 2008 that were included in the 2009 mental health findings report (CBHSQ, 2010) were based only on half of the sample (see Section B.4.3 in this report).

To address the break in comparability of the adult MDE data beginning in 2008 and to estimate adult MDE based on the full sample of adults from 2008, adjusted versions of lifetime and past year MDE variables for adults were created retroactively for 2005 to 2008. These variables were adjusted to make MDE estimates from the SDS half sample in 2008 and from all adult respondents for 2005 to 2007 that would be comparable with the MDE estimates based on data from the half sample who received the WHODAS in 2008 and from all adult respondents in later years. The adjusted data from 2005 to 2008 were used in conjunction with unadjusted data from later years to estimate trends in adult MDE over the entire period from 2005 to 2012.

Specifically, a weighted logistic regression was fit for the NSDUH data from 2005 to 2009 with past year MDE as the binary dependent variable. Independent variables in this model controlled for the questionnaire differences between NSDUHs from 2005 to 2007 and NSDUHs from 2008 and 2009, as well as for the context effects associated with the SDS half sample in 2008. This model was used to compute predicted probabilities of past year MDE for each respondent. The predicted probabilities, which can have any value between 0 and 1, then were dichotomized such that each respondent was specified as having or not having MDE in the past year. Adjusted lifetime MDE estimates were similarly constructed, with the additional condition that respondents reporting past year MDE were assumed to have lifetime MDE. Details about the adjustment of the adult MDE data for 2005 to 2008 can be found in a report describing these procedures (CBHSQ, 2012a).

In addition, changes to YMHSU module 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. As discussed in Section B.4.3 in this report, 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 2009 did not require adjustment for adolescents aged 12 to 17.

Table B.1 Selected Demographic and Geographic Domains Forced to Match Their Respective U.S. Census Bureau Population Estimates through the Weight Calibration Process, 2014

Main Effects	Two-Way Interactions
<p>Age Group 12-17 18-25 26-34 35-49 50-64 65 or Older All Combinations of Groups Listed Above¹</p>	
<p>Gender Male Female</p>	<p>Age Group × Gender (e.g., Males Aged 12 to 17)</p>
<p>Hispanic Origin Hispanic or Latino Not Hispanic or Latino</p>	<p>Age Group × Hispanic Origin (e.g., Hispanics or Latinos Aged 18 to 25)</p>
<p>Race² White Black or African American</p>	<p>Age Group × Race (e.g., Whites Aged 26 or Older)</p>
<p>Geographic Region Northeast Midwest South West</p>	<p>Age Group × Geographic Region (e.g., Individuals Aged 12 to 25 in the Northeast)</p>
<p>Geographic Division New England Middle Atlantic East North Central West North Central South Atlantic East South Central West South Central Mountain Pacific</p>	<p>Age Group × Geographic Division (e.g., Adults Aged 65 or Older in New England)</p> <p>Gender × Hispanic Origin (e.g., Not Hispanic or Latino Males)</p> <p>Hispanic Origin × Race (e.g., Not Hispanic or Latino Whites)</p>

NOTE: State also is a controlled domain in the 2014 National Survey on Drug Use and Health (NSDUH). State totals were forced to match their respective U.S. Census Bureau population estimates through the weight calibration process. State was omitted from this table because state estimates are not shown in the 2014 NSDUH national reports and detailed tables.

¹ Combinations of the age groups (including but not limited to 12 or older, 18 or older, 26 or older, 35 or older, and 50 or older) also were forced to match their respective U.S. Census Bureau population estimates through the weight calibration process.

² Unlike racial/ethnic groups discussed elsewhere in this report, race domains in this table include Hispanics in addition to individuals who were not Hispanic.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2014.

Table B.2 Summary of 2014 NSDUH Suppression Rules

Estimate	Suppress if:
Prevalence Rate, \hat{p} , with Nominal Sample Size, n , and Design Effect, $deff$ $\left(deff = \frac{n[SE(\hat{p})]^2}{\hat{p}(1-\hat{p})} \right)$	(1) The estimated prevalence rate, \hat{p} , is $< .00005$ or $\geq .99995$, or (2) $\frac{SE(\hat{p})/\hat{p}}{-\ln(\hat{p})} > .175$ when $\hat{p} \leq .5$, or $\frac{SE(\hat{p})/(1-\hat{p})}{-\ln(1-\hat{p})} > .175$ when $\hat{p} > .5$, or (3) <i>Effective n</i> < 68 , where $Effective\ n = \frac{n}{deff} = \frac{\hat{p}(1-\hat{p})}{[SE(\hat{p})]^2}$, or (4) $n < 100$. Note: The rounding portion of this suppression rule for prevalence rates will produce some estimates that round at one decimal place to 0.0 or 100.0 percent but are not suppressed.
Estimated Number (Numerator of \hat{p})	The estimated prevalence rate, \hat{p} , is suppressed. Note: In some instances when \hat{p} is not suppressed, the estimated number may appear as a 0. This means that the estimate is greater than 0 but less than 500 (estimated numbers are shown in thousands).
Mean Age at First Use, \bar{x} , with Nominal Sample Size, n	(1) $RSE(\bar{x}) > .5$, or (2) $n < 10$.

deff = design effect; RSE = relative standard error; SE = standard error.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2014.

Figure B.1 Required Effective Sample in the 2014 NSDUH as a Function of the Proportion Estimated

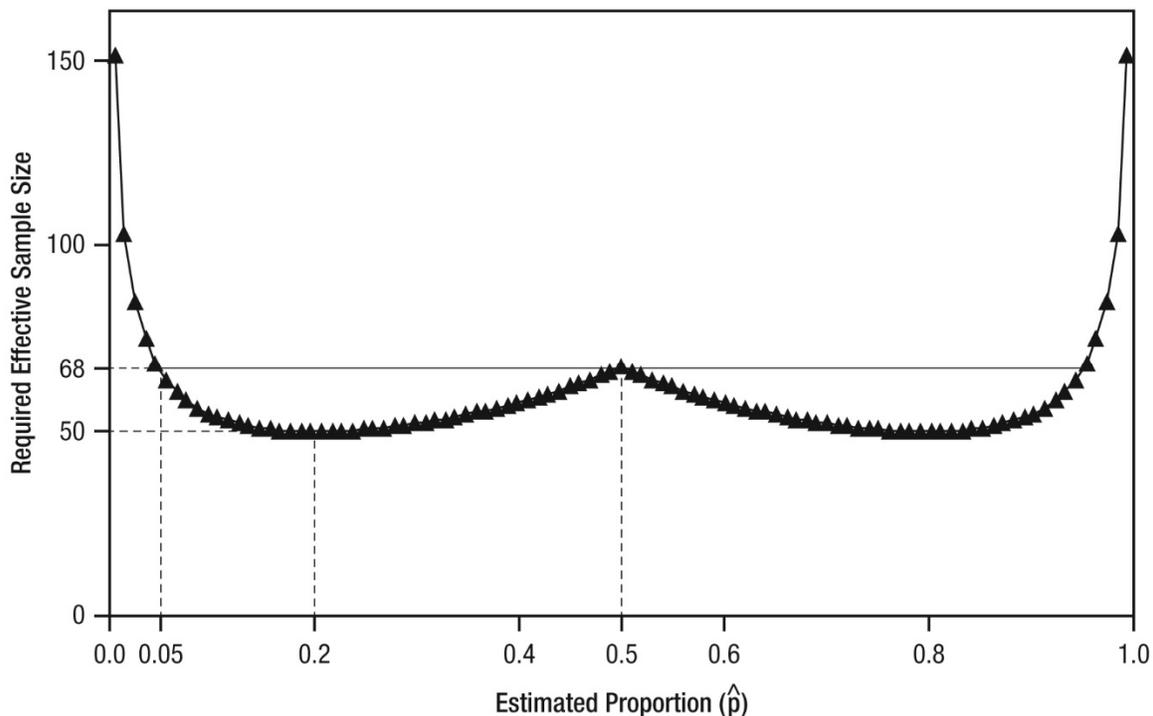


Table B.3 Weighted Percentages and Sample Sizes for 2013 and 2014 NSDUHs, by Final Screening Result Code

Final Screening Result Code	Sample Size 2013	Sample Size 2014¹	Weighted Percentage 2013	Weighted Percentage 2014
TOTAL SAMPLE	227,075	185,013	100.00	100.00
Ineligible Cases	37,008	30,480	15.96	16.33
Eligible Cases	190,067	154,533	84.04	83.67
INELIGIBLES	37,008	30,480	15.96	16.33
10 - Vacant	19,839	15,904	51.74	51.83
13 - Not a Primary Residence	8,220	6,988	24.52	23.56
18 - Not a Dwelling Unit	2,617	1,893	6.70	5.96
22 - All Military Personnel	374	318	0.90	0.84
Other, Ineligible ²	5,958	5,377	16.13	17.81
ELIGIBLE CASES	190,067	154,533	84.04	83.67
Screening Complete	160,325	127,605	83.93	81.94
30 - No One Selected	98,431	62,499	50.51	38.89
31 - One Selected	34,424	37,878	18.38	24.61
32 - Two Selected	27,470	27,228	15.04	18.43
Screening Not Complete	29,742	26,928	16.07	18.06
11 - No One Home	3,244	2,779	1.56	1.66
12 - Respondent Unavailable	473	589	0.27	0.42
14 - Physically or Mentally Incompetent	598	563	0.30	0.38
15 - Language Barrier - Hispanic	96	76	0.06	0.05
16 - Language Barrier - Other	821	812	0.52	0.64
17 - Refusal	21,086	19,226	11.39	12.79
21 - Other, Access Denied ³	2,549	2,696	1.40	1.99
24 - Other, Eligible	24	20	0.01	0.01
27 - Segment Not Accessible	0	0	0.00	0.00
33 - Screener Not Returned	73	94	0.04	0.06
39 - Fraudulent Case	776	71	0.50	0.06
44 - Electronic Screening Problem	2	2	0.00	0.00

¹ The sample size distribution for 2014 is different from the distribution for prior years because of recent changes in the 2014 sample design. In the 1999 to 2013 design, the eight largest states each had a target sample size of 3,600, and the remaining states and the District of Columbia each had a sample size of 900. In 2014, the sample design was modified so that the sample size per state was relatively more proportional to the state population. In the 2013 NSDUH, the sample also was allocated equally between three age groups: 12 to 17, 18 to 25, and 26 or older. In 2014, the sample was allocated to these three age groups in proportions of 25, 25, and 50 percent, respectively, with further allocation of the sample for adults aged 26 or older within the age groups of 26 to 34, 35 to 49, and 50 or older. Adolescents aged 12 to 17 years and young adults aged 18 to 25 years continued to be oversampled in 2014, but at a lower rate than in 2013. See Section A.1 of Section A in this report for additional information.

² Examples of "Other, Ineligible" cases are those in which all residents lived in the dwelling unit for less than half of the calendar quarter and dwelling units that were listed in error.

³ "Other, Access Denied" includes all dwelling units to which the field interviewer was denied access, including locked or guarded buildings, gated communities, and other controlled access situations.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2013 and 2014.

Table B.4 Weighted Percentages and Sample Sizes for 2013 and 2014 NSDUHs, by Final Interview Code

Final Interview Code	12+ Sample Size 2013	12+ Sample Size 2014 ¹	12+ Weighted Percentage 2013	12+ Weighted Percentage 2014	12-17 Sample Size 2013	12-17 Sample Size 2014 ¹	12-17 Weighted Percentage 2013	12-17 Weighted Percentage 2014	18+ Sample Size 2013	18+ Sample Size 2014 ¹	18+ Weighted Percentage 2013	18+ Weighted Percentage 2014
TOTAL	88,742	91,640	100.00	100.00	27,630	21,392	100.00	100.00	61,112	70,248	100.00	100.00
70 - Interview Complete	67,838	67,901	71.69	71.20	22,532	17,046	81.95	80.03	45,306	50,855	70.61	70.28
71 - No One at Dwelling Unit	1,101	1,280	1.15	1.14	172	184	0.53	0.77	929	1,096	1.22	1.18
72 - Respondent Unavailable	1,521	1,930	1.81	2.07	314	301	1.15	1.40	1,207	1,629	1.88	2.14
73 - Break-Off	23	17	0.03	0.03	4	6	0.01	0.05	19	11	0.04	0.02
74 - Physically/ Mentally Incompetent	1,012	1,257	1.95	2.15	284	228	1.03	0.96	728	1,029	2.04	2.27
75 - Language Barrier - Hispanic	105	138	0.16	0.17	5	7	0.02	0.03	100	131	0.17	0.18
76 - Language Barrier - Other	409	580	1.12	1.25	29	12	0.13	0.07	380	568	1.22	1.38
77 - Refusal	12,606	14,803	19.90	19.87	1,016	772	3.62	3.68	11,590	14,031	21.62	21.56
78 - Parental Refusal	3,111	2,689	1.04	1.16	3,111	2,689	10.95	12.34	0	0	0.00	0.00
91 - Fraudulent Case	93	57	0.17	0.07	18	8	0.10	0.05	75	49	0.18	0.08
Other ²	923	988	0.96	0.89	145	139	0.52	0.64	778	849	1.01	0.91

¹The sample size distribution for 2014 is different from the distribution for prior years because of recent changes in the 2014 sample design. In the 1999 to 2013 design, the eight largest states each had a target sample size of 3,600, and the remaining states and the District of Columbia each had a sample size of 900. In 2014, the sample design was modified so that the sample size per state was relatively more proportional to the state population. In the 2013 NSDUH, the sample also was allocated equally between three age groups: 12 to 17, 18 to 25, and 26 or older. In 2014, the sample was allocated to these three age groups in proportions of 25, 25, and 50 percent, respectively, with further allocation of the sample for adults aged 26 or older within the age groups of 26 to 34, 35 to 49, and 50 or older. Adolescents aged 12 to 17 years and young adults aged 18 to 25 years continued to be oversampled in 2014, but at a lower rate than in 2013. See Section A.1 of Section A in this report for additional information.

²"Other" includes eligible person moved, data not received from field, too dangerous to interview, access to building denied, computer problem, and interviewed wrong household member.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2013 and 2014.

Table B.5 Response Rates and Sample Sizes for 2013 and 2014 NSDUHs, by Demographic Characteristics

Demographic Characteristic	Selected Individuals 2013	Selected Individuals 2014	Completed Interviews 2013	Completed Interviews 2014	Weighted Response Rate 2013	Weighted Response Rate 2014
TOTAL	88,742	91,640	67,838	67,901	71.69%	71.20%
AGE IN YEARS						
12-17	27,630	21,392	22,532	17,046	81.95%	80.03%
18-25	28,921	21,726	22,458	16,570	77.34%	75.88%
26 or Older	32,191	48,522	22,848	34,285	69.45%	69.34%
GENDER						
Male	43,823	44,750	32,840	32,417	69.97%	69.50%
Female	44,919	46,890	34,998	35,484	73.30%	72.79%
RACE/ETHNICITY						
Hispanic	14,369	14,877	11,278	11,433	74.03%	74.52%
White	56,577	58,300	42,305	42,320	70.47%	70.17%
Black	10,304	10,136	8,561	8,119	78.76%	76.46%
All Other Races	7,492	8,327	5,694	6,029	66.23%	64.79%
REGION						
Northeast	18,334	18,175	13,661	12,999	68.75%	67.54%
Midwest	24,842	21,523	18,822	15,825	71.54%	71.17%
South	26,758	30,192	20,782	22,781	73.32%	72.44%
West	18,808	21,750	14,573	16,296	71.48%	72.05%
COUNTY TYPE						
Large Metropolitan	40,266	42,048	30,126	30,393	70.40%	69.25%
Small Metropolitan	30,100	30,908	23,290	23,361	73.38%	73.55%
Nonmetropolitan	18,376	18,684	14,422	14,147	72.82%	73.75%

NOTE: Estimates are based on demographic information obtained from screener data and are not consistent with estimates on demographic characteristics presented in the 2013 and 2014 sets of detailed tables.

NOTE: The sample size distribution for 2014 is different from the distribution for prior years because of recent changes in the 2014 sample design. In the 1999 to 2013 design, the eight largest states each had a target sample size of 3,600, and the remaining states and the District of Columbia each had a sample size of 900. In 2014, the sample design was modified so that the sample size per state was relatively more proportional to the state population. In the 2013 NSDUH, the sample also was allocated equally between three age groups: 12 to 17, 18 to 25, and 26 or older. In 2014, the sample was allocated to these three age groups in proportions of 25, 25, and 50 percent, respectively, with further allocation of the sample for adults aged 26 or older within the age groups of 26 to 34, 35 to 49, and 50 or older. Adolescents aged 12 to 17 years and young adults aged 18 to 25 years continued to be oversampled in 2014, but at a lower rate than in 2013. See Section A.1 of Section A in this report for additional information.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2013 and 2014.

Table B.6 Final SMI Prediction Models in the 2008-2012 MHSSs

	Beta	Beta SE	TStatistic	PValue	DF	Wald P Value¹
WHODAS Sample (2008A-2012)						
Intercept	-5.9726640	0.3201	-18.6586	0.0000		
Alt PY K6	0.0873416	0.0248	3.5247	0.0009	1	0.0009
Alt WHODAS	0.3385193	0.0349	9.7034	0.0000	1	0.0000
PY Suicidal Thoughts	1.9552664	0.2164	9.0342	0.0000	1	0.0000
PY MDE	1.1267330	0.2196	5.1308	0.0000	1	0.0000
Age1830	0.1059137	0.0244	4.3380	0.0001	1	0.0001
WHODAS and SDS Samples (2008-2012)²						
Intercept	-5.7736246	0.3479	-16.5960	0.0000		
Alt PY K6	0.1772067	0.0190	9.3251	0.0000	1	0.0000
PY Suicidal Thoughts	1.8392433	0.1941	9.4781	0.0000	1	0.0000
PY MDE	1.6428623	0.2119	7.7528	0.0000	1	0.0000
Age1830	0.1231266	0.0259	4.7482	0.0000	1	0.0000

Age1830 = recoded age variable; Alt = alternative; *DF* = degrees of freedom; K6 = Kessler-6, a six-item psychological distress scale; MDE = major depressive episode; MHSS = Mental Health Surveillance Study; PY = past year; SDS = Sheehan Disability Scale; SE = standard error; SMI = serious mental illness; WHODAS = eight-item World Health Organization Disability Assessment Schedule.

¹The *p* value is obtained from the overall model fitting.

²The model is fit over the WHODAS and SDS samples in 2008-2012, but is used only to produce predictions for the 2008 SDS sample.

NOTE: Alternative past year K6 score: past year K6 score of < 8 recoded as 0; past year K6 score of 8 to 24 recoded as 1 to 17.

NOTE: Alternative WHODAS score: WHODAS item score of < 2 recoded as 0; WHODAS item score of 2 to 3 recoded as 1, then summed for a score ranging from 0 to 8.

NOTE: Past year suicidal thought: coded as 1 if had serious thoughts of suicide in the past year; coded as 0 otherwise.

NOTE: Past year MDE: coded as 1 if the criteria for past year MDE were met; coded as 0 otherwise.

NOTE: Age1830: coded as age minus 18 if aged 18 to 30; coded as 12 otherwise.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2008-2012.

Section C: Key Definitions for the 2014 National Survey on Drug Use and Health

This glossary provides definitions for many of the commonly used measures and terms in tables and reports from the 2014 National Survey on Drug Use and Health (NSDUH). Where relevant, cross-references also are provided. For some key terms, specific question wording is provided for clarity. In some situations, information also is included about specific gate questions. In many instances, a gate question is the first question in a series of related questions. How a respondent answers the gate question affects whether the respondent is asked additional questions in that section of the interview or is routed to the next section of the interview. In some sections of the interview, respondents may be asked more than one gate question to determine whether they are asked additional questions in that section or are routed to the next section.³¹

Abbreviated WHODAS SEE: "World Health Organization Disability Assessment Schedule (WHODAS)."

Abuse NSDUH questions about criteria for abuse of alcohol or illicit drugs ask about the following symptoms, consistent with the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) (American Psychiatric Association [APA], 1994): (1) problems at work, home, and school; (2) doing something physically dangerous; (3) repeated trouble with the law; and (4) problems with family or friends because of use of alcohol or illicit drugs in the past 12 months. Respondents meet criteria for abuse if they report one or more of these symptoms and if the criteria for dependence were not met for that substance. Respondents were asked the abuse questions for illicit drugs other than marijuana if they reported any use in the past 12 months. Respondents were asked the alcohol and marijuana abuse questions if they indicated use of these substances on 6 or more days in the past 12 months. These questions for measuring abuse for illicit drugs or alcohol have been included in the survey since 2000. Although responses to the dependence or abuse questions based only on the past year use of methamphetamine, Ambien®, Adderall®, or specific hallucinogens from the noncore special drugs module³² are included in the dataset, these data were not included in these abuse and dependence measures to maintain the comparability of estimates over time.

SEE: "Dependence," "Illicit Drugs," "Need for Illicit Drug or Alcohol Use Treatment," "Noncore Modules," and "Prevalence."

³¹ The 2014 NSDUH questionnaire is available at <http://www.samhsa.gov/data/>.

³² These questions were added to the survey after 2002.

ACASI

ACASI stands for audio computer-assisted self-interviewing. ACASI questions in NSDUH appear on a laptop computer screen while an audio recording of the questions plays on headphones. Respondents enter their answers directly into the computer. ACASI is designed to provide the respondent with a highly private and confidential mode for responding to questions about illicit drug use and other sensitive behaviors. The audio also is helpful for respondents with limited reading skill.

SEE: "CAPI," "Core Modules," and "Noncore Modules."

Adderall® Use

Measures of use of the prescription stimulant Adderall® in the respondent's lifetime, the past year, and the past month were derived from responses to the noncore question about recency of use: "Earlier, the computer recorded that you have used Adderall that was not prescribed for you or that you took only for the experience or feeling it caused. How long has it been since you last used Adderall in either of these ways?" The questions about Adderall® were added to a noncore section of the interview in 2006 and were not incorporated in estimates of use of stimulants, nonmedical use of psychotherapeutics, or other estimates of illicit drug use because inclusion of these questions would affect the comparability of estimates over time.

SEE: "Core Modules," "Current Use," "Illicit Drugs," "Illicit Drugs Other Than Marijuana," "Lifetime Use," "Noncore Modules," "Nonmedical Use of Psychotherapeutics," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," and "Stimulant Use."

Age

Age of the respondent was defined as "age at time of interview." The interview program calculated the respondent's age from the interview date and the date of birth that was reported to the interviewer. The interview program prompts the interviewer to confirm the respondent's age after it has been calculated.

Alcohol Use

Measures of use of alcohol in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last drank an alcoholic beverage?" The question about recency of use was asked if respondents previously reported any use of alcohol in their lifetime.

The following definitional information preceded the question about lifetime alcohol use: "The next questions are about alcoholic beverages, such as beer, wine, brandy, and mixed drinks. Listed on the next screen are examples of the types of beverages we are

interested in. Please review this list carefully before you answer these questions. These questions are about drinks of alcoholic beverages. Throughout these questions, by a 'drink,' we mean a can or bottle of beer, a glass of wine or a wine cooler, a shot of liquor, or a mixed drink with liquor in it. We are not asking about times when you only had a sip or two from a drink."

SEE: "Binge Use of Alcohol," "Current Use," "Heavy Use of Alcohol," "Lifetime Use," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," and "Underage Alcohol Use."

Alcohol Use Disorder

Alcohol use disorder is defined as meeting criteria in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* (American Psychiatric Association [APA], 1994) for either dependence or abuse for alcohol.

SEE: "Abuse," "Dependence," and "Substance Use Disorder."

Alcohol Use in Combination with Illicit Drug Use

A respondent was defined as having alcohol use in combination with illicit drug use if he or she reported using 1 or more of 10 possible illicit drugs with his or her last alcohol use or within a couple of hours of drinking. Respondents who used alcohol and also used illicit drugs in the past month were asked about this behavior. The illicit drugs that respondents could have used in combination with alcohol were marijuana or hashish, cocaine or crack, heroin, hallucinogens, inhalants, prescription pain relievers, prescription tranquilizers, prescription stimulants, methamphetamine, or prescription sedatives.

NOTE: Respondents were defined as having used methamphetamine with their most recent use of alcohol in the past month if they reported methamphetamine use in the core stimulants module. They also were included if they reported methamphetamine use in the noncore special drugs module and said they had not reported methamphetamine use in the core module because they did not think of it as a prescription drug.

SEE: "Alcohol Use," "Core Modules," "Illicit Drugs," "Methamphetamine Use," and "Noncore Modules."

Alternative Service Professional

An alternative service professional was defined as a religious or spiritual advisor (e.g., minister, priest, or rabbi), herbalist, chiropractor, acupuncturist, or massage therapist.

SEE: "Health Professional," "Major Depressive Episode," "Treatment Depression," and "Treatment for Major Depressive Episode."

Ambien® Use

Measures of use of the prescription sedative Ambien® in the respondent's lifetime, the past year, and the past month were derived from responses to the noncore question about recency of use: "Earlier, the computer recorded that you have used Ambien that was not prescribed for you or that you took only for the experience or feeling it caused. How long has it been since you last used Ambien in either of these ways?" The questions about Ambien® use were added to a noncore section of the interview in 2006 and were not incorporated in estimates of use of sedatives, nonmedical use of psychotherapeutics, or other estimates of illicit drug use because inclusion of these questions would affect the comparability of estimates over time.

SEE: "Core Modules," "Current Use," "Illicit Drugs," "Illicit Drugs Other Than Marijuana," "Lifetime Use," "Noncore Modules," "Nonmedical Use of Psychotherapeutics," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," and "Sedative Use."

American Indian or Alaska Native

American Indian or Alaska Native only, not of Hispanic, Latino, or Spanish origin, including North American, Central American, or South American Indian. This does not include respondents reporting two or more races. Respondents reporting that they were American Indians or Alaska Natives and of Hispanic, Latino, or Spanish origin were classified as Hispanic.

SEE: "Hispanic," "Race/Ethnicity," and "Two or More Races."

Any Mental Illness (AMI)

SEE: "Mental Illness."

Asian

Asian only, not of Hispanic, Latino, or Spanish origin, in accordance with federal standards for reporting race and ethnicity data (Office of Management and Budget [OMB], 1997). This does not include respondents reporting two or more races. Respondents reporting that they were Asian and of Hispanic, Latino, or Spanish origin were classified as Hispanic. Specific Asian groups that were

asked about were Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, and "Other Asian."

SEE: "Hispanic," "Race/Ethnicity," and "Two or More Races."

Binge Use of Alcohol

Binge use of alcohol was defined for both males and females as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Respondents were asked about the number of days they had five or more drinks on the same occasion if they reported last using any alcohol in the past 30 days based on the following question: "How long has it been since you last drank an alcoholic beverage?"

SEE: "Alcohol Use" and "Heavy Use of Alcohol."

Black

Black/African American only, not of Hispanic, Latino, or Spanish origin. This does not include respondents reporting two or more races. Respondents reporting that they were black or African American and of Hispanic, Latino, or Spanish origin were classified as Hispanic.

SEE: "Hispanic," "Race/Ethnicity," and "Two or More Races."

Blunts

Blunts were defined as cigars with marijuana in them. Measures of the use of blunts in the respondent's lifetime, the past year, and the past month were derived from responses to the noncore question about recency of use: "How long has it been since you last smoked part or all of a cigar with marijuana in it?" The question about recency of use was asked if respondents previously reported any use of cigars with marijuana in them in their lifetime.

The following definitional information preceded the question about lifetime use of cigars with marijuana in them: "Sometimes people take tobacco out of a cigar and replace it with marijuana. This is sometimes called a 'blunt.'"

SEE: "Cigar Use," "Core Modules," "Current Use," "Lifetime Use," "Marijuana Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," and "Tobacco Product Use."

CAPI

CAPI stands for computer-assisted personal interviewing. CAPI questions in NSDUH are interviewer administered. Interviewers read these questions to respondents, then enter the respondents' answers into a laptop computer.

SEE: "ACASI," "Core Modules," and "Noncore Modules."

Cigar Use

Measures of use of cigars, including big cigars, cigarillos, and little cigars that look like cigarettes, in the respondent's lifetime, the past year, and the past month were derived from responses to the questions about cigar use in the past 30 days and the recency of use (if not in the past 30 days): "Now think about the past 30 days—that is, from [DATEFILL] up to and including today. During the past 30 days, have you smoked part or all of any type of cigar?" and "How long has it been since you last smoked part or all of any type of cigar?" Responses to noncore questions about use of cigars with marijuana in them (blunts) were not included in these measures to maintain the comparability of estimates over time. Questions about use of cigars in the past 30 days or the most recent use of cigars (if not in the past 30 days) were asked if respondents previously reported any use of cigars in their lifetime.

SEE: "Blunts," "Cigarette Use," "Core Modules," "Current Use," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," "Smokeless Tobacco Use," and "Tobacco Product Use."

Cigarette Use

Measures of use of cigarettes in the respondent's lifetime, the past year, and the past month were derived from responses to the questions about cigarette use in the past 30 days and the recency of use (if not in the past 30 days): "Now think about the past 30 days—that is, from [DATEFILL] up to and including today. During the past 30 days, have you smoked part or all of a cigarette?" and "How long has it been since you last smoked part or all of a cigarette?" Questions about use of cigarettes in the past 30 days or the most recent use of cigarettes (if not in the past 30 days) were asked if respondents previously reported that they smoked part or all of a cigarette in their lifetime.

SEE: "Cigar Use," "Current Use," "Lifetime Use," "Nicotine (Cigarette) Dependence," "Past Month Daily Cigarette Use," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," "Smokeless Tobacco Use," and "Tobacco Product Use."

Cocaine Use

Measures of use of cocaine, including powder, crack, free base, and coca paste, in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used any form of cocaine?" The question about recency of use was asked if respondents previously reported any use of cocaine in their lifetime.

SEE: "Crack Use," "Current Use," "Lifetime Use," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

College Enrollment Status

This measure was developed only for college-aged respondents aged 18 to 22 based on answers to questions about current or upcoming enrollment in school, and (if applicable) whether respondents were full- or part-time students, and the year of school that they were or will be attending. Respondents in this age group were classified either as full-time college students or as some other status, which included respondents not enrolled in school, enrolled in college part time, enrolled in other grades either full time or part time, or enrolled with no other information available. Respondents were classified as full-time college students if they reported that they were attending or will be attending their first through fifth or higher year of college or university and that they were or will be a full-time student. Respondents whose current enrollment status was unknown were excluded from this measure.

Core Modules

The NSDUH interview includes two types of sections or modules: (a) core and (b) noncore. A core set of questions critical for basic trend measurement of prevalence estimates remains relatively unchanged in the survey every year and is contained in the first part of the interview. The core consists of initial interviewer-administered demographic items (administered through computer-assisted personal interviewing [CAPI]) and self-administered questions (administered through audio computer-assisted self-interviewing [ACASI]) pertaining to the use of tobacco, alcohol, marijuana, cocaine, crack cocaine, heroin, hallucinogens, inhalants, prescription pain relievers, prescription tranquilizers, prescription stimulants, and prescription sedatives. Noncore questions, or modules, can be revised, dropped, or added from year to year and make up the latter part of the interview.

SEE: "ACASI," "CAPI," "Module," and "Noncore Modules."

County Type

County type is based on the "Rural/Urban Continuum Codes" developed in 2003 by the U.S. Department of Agriculture.³³ All U.S. counties and county equivalents were grouped based on revised definitions of metropolitan statistical areas (MSAs) and definitions of micropolitan statistical areas as defined by the Office of Management and Budget (OMB) in June 2003 (OMB, 2003).

³³ These codes are updated approximately every 10 years and are available at <http://ers.usda.gov/topics/rural-economy-population/rural-classifications.aspx> by clicking on that page's link to the "Rural/Urban Continuum Codes." To maintain consistency with county type measures from prior years, NSDUH is continuing to use the 2003 Rural/Urban Continuum Codes.

Large MSAs (large metro) have a total population of 1 million or more. Small MSAs (small metro) have a total population of fewer than 1 million. Nonmetropolitan (nonmetro) areas include counties in micropolitan statistical areas as well as counties outside of both metropolitan and micropolitan statistical areas. Nonmetro counties with a population of 20,000 or more in urbanized areas are classified as "urbanized," nonmetro counties with a population of at least 2,500 but fewer than 20,000 in urbanized areas are classified as "less urbanized," and nonmetro counties with a population of fewer than 2,500 in urbanized areas are classified as "completely rural." The terms "urbanized," "less urbanized," and "completely rural" for counties are not based on the relative proportion of the county population in urbanized areas, but rather on the absolute size of the population in urbanized areas. For example, some counties classified as "less urbanized" had over 50 percent of the county population residing in urbanized areas, but this represented fewer than 20,000 people in the county. Population counts used are from the 2000 census representing the resident population.

Crack Use

Crack is defined as cocaine that is used in rock or chunk form. Measures of use of crack cocaine in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used *crack*?" The question about recency of use was asked if respondents previously reported use of cocaine in any form and specifically any use of crack in their lifetime. Respondents who reported that they never used any form of cocaine were logically defined as never having used crack.

SEE: "Cocaine Use," "Current Use," "Lifetime Use," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Current Use

Any reported use of a specific substance in the past 30 days (also referred to as past month use).

SEE: "Lifetime Use," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Delinquent Behavior

Youths aged 12 to 17 were asked a series of six questions: "During the past 12 months, how many times have you . . . gotten into a serious fight at school or work?" "taken part in a fight where a group of your friends fought against another group?" "carried a handgun?" "sold illegal drugs?" "stolen or tried to steal anything worth more than \$50?" and "attacked someone with the intent to seriously hurt them?" Response options were (1) 0 times, (2) 1 or

2 times, (3) 3 to 5 times, (4) 6 to 9 times, or (5) 10 or more times. Respondents were defined as having engaged in a specific delinquent behavior if they reported engaging in that behavior at least one time in the past 12 months.

SEE: "Prevalence."

Dependence

NSDUH dependence questions for alcohol or illicit drugs ask about the following symptoms, consistent with the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) (American Psychiatric Association [APA], 1994): (1) spent a lot of time engaging in activities related to substance use; (2) used the substance in greater quantities or for a longer time than intended; (3) developed tolerance (i.e., needing to use the substance more than before to get desired effects or noticing that the same amount of substance use had less effect than before); (4) made unsuccessful attempts to cut down on use; (5) continued substance use despite physical health or emotional problems associated with substance use; (6) reduced or eliminated participation in other activities because of substance use; and (7) experienced withdrawal symptoms. For the specific illicit drugs and alcohol that include a withdrawal criterion as one of the criteria that can be used to establish dependence, respondents meet the criteria for dependence if they met three out of the seven criteria. For illicit drugs that do not include a withdrawal criterion to establish dependence, respondents meet the criteria for dependence if they met three out of the six criteria for that substance. Respondents were asked the dependence questions for illicit drugs other than marijuana if they reported any use in the past 12 months. Respondents were asked the alcohol and marijuana dependence questions only if they indicated use of these substances on 6 or more days in the past 12 months. These criteria were not used to define nicotine (cigarette) dependence, which used a different series of items. Although responses to the dependence or abuse questions based only on the past year use of methamphetamine, Ambien®, Adderall®, or specific hallucinogens from the noncore special drugs module³⁴ are included in the dataset, these data were not included in these abuse and dependence measures to maintain the comparability of estimates over time.

SEE: "Abuse," "Need for Alcohol Use Treatment," "Need for Illicit Drug or Alcohol Use Treatment," "Need for Illicit Drug Use Treatment," "Nicotine (Cigarette) Dependence," "Noncore Modules," and "Prevalence."

³⁴ These questions were added to the survey after 2002.

Depression

SEE: "Major Depressive Episode (MDE)."

Distress

SEE: "Kessler-6 (K6) Scale."

**DMT, AMT, or
5-MeO-DIPT ("Foxy")
Use**

Measures of use of dimethyltryptamine (DMT), alpha-methyltryptamine (AMT), or N, N-diisopropyl-5-methoxytryptamine (5-MeO-DIPT or "Foxy") in the respondent's lifetime, the past year, and the past month were derived from responses to the noncore question about recency of use: "Earlier, the computer recorded that you have used DMT, AMT, or Foxy. How long has it been since you last used any of these drugs?" The questions about DMT, AMT, or 5-MeO-DIPT were added to a noncore section of the interview in 2006 and were not incorporated in estimates of use of hallucinogens, illicit drugs, or illicit drugs other than marijuana because inclusion of these questions would affect the comparability of estimates over time.

SEE: "Core Modules," "Current Use," "Hallucinogen Use," "Illicit Drugs," "Illicit Drugs Other Than Marijuana," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

**Driving Under the
Influence**

Respondents who reported use of alcohol or illicit drugs in the past 12 months were asked up to three questions in a noncore section of the interview about driving a vehicle in the past 12 months while under the influence of (a) alcohol and illegal drugs used together, (b) alcohol only, or (c) illegal drugs only. Respondents were defined as driving under the influence of illicit drugs if they reported driving under the influence of alcohol and illegal drugs used together or illegal drugs only. Respondents were defined as driving under the influence of alcohol if they reported driving under the influence of alcohol and illegal drugs used together or alcohol only. Respondents were defined as driving under the influence of illicit drugs *or* alcohol if they reported driving under the influence in response to any of these three questions.

SEE: "Core Modules," "Illicit Drugs," "Noncore Modules," and "Prevalence."

Ecstasy Use

Measures of use of Ecstasy or MDMA (methylenedioxy-methamphetamine) in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used *Ecstasy*, also known as MDMA?" The question about recency of use was

asked if respondents previously reported any use of Ecstasy or MDMA in their lifetime.

SEE: "Current Use," "Hallucinogen Use," "Lifetime Use," "LSD Use," "Past Month Use," "Past Year Use," "PCP Use," "Prevalence," and "Recency of Use."

Education

This is the measure of educational attainment among respondents who are aged 18 or older. It is based on respondents' reports of their highest grade or year of school that they completed. Response options were presented in terms of single years of education, ranging from 0 if respondents never attended school to 17 if respondents completed 5 or more years at the college or university level. Respondents were classified into four categories based on their answers: less than high school, high school graduate, some college, and college graduate. Individuals who indicated that they completed the 12th grade were classified as high school graduates, and individuals who indicated that they completed 4 or more years at the college or university level were defined as being college graduates.

Employment

Respondents were asked to report whether they worked in the week prior to the interview, and if not, whether they had a job despite not working in the past week. Respondents who worked in the past week or who reported having a job despite not working were asked whether they usually work 35 or more hours per week. Respondents who did not work in the past week but had a job were asked to look at a card that described why they did not work in the past week despite having a job. Respondents who did not have a job in the past week were asked to look at a different card that described why they did not have a job in the past week.

Full-time "Full-time" includes respondents who usually work 35 or more hours per week and who worked in the past week or had a job despite not working in the past week.

Part-time "Part-time" includes respondents who usually work fewer than 35 hours per week and who worked in the past week or had a job despite not working in the past week.

Unemployed "Unemployed" refers to respondents who did not have a job and were looking for work or who were on layoff. For consistency with the Current Population Survey definition of unemployment, respondents who reported that they did not have a

job but were looking for work needed to report making specific efforts to find work in the past 30 days, such as sending out resumes or applications, placing ads, or answering ads.

Other "Other" includes all responses defined as not being in the labor force, including being a student, keeping house or caring for children full time, retired, disabled, or other miscellaneous work statuses. Respondents who reported that they did not have a job and did not want one also were classified as not being in the labor force. Similarly, respondents who reported not having a job and looking for work also were classified as not being in the labor force if they did not report making specific efforts to find work in the past 30 days. Those respondents who reported having no job and provided no additional information could not have their labor force status determined and were therefore assigned to the "Other" employment category.

Ethnicity SEE: "Race/Ethnicity."

Ever Used SEE: "Lifetime Use."

Exposure to Drug

Education and Prevention

The following measures were created for exposure to drug education and prevention among youths aged 12 to 17: (a) exposure to prevention messages in school; (b) participation in a prevention program outside of school; (c) seeing or hearing prevention messages from sources outside of school; and (d) conversations with parents about the dangers of substance use.

Youths who reported that they attended any type of school at any time in the past 12 months were asked: "During the past 12 months . . . Have you had a special class about drugs or alcohol in school?" "Have you had films, lectures, discussions, or printed information about drugs or alcohol in one of your regular classes, such as health or physical education?" "Have you had films, lectures, discussions, or printed information about drugs or alcohol outside of one of your regular classes, such as in a special assembly?" Youths who reported having had any of these were defined as having seen or heard prevention messages in school.

Youths who reported that they were home schooled in the past 12 months also were asked these questions. Youths who reported

that they were home schooled were instructed to think about their home schooling as "school."

Youths also were asked: "During the past 12 months . . . Have you participated in an alcohol, tobacco or drug prevention program outside of school, where you learn about the dangers of using, and how to resist using, alcohol, tobacco, or drugs?" "Have you seen or heard any alcohol or drug prevention messages from sources outside school such as posters, pamphlets, radio, or TV?" "Have you talked with at least one of your parents about the dangers of tobacco, alcohol, or drug use?" Youths who answered these questions as "yes" were defined as having been exposed to prevention messages from these sources outside of school.

Family Income

Family income was estimated by asking respondents about their total personal income and total family income, based on the following questions: "Of these income groups, which category best represents (your/SAMPLE MEMBER's) total personal income during [the previous calendar year]?" and "Of these income groups, which category best represents (your/SAMPLE MEMBER's) total combined family income during [the previous calendar year]?" Family was defined as any related member in the household, including all foster relationships and unmarried partners (including same-sex partners). It excluded roommates, boarders, and other nonrelatives.

NOTE: If no other family members were living with the respondent, total family income was based on information about the respondent's total personal income. For youths aged 12 to 17 and those respondents who were unable to respond to the health insurance or income questions, proxy responses were accepted from a household member identified as being better able to give the correct information about health insurance and income.

Functional Impairment

Functional impairment refers to interference in a person's daily functioning or limitations in carrying out one or more major life activities. The Global Assessment of Functioning (GAF) allows mental health clinicians to assess a person's level of impairment because of a diagnosable mental, behavioral, or emotional disorder. See Section B.4.4 in Section B of this report for more details about how functional impairment is assessed for adults in NSDUH.

SEE: "Global Assessment of Functioning (GAF)," "Mental Illness," "Sheehan Disability Scale (SDS)," and "World

Health Organization Disability Assessment Schedule (WHODAS)."

Geographic Division

Data are presented for nine geographic divisions within the four geographic regions. Within the **Northeast Region** are the *New England Division* (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont) and the *Middle Atlantic Division* (New Jersey, New York, Pennsylvania). Within the **Midwest Region** are the *East North Central Division* (Illinois, Indiana, Michigan, Ohio, Wisconsin) and the *West North Central Division* (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota). Within the **South Region** are the *South Atlantic Division* (Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia), the *East South Central Division* (Alabama, Kentucky, Mississippi, Tennessee), and the *West South Central Division* (Arkansas, Louisiana, Oklahoma, Texas). Within the **West Region** are the *Mountain Division* (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming) and the *Pacific Division* (Alaska, California, Hawaii, Oregon, Washington).

SEE: "Region."

GHB Use

Measures of use of gamma hydroxybutyrate (GHB) in the respondent's lifetime, the past year, and the past month were derived from responses to the noncore question about recency of use: "Earlier, the computer recorded that you have used GHB. How long has it been since you last used GHB?" The questions about GHB were added to a noncore section of the interview in 2006 and were not incorporated in estimates of use of illicit drugs or illicit drugs other than marijuana because inclusion of these questions would affect the comparability of estimates over time.

The following definitional information preceded the question about lifetime use of GHB: "The next question is about GHB, also called *G*, *Georgia Home Boy*, *Grievous Bodily Harm*, *Liquid G*, or gamma hydroxybutyrate."

SEE: "Core Modules," "Current Use," "Illicit Drugs," "Illicit Drugs Other Than Marijuana," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Global Assessment of Functioning (GAF)

As indicated in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) (American Psychiatric Association [APA], 1994), mental health clinicians use the Global Assessment of

Functioning (GAF) to consider a person's psychological, social, and occupational functioning on a hypothetical continuum. When adequate information is available, numeric ratings for the GAF range from 1 to 100. Lower values on the rating scale indicate a greater extent of impairment due to the presence of a diagnosable mental, behavioral, or emotional disorder. In interviews that were conducted in 2008 to 2012 with a subset of adult NSDUH respondents, mental health clinicians rated respondents' worst period of functioning in the past 12 months because of a mental disorder. Clinicians do not include impairment in functioning due to physical or environmental limitations.

SEE: "Mental Illness," "Sheehan Disability Scale (SDS)," and "World Health Organization Disability Assessment Schedule (WHODAS)."

Hallucinogen Use

Measures of use of hallucinogens in the respondent's lifetime, the past year, and the past month were derived from responses to the core question about recency of use: "How long has it been since you last used any hallucinogen?" The question about recency of use was asked if respondents previously reported any use of hallucinogens in their lifetime. Responses to noncore questions about the use of the following drugs, which were added to the survey in 2006, were not included in these measures: ketamine, DMT (dimethyltryptamine), AMT (alpha-methyltryptamine), 5-MeO-DIPT (N, N-diisopropyl-5-methoxytryptamine, also known as "Foxy"), and *Salvia divinorum*.

Respondents were asked a series of gate questions about any use of specific hallucinogens in their lifetime. These gate questions were preceded by the following definitional information about hallucinogens: "The next questions are about substances called hallucinogens. These drugs often cause people to see or experience things that are not real."

Gate questions asked whether respondents ever used the following hallucinogens, even once: (a) LSD, also called "acid"; (b) PCP, also called "angel dust" or phencyclidine; (c) peyote; (d) mescaline; (e) psilocybin, found in mushrooms; (f) "Ecstasy," also known as MDMA; and (g) any other hallucinogen besides the ones that have been listed.

SEE: "Core Modules," "Current Use," "Ecstasy Use," "Lifetime Use," "LSD Use," "Noncore Modules," "Past Month Use," "Past Year Use," "PCP Use," "Prevalence," and "Recency of Use."

Health Insurance Status

A series of questions was asked to identify whether respondents currently were covered by Medicare, Medicaid, the State Children's Health Insurance Program (SCHIP), military health care (such as TRICARE or CHAMPUS), private health insurance, or any kind of health insurance (if respondents reported not being covered by any of the above). If respondents did not currently have health insurance coverage, questions were asked to determine the length of time they were without coverage and the reasons for not being covered.

NOTE: For youths aged 12 to 17 and those respondents who were unable to respond to the health insurance or income questions, proxy responses were accepted from a household member identified as being better able to give the correct information about health insurance and income.

SEE: "Medicaid" and "Medicare."

Health Professional

A health professional was defined as any of the following types of medical doctors or other professionals: general practitioner or family doctor; other medical doctor (e.g., cardiologist, gynecologist, urologist); psychologist; psychiatrist or psychotherapist; social worker; counselor; other mental health professional (e.g., mental health nurse or other therapist where type is not specified); and nurse, occupational therapist, or other health professional.

SEE: "Alternative Service Professional," "Treatment for Depression" and "Treatment for Major Depressive Episode."

Heavy Use of Alcohol

Heavy use of alcohol was defined for both males and females as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on each of 5 or more days in the past 30 days. Heavy alcohol users also were defined as binge users of alcohol. Respondents were asked about the number of days they had five or more drinks on the same occasion if they reported last using any alcohol in the past 30 days based on the following question: "How long has it been since you last drank an alcoholic beverage?"

SEE: "Alcohol Use" and "Binge Use of Alcohol."

Heroin Use

Measures of use of heroin in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you

last used heroin?" The question about recency of use was asked if respondents previously reported any use of heroin in their lifetime.

SEE: "Current Use," "Lifetime Use," "Past Month Use,"
"Past Year Use," "Prevalence," and "Recency of Use."

Hispanic

Hispanic was defined as anyone of Hispanic, Latino, or Spanish origin. Respondents were classified as Hispanic or Latino in the race/ethnicity measure regardless of race, in accordance with federal standards for reporting race and ethnicity data (Office of Management and Budget [OMB], 1997).

SEE: "American Indian or Alaska Native," "Asian," "Black,"
"Native Hawaiian or Other Pacific Islander,"
"Race/Ethnicity," "Two or More Races," and "White."

Illicit Drugs

Illicit drugs include marijuana or hashish, cocaine (including crack), heroin, hallucinogens (including phencyclidine [PCP], lysergic acid diethylamide [LSD], and Ecstasy [MDMA]), inhalants, or prescription-type psychotherapeutics used nonmedically, which include pain relievers, tranquilizers, stimulants, and sedatives. Illicit drug use refers to use of any of these drugs based on responses to questions only in the core sections and *does not* include data from the noncore methamphetamine items that were added in 2005 and 2006. Responses to questions about the use of the following drugs, which have been included in the survey since 2006, also were not included in these measures: GHB (gamma hydroxybutyrate), Adderall[®], Ambien[®], nonprescription cough or cold medicines, ketamine, DMT (dimethyltryptamine), AMT (alpha-methyltryptamine), 5-MeO-DIPT (N, N-diisopropyl-5-methoxytryptamine, also known as "Foxy"), and *Salvia divinorum*.

SEE: "Core Modules," "Current Use," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use,"
"Prevalence," "Psychotherapeutic Drugs," and "Recency of Use."

Illicit Drugs Other Than Marijuana

These drugs include cocaine (including crack), heroin, hallucinogens (including phencyclidine [PCP], lysergic acid diethylamide [LSD], and Ecstasy [MDMA]), inhalants, or prescription-type psychotherapeutics used nonmedically, which include pain relievers, tranquilizers, stimulants, and sedatives. This measure includes marijuana users who used any of the above drugs in addition to using marijuana, as well as users of those drugs who have not used marijuana. The measure for illicit drugs other than

marijuana is defined based on responses to questions only in the core sections and *does not* include responses based on the noncore methamphetamine items that were added in 2005 and 2006. Responses to questions about the use of the following drugs, which have been included in the survey since 2006, also were not included in these measures: GHB (gamma hydroxybutyrate), Adderall[®], Ambien[®], nonprescription cough or cold medicines, ketamine, DMT (dimethyltryptamine), AMT (alpha-methyltryptamine), and 5-MeO-DIPT (N, N-diisopropyl-5-methoxytryptamine, also known as "Foxy"), and *Salvia divinorum*.

SEE: "Core Modules," "Current Use," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," "Psychotherapeutic Drugs," and "Recency of Use."

Incidence

Substance use incidence refers to the use of a substance for the first time (new use). Incidence statistics in NSDUH reflect first use occurring within the 12 months prior to the interview. This is referred to as past year incidence.

Incidence estimates are based on retrospective questions about the age at first use of substances, year and month of first use for recent initiates, the respondent's date of birth, and the interview date. For these estimates, respondents who are immigrants are included regardless of whether their first use occurred inside or outside the United States. See Section B.4.1 in Section B of this report for additional details.

SEE: "Prevalence."

Income

SEE: "Family Income."

Inhalant Use

Measures of use of inhalants in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used any inhalant for kicks or to get high?" The question about recency of use was asked if respondents previously reported any use of inhalants in their lifetime.

Respondents were asked a series of gate questions about any use of specific inhalants in their lifetime. These gate questions were preceded by the following definitional information about inhalants: "These next questions are about liquids, sprays, and gases that people sniff or inhale to get high or to make them feel good. We are not interested in times when you inhaled a substance

accidentally—such as when painting, cleaning an oven, or filling a car with gasoline."

Gate questions asked whether respondents ever inhaled the following substances, even once, for kicks or to get high: (a) amyl nitrite, "poppers," locker room odorizers, or "rush"; (b) correction fluid, degreaser, or cleaning fluid; (c) gasoline or lighter fluid; (d) glue, shoe polish, or toluene; (e) halothane, ether, or other anesthetics; (f) lacquer thinner or other paint solvents; (g) lighter gases, such as butane or propane; (h) nitrous oxide or "whippits"; (i) spray paints; (j) some other aerosol spray; and (k) any other inhalants besides the ones that have been listed.

SEE: "Current Use," "Lifetime Use," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Kessler-6 (K6) Scale

The Kessler-6 (K6) scale consists of six questions that gather information on how frequently adult respondents experienced symptoms of psychological distress during the past month or the one month in the past year when they were at their worst emotionally (Kessler et al., 2003a). These questions ask about the frequency of feeling (1) nervous, (2) hopeless, (3) restless or fidgety, (4) sad or depressed, (5) that everything was an effort, and (6) no good or worthless. Since 2008, adult respondents have first been asked about these symptoms for the past 30 days. Adults are then asked if they had a period in the past 12 months when they felt more depressed, anxious, or emotionally stressed than they felt during the past 30 days. If so, they are asked the K6 questions for the one month in the past 12 months when they felt the worst. Responses to these six questions for the past 30 days and (if applicable) the past 12 months are coded and summed to produce a score ranging from 0 to 24; if respondents are asked the K6 questions for both the past 30 days and past 12 months, the higher of the two scores is chosen as the final score for the past year reference period. Higher K6 total scores indicate greater distress. The K6 scale provides a measure of psychological distress and does not directly measure the presence of a diagnosable mental, behavioral, or emotional disorder, nor does it capture information on functional impairment due to having psychological distress or a mental disorder. The K6 and scales for measuring functional impairment (the Sheehan Disability Scale [SDS] only in 2008 and the World Health Organization Disability Assessment Schedule [WHODAS] in 2008 to the present) are used in models that predict whether a respondent can be categorized as having serious mental illness (SMI). See Section B.4.4 in Section B of this report for more information about the K6 and its scoring, as well as the development of SMI prediction models.

SEE: "Global Assessment of Functioning (GAF)," "Mental Illness," "Serious Psychological Distress (SPD)," "Sheehan Disability Scale (SDS)," and "World Health Organization Disability Assessment Schedule (WHODAS)."

Ketamine Use

Measures of use of ketamine in the respondent's lifetime, the past year, and the past month were derived from responses to the noncore question about recency of use: "Earlier, the computer recorded that you have used Ketamine. How long has it been since you last used Ketamine?" The question about lifetime use of ketamine noted that ketamine also is called "Special K" or "Super K." The questions about ketamine were added to a noncore section of the interview in 2006 and were not incorporated in estimates of use of hallucinogens, illicit drugs, or illicit drugs other than marijuana because inclusion of these questions would affect the comparability of estimates over time.

SEE: "Core Modules," "Current Use," "Hallucinogen Use," "Illicit Drugs," "Illicit Drugs Other Than Marijuana," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Large Metro

SEE: "County Type."

Latino

SEE: "Hispanic."

Lifetime Use

Lifetime use indicates use of a specific substance at least once in the respondent's lifetime. This measure includes respondents who also reported last using the substance in the past 30 days or past 12 months.

SEE: "Current Use," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Location of Most Recent Underage Alcohol Use

Respondents aged 12 to 20 who reported drinking at least one alcoholic beverage within the past 30 days were asked to indicate where they drank alcoholic beverages the last time they drank. The possible locations were (1) in a car or other vehicle; (2) at the respondent's home; (3) at someone else's home; (4) at a park, on a beach, or in a parking lot; (5) in a restaurant, bar, or club; (6) at a concert or sports game; (7) at school; or (8) some other place. Those who reported "some other place" were asked to write in a response indicating the specific location.

SEE: "Alcohol Use" and "Underage Alcohol Use."

Low (Mild) Mental Illness SEE: "Mental Illness."

Low Precision Prevalence estimates based on a relatively small number of respondents or with relatively large standard errors were not shown in the tables, but have been replaced with an asterisk (*) and noted as "low precision." These estimates have been omitted because one cannot place a high degree of confidence in their accuracy. [Table B.2](#) in Section B of this report includes a complete list of the rules used to determine low precision.

LSD Use Measures of use of lysergic acid diethylamide (LSD) in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used LSD?" The question about recency of use was asked if respondents previously reported any use of LSD in their lifetime.

SEE: "Current Use," "Ecstasy Use," "Hallucinogen Use," "Lifetime Use," "Past Month Use," "Past Year Use," "PCP Use," "Prevalence," and "Recency of Use."

Major Depressive Episode (MDE)

A person was defined as having had a **lifetime** major depressive episode (MDE) if he or she reported at least five or more of the following nine symptoms in the same 2-week period in his or her lifetime, in which at least one of the symptoms was a depressed mood or loss of interest or pleasure in daily activities:

- (1) depressed mood most of the day, nearly every day;
- (2) markedly diminished interest or pleasure in all or almost all activities most of the day, nearly every day;
- (3) significant weight loss when not dieting or weight gain or decrease or increase in appetite nearly every day;
- (4) insomnia or hypersomnia nearly every day;
- (5) psychomotor agitation or retardation nearly every day;
- (6) fatigue or loss of energy nearly every day;
- (7) feelings of worthlessness nearly every day;
- (8) diminished ability to think or concentrate or indecisiveness nearly every day; and
- (9) recurrent thoughts of death or recurrent suicide ideation.

This definition is based on the definition found in the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) (American Psychiatric Association [APA], 1994).

A person was defined as having an MDE **in the past year** if he or she (a) had a lifetime MDE; (b) had a period of time in the past 12 months when he or she felt depressed or lost interest or pleasure in daily activities for 2 weeks or longer; and (c) reported during this period of 2 weeks or longer in the past 12 months that he or she had "some of the other problems" that he or she reported for a

lifetime MDE. Unlike the DSM-IV criteria, however, no exclusions were made in NSDUH for depressive symptoms caused by medical illness, bereavement, or substance use disorders.

Because of changes that were made in the 2008 NSDUH questionnaire, the comparability of MDE estimates over time, including severe impairment due to MDE, was affected for adults. Adjusted MDE variables have been developed to allow trends in adult MDE to be reported for 2005 onward (Center for Behavioral Health Statistics and Quality [CBHSQ], 2012a). However, the estimate of severe impairment due to MDE among adults was not adjusted for 2008. More information on the comparability of MDE measures for adults can be found in Appendix I of the codebook for the 2013 NSDUH public use file (CBHSQ, 2014c).

SEE: "Kessler-6 (K6) Scale," "Prevalence," "Severe Impairment due to Major Depressive Episode," "Sheehan Disability Scale (SDS)," and "World Health Organization Disability Assessment Schedule (WHODAS)."

Marijuana Use

Measures of use of marijuana in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used marijuana or hashish?" The question about recency of use was asked if respondents previously reported any use of marijuana or hashish in their lifetime. Responses to noncore questions about use of cigars with marijuana in them (blunts) were not included in these measures. Creation of these measures did not take into account responses to noncore questions that have been included in the survey since 2013 about use of marijuana in the past 12 months that was recommended by a doctor or other health care professional.

The following definitional information preceded the question about lifetime use of marijuana: "The next questions are about marijuana and hashish. Marijuana is also called pot or grass. Marijuana is usually smoked, either in cigarettes called joints, or in a pipe. It is sometimes cooked in food. Hashish is a form of marijuana that is also called *hash*. It is usually smoked in a pipe. Another form of hashish is hash oil."

SEE: "Blunts," "Core Modules," "Current Use," "Illicit Drugs," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," "Prior Year Marijuana Use," and "Recency of Use."

Medicaid

Medicaid is a public assistance program that pays for medical care for low-income and disabled people. Respondents were asked specifically about the Medicaid program in the state where they lived. Respondents aged 12 to 19 were asked specifically about the State Children's Health Insurance Program (SCHIP) in their state. Respondents aged 12 to 19 who reported that they were covered by the SCHIP in their state also were classified as being covered by Medicaid. Respondents aged 65 or older who reported that they were covered by Medicaid were asked to verify that their answer was correct.

NOTE: For youths aged 12 to 17 and those respondents who were unable to respond to the health insurance or income questions, proxy responses were accepted from a household member identified as being better able to give the correct information about health insurance and income.

SEE: "Health Insurance Status" and "Medicare."

Medicare

Medicare is a health insurance program for people aged 65 or older and for certain disabled people. Respondents under the age of 65 who reported that they were covered by Medicare were asked to verify that their answer was correct.

NOTE: For youths aged 12 to 17 and those respondents who were unable to respond to the health insurance or income questions, proxy responses were accepted from a household member identified as being better able to give the correct information about health insurance and income.

SEE: "Health Insurance Status" and "Medicaid."

Mental Health Care

SEE: "Mental Health Service Utilization" and "Treatment for Depression."

Mental Health Service Utilization

For adults aged 18 or older, mental health service utilization is defined as receiving treatment or counseling for any problem with emotions, nerves, or mental health in the 12 months prior to the interview in any inpatient or outpatient setting, or the use of prescription medication for treatment of any mental or emotional condition.

For youths aged 12 to 17, mental health service utilization is defined as receiving within the 12 months prior to the interview treatment or counseling for any emotional or behavioral problem in the specialty mental health setting (inpatient or outpatient services) or a nonspecialty mental health service setting, which includes an

educational setting (school-based services), the general medical setting (pediatrician or family physician services), the juvenile justice setting (juvenile detention center, prison, or jail), or the child welfare setting (foster care or therapeutic foster care). This definition differs from the definition that was used in earlier reports and tables prior to the 2013 survey. Starting with the 2013 NSDUH, the child welfare setting was defined as a separate nonspecialty service category instead of being included in the inpatient services under specialty services.

Treatment for only a substance use problem is not included in estimates of mental health service utilization for adults or youths.

SEE: "Prevalence" and "Unmet Need for Mental Health Services."

Mental Health Treatment SEE: "Mental Health Service Utilization" and "Treatment for Major Depressive Episode."

Mental Illness The definition of mental illness among adults aged 18 or older has two dimensions: (1) the presence of a diagnosable mental, behavioral, or emotional disorder in the past year (excluding developmental and substance use disorders) of sufficient duration to meet diagnostic criteria specified within the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) (American Psychiatric Association [APA], 1994); and (2) the level of interference with or limitation of one or more major life activities resulting from a disorder (functional impairment). A statistical model that predicts the likelihood of having mental illness was developed based on a subsample of adult NSDUH respondents from 2008 to 2012 who completed a clinical follow-up interview after the main NSDUH interview. The follow-up interviews consisted of detailed mental health assessments administered by trained mental health clinicians. The dependent variable for mental illness in the model was established through the clinical interviews using modules from the Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Non-patient Edition (SCID-I/NP) (First et al., 2002) for the following past year disorders or symptoms: major depressive disorder (including major depressive episode [MDE]); dysthymic disorder; bipolar I disorder (including manic episode); specific phobia; social phobia; generalized anxiety disorder; panic disorder (with and without agoraphobia); agoraphobia (without history of panic disorder); obsessive compulsive disorder; posttraumatic stress disorder; anorexia nervosa; bulimia nervosa; adjustment disorder; and psychotic symptoms (i.e., hallucinations or delusions). The clinical interviews also included the Global

Assessment of Functioning (GAF) scale to measure functional impairment. This model was used to predict each adult NSDUH respondent's mental illness status based on his or her responses to questions in the main NSDUH interview on psychological distress (Kessler-6 [K6] scale), functional impairment (an abbreviated version of the World Health Organization Disability Assessment Schedule [WHODAS]), past year MDE, past year suicidal thoughts, and age. See Section B.4.4 in Section B of this report for additional details on the model and specifications.

Mental illness, differentiated by the level of functional impairment, is defined as follows:

Any Any mental illness (AMI) among adults is defined as adults aged 18 or older who currently or at any time in the past year have had a diagnosable mental, behavioral, or emotional disorder as defined above, regardless of the level of impairment in carrying out major life activities. AMI is estimated based on a statistical model of a clinical diagnosis and responses to questions in the main NSDUH interview on distress (Kessler-6 [K6] scale), impairment (truncated version of the World Health Organization Disability Assessment Schedule [WHODAS]), past year major depressive episode (MDE), past year suicidal thoughts, and age.

Low (mild) Low (mild) mental illness among adults is defined as adults aged 18 or older who currently or at any time in the past year have had a diagnosable mental, behavioral, or emotional disorder as defined above, but resulting in no more than mild impairment in carrying out major life activities, based on clinical interview Global Assessment of Functioning (GAF) scores of greater than 59. Low (mild) mental illness is estimated based on a statistical model of a clinical diagnosis and responses to questions in the main NSDUH interview on distress (Kessler-6 [K6] scale), impairment (truncated version of the World Health Organization Disability Assessment Schedule [WHODAS]), past year major depressive episode (MDE), past year suicidal thoughts, and age.

Moderate Moderate mental illness among adults is defined as adults aged 18 or older who currently or at any time in the past year have had a diagnosable mental,

behavioral, or emotional disorder as defined above and resulting in moderate impairment in carrying out major life activities, based on clinical interview Global Assessment of Functioning (GAF) scores of 51 to 59. Moderate mental illness is estimated based on a statistical model of a clinical diagnosis and responses to questions in the main NSDUH interview on distress (Kessler-6 [K6] scale), impairment (truncated version of the World Health Organization Disability Assessment Schedule [WHODAS]), past year major depressive episode (MDE), past year suicidal thoughts, and age.

Note that in 2014 NSDUH reports, low (mild) mental illness or moderate mental illness are represented as a single category of any mental illness (AMI) without serious mental illness (SMI).

Serious

Serious mental illness (SMI) among adults is defined in Public Law 102-321 as adults aged 18 or older who currently or at any time in the past year have had a diagnosable mental, behavioral, or emotional disorder and resulting in substantial impairment in carrying out major life activities (Alcohol, Drug Abuse, and Mental Health Administration [ADAMHA] Reorganization Act, 1992). In NSDUH, a diagnosable mental, behavioral, or emotional disorder is defined as for the other mental illness categories described previously (i.e., based on the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition [DSM-IV] [American Psychiatric Association (APA), 1994] and excluding developmental and substance use disorders); substantial impairment is defined based on clinical interview Global Assessment of Functioning (GAF) scores of 50 or less. SMI is estimated based on a statistical model of a clinical diagnosis and responses to questions in the main NSDUH interview on distress (Kessler-6 [K6] scale), impairment (truncated version of the World Health Organization Disability Assessment Schedule [WHODAS]), past year major depressive episode (MDE), past year suicidal thoughts, and age.

SEE: "Global Assessment of Functioning (GAF)," "Kessler-6 (K6) Scale," "Major Depressive Episode (MDE),"

"Prevalence," "Suicide," and "World Health Organization Disability Assessment Schedule (WHODAS)."

Methamphetamine Use

Measures of use of methamphetamine (also known as crank, crystal, ice, or speed), Desoxyn[®], or Methedrine[®] in the respondent's lifetime, the past year, and the past month were derived from responses to the core question about recency of use: "How long has it been since you last used methamphetamine, Desoxyn, or Methedrine?" The core question about recency of use was asked if respondents previously reported any use of methamphetamine, Desoxyn[®], or Methedrine[®] in their lifetime that was not prescribed or that they took only for the experience or feeling it caused.

Estimates for methamphetamine use, stimulant use, and nonmedical use of psychotherapeutics from 2006 onward also include responses based on the noncore methamphetamine use items that were added in 2005 and 2006. Estimates for 2002 through 2005 have been adjusted to make them comparable with estimates from 2006 onward that include responses to the noncore methamphetamine items. Unlike the core question about lifetime use, which asks about use of methamphetamine that was not prescribed or was taken only for the experience or feeling it caused, the noncore question asked about *any* lifetime use of methamphetamine.

SEE: "Core Modules," "Current Use," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," "Source of Psychotherapeutic Drugs," and "Stimulant Use."

Midwest Region

The states included are those in the East North Central Division—Illinois, Indiana, Michigan, Ohio, and Wisconsin; and the West North Central Division—Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

SEE: "Geographic Division" and "Region."

Moderate Mental Illness

SEE: "Mental Illness."

Module

Modules in the NSDUH questionnaire refer to sections that are organized together by mode of administration (i.e., computer-assisted personal interviewing [CAPI] or audio computer-assisted self-interviewing [ACASI]), content, and routing logic. Several modules include an initial question or series of initial questions that ask whether the behavior or characteristic of interest was applicable to respondents. If so, respondents are asked further

questions about that topic. If the behavior or characteristic of interest is not applicable, then respondents are routed to the next module in the interview.

SEE: "ACASI," "CAPI," "Core Modules," and "Noncore Modules."

**Native Hawaiian or
Other Pacific Islander**

Native Hawaiian, Guamanian or Chamorro, Samoan, or Other Pacific Islander, not of Hispanic, Latino, or Spanish origin, in accordance with federal standards for reporting race and ethnicity data (Office of Management and Budget [OMB], 1997). This does not include respondents reporting two or more races. Respondents reporting that they were Native Hawaiian, Guamanian or Chamorro, Samoan, or Other Pacific Islander and of Hispanic, Latino, or Spanish origin were classified as Hispanic. The categories "Guamanian or Chamorro" and "Samoan" have been included in the NSDUH questionnaire since 2013.

SEE: "Hispanic," "Race/Ethnicity," and "Two or More Races."

**Need for Alcohol Use
Treatment**

Respondents were classified as needing treatment for an alcohol use problem if they met at least one of three criteria during the past year: (1) dependence on alcohol; (2) abuse of alcohol; or (3) received treatment for alcohol use at a specialty facility (i.e., drug and alcohol rehabilitation facility [inpatient or outpatient], hospital [inpatient only], or mental health center).

SEE: "Abuse," "Dependence," "Prevalence," "Specialty Substance Use Treatment Facility," and "Treatment for a Substance Use Problem."

**Need for Illicit Drug
or Alcohol Use Treatment**

Respondents were classified as needing treatment for an illicit drug or alcohol use problem if they met at least one of three criteria during the past year: (1) dependence on illicit drugs or alcohol; (2) abuse of illicit drugs or alcohol; or (3) received treatment for illicit drug or alcohol use at a specialty facility (i.e., drug and alcohol rehabilitation facility [inpatient or outpatient], hospital [inpatient only], or mental health center).

SEE: "Abuse," "Dependence," "Prevalence," "Specialty Substance Use Treatment Facility," and "Treatment for a Substance Use Problem."

Need for Illicit Drug Use Treatment

Respondents were classified as needing treatment for an illicit drug use problem if they met at least one of three criteria during the past year: (1) dependence on illicit drugs; (2) abuse of illicit drugs; or (3) received treatment for illicit drug use at a specialty facility (i.e., drug and alcohol rehabilitation facility [inpatient or outpatient], hospital [inpatient only], or mental health center).

SEE: "Abuse," "Dependence," "Prevalence," "Specialty Substance Use Treatment Facility," and "Treatment for a Substance Use Problem."

Nicotine (Cigarette) Dependence

A respondent was defined as having nicotine (cigarette) dependence if he or she met either the dependence criteria derived from the Nicotine Dependence Syndrome Scale (NDSS) (Shiffman, Hickcox, Gnys, Paty, & Kassel, 1995; Shiffman, Waters, & Hickcox, 2004) or the Fagerstrom Test of Nicotine Dependence (FTND) (Fagerstrom, 1978; Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991).

SEE: "Cigarette Use," "Dependence," and "Prevalence."

Noncore Modules

The NSDUH interview includes two types of sections or modules: (a) core and (b) noncore. A core set of questions that are critical for basic trend measurement of prevalence estimates remains in the survey every year and is contained in the first part of the interview. Noncore questions are supplemental topics included in the latter part of the interview after all the core modules. Noncore topics can be revised, dropped, or added from year to year. These include (but are not limited to) injection drug use, perceived risks of substance use, substance dependence or abuse, arrests, treatment for substance use problems, pregnancy and health care issues, and mental health issues. Noncore demographic questions, which are interviewer administered using computer-assisted personal interviewing (CAPI) and follow the audio computer-assisted self-interviewing (ACASI) questions, address such topics as immigration, current school enrollment, employment and workplace issues, health insurance coverage, and income. In practice, however, some of the noncore portions of the interview have remained in the survey, relatively unchanged, from year to year (e.g., current health insurance coverage, employment).

SEE: "ACASI," "CAPI," "Core Modules," and "Modules."

Nonmedical Use of Psychotherapeutics

A core section of the interview instrument contains questions about nonmedical use of four classes of prescription-type psychotherapeutics: pain relievers, tranquilizers, stimulants, and sedatives. Nonmedical use is defined as (1) use of at least one of these medications without a prescription belonging to the respondent or (2) use that occurred simply for the experience or feeling the drug caused.

Estimates for the measures of nonmedical use of psychotherapeutics from 2006 onward also include responses based on the noncore methamphetamine use items that were added in 2005 and 2006. Estimates for 2002 through 2005 have been adjusted to make them comparable with estimates from 2006 onward that include responses to the noncore methamphetamine items. Responses to questions about the nonmedical use of Adderall® (a stimulant) and Ambien® (a sedative), which were added to the survey in 2006, were not included in these measures to maintain the comparability of estimates over time.

Measures of use of nonmedical psychotherapeutic agents in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used any prescription [pain reliever, tranquilizer, stimulant, or sedative] that was not prescribed for you or that you took only for the experience or feeling it caused?"

Questions about nonmedical use of psychotherapeutic drugs were preceded by the following introduction: "Now we have some questions about drugs that people are supposed to take only if they have a prescription from a doctor. We are only interested in your use of a drug if the drug was not prescribed for you, or if you took the drug only for the experience or feeling it caused."

NOTE: The pill card contains pictures and names of specific drugs within each psychotherapeutic category. For example, pictures and the names of Valium®, Librium®, and other tranquilizers are shown when the section on tranquilizers is introduced.

SEE: "Core Modules," "Current Use," "Lifetime Use," "Methamphetamine Use," "Noncore Modules," "Pain Reliever Use," "Past Month Use," "Past Year Use," "Pill Cards," "Prevalence," "Psychotherapeutic Drugs," "Recency of Use," "Sedative Use," "Source of

Psychotherapeutic Drugs," "Stimulant Use," and "Tranquilizer Use."

Nonmetro

SEE: "County Type."

Nonprescription Cough or Cold Medicine Use

Measures of nonmedical use of nonprescription cough or cold medicine in the respondent's lifetime, the past year, and the past month were derived from responses to the noncore question about recency of use: "Earlier, the computer recorded that you have taken a non-prescription cough or cold medicine just to get high. How long has it been since you last took one of these cough or cold medicines to get high?" The questions about nonprescription cough or cold medicine use were added to a noncore section of the interview in 2006 and were not incorporated in estimates of use of illicit drugs or illicit drugs other than marijuana because inclusion of these questions would affect the comparability of estimates over time.

SEE: "Core Modules," "Current Use," "Illicit Drugs," "Illicit Drugs Other Than Marijuana," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Northeast Region

The states included are those in the New England Division—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; and the Middle Atlantic Division—New Jersey, New York, and Pennsylvania.

SEE: "Geographic Division" and "Region."

OxyContin® Use

Measures of nonmedical use of the prescription pain reliever OxyContin® in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used OxyContin that was not prescribed for you or that you took only for the experience or feeling it caused?" The question about recency of use was asked if respondents previously reported any nonmedical use of OxyContin® in their lifetime.

SEE: "Current Use," "Lifetime Use," "Pain Reliever Use," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Pain Reliever Use

Measures of the nonmedical use of prescription-type pain relievers in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used any prescription pain

reliever that was not prescribed for you, or that you took only for the experience or feeling it caused?" The question about recency of use was asked if respondents previously reported any nonmedical use of prescription pain relievers in their lifetime.

Respondents were asked a series of gate questions about any nonmedical use of specific prescription pain relievers in their lifetime. These gate questions were preceded by the following definitional information about pain relievers: "These questions are about the use of pain relievers. We are not interested in your use of *over-the-counter* pain relievers such as aspirin, Tylenol, or Advil that can be bought in drug stores or grocery stores without a doctor's prescription. Card A shows pictures of some different types of prescription pain relievers and lists the names of some others. These pictures show only pills, but we are interested in your use of any form of prescription pain relievers that were not prescribed for you or that you took only for the experience or feeling they caused."

Gate questions asked whether respondents ever, even once, used the following prescription pain relievers that were not prescribed for respondents or that they took only for the experience or feeling they caused; unless indicated otherwise, pictures of these pain relievers were shown on Pill Card A to aid respondents in identifying pain relievers they used nonmedically: (a) Darvocet[®], Darvon[®], or Tylenol[®] with Codeine; (b) Percocet[®], Percodan[®], or Tylox[®]; (c) Vicodin[®], Lortab[®], or Lorcet[®]; (d) Codeine; (e) Demerol[®]; (f) Dilaudid[®]; (g) Fioricet[®]; (h) Fiorinal[®]; (i) Hydrocodone; (j) Methadone; (k) Morphine; (l) OxyContin[®]; (m) Phenaphen[®] with Codeine; (n) Propoxyphene; (o) SK-65[®]; (p) Stadol[®] (not pictured); (q) Talacen[®]; (r) Talwin[®]; (s) Talwin[®] NX; (t) Tramadol (not pictured); (u) Ultram[®]; and (v) any other prescription pain reliever besides the ones shown on Card A.

SEE: "Core Modules," "Current Use," "Lifetime Use," "Noncore Modules," "Nonmedical Use of Psychotherapeutics," "OxyContin[®] Use," "Past Month Use," "Past Year Use," "Pill Cards," "Prevalence," "Psychotherapeutic Drugs," "Recency of Use," "Sedative Use," "Source of Psychotherapeutic Drugs," "Stimulant Use," and "Tranquilizer Use."

Past Month Daily Cigarette Use

A respondent was defined as being a past month daily cigarette user if he or she smoked part or all of a cigarette on each of the past 30 days. Respondents were asked about the number of days

they smoked a cigarette in this period if they previously reported that they smoked part or all of a cigarette in the past 30 days.

SEE: "Cigarette Use."

Past Month Use

This measure indicates use of a specific substance in the 30 days prior to the interview. Respondents who indicated past month use of a specific substance also were classified as lifetime and past year users.

SEE: "Current Use," "Lifetime Use," "Past Year Use," "Prevalence," and "Recency of Use."

Past Year Incidence

SEE: "Incidence."

Past Year Use

This measure indicates use of a specific substance in the 12 months prior to the interview. This definition includes those respondents who last used the substance in the 30 days prior to the interview. Respondents who indicated past year use of a specific substance also were classified as lifetime users.

SEE: "Current Use," "Lifetime Use," "Past Month Use," "Prevalence," and "Recency of Use."

PCP Use

Measures of use of phencyclidine (PCP) in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used PCP?" The question about recency of use was asked if respondents previously reported any use of PCP in their lifetime.

SEE: "Current Use," "Ecstasy Use," "Hallucinogen Use," "Lifetime Use," "LSD Use," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Perceived Availability

Respondents were asked to assess how difficult or easy it would be for them to get various illicit drugs if they wanted these drugs. Response options were (1) probably impossible, (2) very difficult, (3) fairly difficult, (4) fairly easy, and (5) very easy.

Perceived Need for Alcohol Use Treatment

Respondents were classified as perceiving a need for alcohol use treatment if they reported feeling a need for alcohol use treatment when asked, "During the past 12 months, did you need treatment or counseling for your use of alcohol?" or if they indicated feeling a need for additional treatment specifically for alcohol use when asked, "During the past 12 months, for which of the following drugs did you need additional treatment or counseling?"

SEE: "Prevalence" and "Treatment for a Substance Use Problem."

**Perceived Need for
Illicit Drug or Alcohol
Use Treatment**

Respondents were classified as perceiving a need for illicit drug or alcohol use treatment if they were classified as either perceiving a need for illicit drug use treatment or perceiving a need for alcohol use treatment.

SEE: "Perceived Need for Alcohol Use Treatment" and "Perceived Need for Illicit Drug Use Treatment."

**Perceived Need for
Illicit Drug Use Treatment**

Respondents were classified as perceiving a need for illicit drug use treatment if they reported feeling a need for treatment for the use of one or more drugs when asked specifically about each of the individual drugs they had indicated using, "During the past 12 months, did you need treatment or counseling for your use of (drug)?" They also were classified as perceiving a need for illicit drug use treatment if they indicated feeling a need for additional treatment specifically for the use of one or more drugs when asked, "During the past 12 months, for which of the following drugs did you need additional treatment or counseling?" The response list of drugs included marijuana/hashish, cocaine or crack, heroin, hallucinogens, inhalants, prescription pain relievers, prescription tranquilizers, prescription stimulants, prescription sedatives, or some other drug.

SEE: "Prevalence" and "Treatment for a Substance Use Problem."

**Perceived Need for
Mental Health Services**

SEE: "Unmet Need for Mental Health Services."

**Perceived Risk/
Harmfulness**

Respondents were asked to assess the extent to which people risk harming themselves physically and in other ways when they use various illicit drugs, alcohol, and cigarettes, with various levels of frequency. Response options were (1) no risk, (2) slight risk, (3) moderate risk, and (4) great risk.

Percentages

Estimated percentages that are presented in NSDUH reports and tables are based on weighted data. Analysis weights are created so that estimates will be representative of the target population. See Section A.3.3 in Section A of this report for more details about the development of analysis weights in NSDUH.

SEE: "Rounding."

Pill Cards

The pill cards contain pictures and names of specific drugs within each psychotherapeutic category to assist respondents with recognition and recall. Respondents are shown the appropriate pill cards at the beginning of each of the questionnaire sections for prescription pain relievers, prescription tranquilizers, prescription stimulants, and prescription sedatives. For example, pictures and the names of Valium[®], Librium[®], and other prescription tranquilizers are shown when the questionnaire section on tranquilizers is introduced.

SEE: "Current Use," "Lifetime Use," "Nonmedical Use of Psychotherapeutics," "Pain Reliever Use," "Past Month Use," "Past Year Use," "Prevalence," "Psychotherapeutic Drugs," "Recency of Use," "Sedative Use," "Stimulant Use," and "Tranquilizer Use."

Poverty Level

Poverty level is a comparison of a respondent's total family income with the U.S. Census Bureau's poverty thresholds (both measured in dollar amounts) in order to determine the poverty status of the respondent and his or her family. Information on family income, size, and composition (i.e., number of children) is used to determine the respondent's poverty level. The poverty level is calculated as a percentage of the poverty threshold by dividing a respondent's reported total family income by the appropriate poverty threshold amount. Three categories for poverty level are defined relative to the poverty threshold: (1) less than 100 percent (i.e., total family income is less than the poverty threshold); (2) 100 to 199 percent (i.e., total family income is at or above the poverty threshold, but less than twice the poverty threshold); and (3) 200 percent or more (i.e., total family income is twice the poverty threshold or greater). In addition, the measure for poverty level excludes respondents aged 18 to 22 who were living in a college dormitory.

SEE: "Family Income."

Prevalence

Prevalence is a general term used to describe the estimates for lifetime, past year, and past month substance use; dependence or abuse; or other behaviors of interest within a given period (e.g., the past 12 months). Other behaviors of interest include delinquent behavior, driving under the influence of alcohol or drugs, perceived need for alcohol or illicit drug use treatment, treatment for a substance use problem, mental health service utilization, treatment for a substance use problem, unmet need for mental health services, serious psychological distress, and mental illness.

Unlike incidence, prevalence measures for substance use include individuals who used a given substance in the lifetime, past year, or past month periods regardless of when they first used it.

SEE: "Abuse," "Current Use," "Delinquent Behavior," "Dependence," "Driving Under the Influence," "Incidence," "Major Depressive Episode (MDE)," "Mental Health Service Utilization," "Mental Illness," "Need for Illicit Drug or Alcohol Use Treatment," "Nicotine (Cigarette) Dependence," "Perceived Need for Alcohol Use Treatment," "Perceived Need for Illicit Drug or Alcohol Use Treatment," "Perceived Need for Illicit Drug Use Treatment," "Recency of Use," "Serious Psychological Distress (SPD)," "Treatment for a Substance Use Problem," and "Unmet Need for Mental Health Services."

Prior Year Marijuana Use A respondent was defined as engaging in prior year marijuana use if he or she used marijuana or hashish 12 to 23 months prior to the interview date. Prior year marijuana use is different from past year marijuana use because past year marijuana use indicates use in the past 12 calendar months prior to the interview date, whereas prior year marijuana use is defined as using marijuana in the year prior to the past year (i.e., within 12 to 23 months prior to the interview date).

SEE: "Marijuana Use."

Probation/Parole Respondents were asked if they were on probation at any time during the past 12 months or if they were on parole, supervised release, or other conditional release from prison at any time during the past 12 months. Respondents could indicate being on both probation and parole during the past 12 months; therefore, these questions are not mutually exclusive.

Psychotherapeutic Drugs Psychotherapeutic drugs are prescription-type medications with legitimate medical uses as pain relievers, tranquilizers, stimulants, and sedatives. The self-administered portion of the interview covers nonmedical use of these drugs, which involves use without a prescription belonging to the respondent or use that occurred simply for the experience or feeling the drug caused. Estimates for psychotherapeutic drug measures from 2006 onward include responses based on the core questions about nonmedical use of psychotherapeutics and the noncore methamphetamine use items that were added in 2005 and 2006. Estimates for 2002 through 2005 have been adjusted to make them comparable with estimates from 2006 onward that include responses to the noncore methamphetamine items.

SEE: "ACASI," "Core Modules," "Current Use," "Lifetime Use," "Methamphetamine Use," "Noncore Modules," "Nonmedical Use of Psychotherapeutics," "Pain Reliever Use," "Past Month Use," "Past Year Use," "Pill Cards," "Prevalence," "Recency of Use," "Sedative Use," "Source of Psychotherapeutic Drugs," "Stimulant Use," and "Tranquilizer Use."

Race/Ethnicity

Race/ethnicity is used to refer to the respondent's self-classification of racial and ethnic origin and identification, in accordance with federal standards for reporting race and ethnicity data (Office of Management and Budget [OMB], 1997). For Hispanic origin, respondents were asked, "Are you of Hispanic, Latino, or Spanish origin or descent?" For race, respondents were asked, "Which of these groups describes you?" Response options for race were (1) white, (2) black/African American, (3) American Indian or Alaska Native, (4) Native Hawaiian, (5) Guamanian or Chamorro, (6) Samoan, (7) Other Pacific Islander, (8) Asian, and (9) Other. The categories for Guamanian or Chamorro and for Samoan have been included in the NSDUH questionnaire since 2013.

Respondents were allowed to choose more than one of these groups. Categories for a combined race/ethnicity variable included Hispanic (regardless of race); non-Hispanic groups where respondents indicated only one race (white, black, American Indian or Alaska Native, Native Hawaiian, Guamanian or Chamorro, Samoan, or Other Pacific Islander, Asian); and non-Hispanic groups where respondents reported two or more races. However, respondents choosing more than one category from among Native Hawaiian, Guamanian or Chamorro, Samoan, and Other Pacific Islander but no other categories are classified as being in the "Native Hawaiian or Other Pacific Islander" category instead of the "two or more races" category. These categories are based on classifications developed by the U.S. Census Bureau.

SEE: "American Indian or Alaska Native," "Asian," "Black," "Hispanic," "Native Hawaiian or Other Pacific Islander," "Two or More Races," and "White."

Recency of Use

The recency question for each substance was the source for the lifetime, past year, and past month prevalence estimates. Respondents were asked the relevant recency question if they previously reported any use of the substance in their lifetime.

The question was essentially the same for all classes of substances: "How long has it been since you last used [substance name]?" For the four classes of psychotherapeutics, the phrase "that was not

prescribed for you or that you took only for the experience or feeling it caused" was added after the name of the drug.

For tobacco products (cigarettes, snuff, chewing tobacco, or cigars), a question first was asked about use in the past 30 days. If the respondent did not use the product in the past 30 days, the recency question was asked as above, with the response options (1) more than 30 days ago but within the past 12 months; (2) more than 12 months ago but within the past 3 years; and (3) more than 3 years ago. For the remaining substances, the response options were (1) within the past 30 days; (2) more than 30 days ago but within the past 12 months; and (3) more than 12 months ago.

SEE: "Current Use," "Lifetime Use," "Past Month Use," "Past Year Use," and "Prevalence."

Region

Four regions, Northeast, Midwest, South, and West, are based on classifications developed by the U.S. Census Bureau.

SEE: "Geographic Division," "Midwest Region," "Northeast Region," "South Region," and "West Region."

Rounding

The decision rules for the rounding of percentages were as follows.

1. If the second number to the right of the decimal point was greater than or equal to 5, the first number to the right of the decimal point was rounded up to the next higher number.
2. If the second number to the right of the decimal point was less than 5, the first number to the right of the decimal point remained the same.

Thus, a prevalence estimate of 16.55 percent would be rounded to 16.6 percent, while an estimate of 16.44 percent would be rounded to 16.4 percent. Although the percentages in the tables generally total 100 percent, the use of rounding sometimes produces a total of slightly less than or more than 100 percent.

SEE: "Percentages."

***Salvia divinorum* Use**

Measures of use of *Salvia divinorum* in the respondent's lifetime, the past year, and the past month were derived from responses to the noncore question about recency of use: "Earlier, the computer recorded that you have used *Salvia divinorum*. How long has it been since you last used *Salvia divinorum*?" The questions about *Salvia divinorum* were added to a noncore section of the interview in 2006 and were not incorporated in estimates of use of hallucinogens, illicit drugs, or illicit drugs other than marijuana

because inclusion of these questions would affect the comparability of estimates over time.

SEE: "Core Modules," "Current Use," "Hallucinogen Use," "Illicit Drugs," "Illicit Drugs Other Than Marijuana," "Lifetime Use," "Noncore Modules," "Past Month Use," "Past Year Use," "Prevalence," and "Recency of Use."

Sedative Use

Measures of the nonmedical use of prescription-type sedatives in the respondent's lifetime, the past year, and the past month were derived from responses to the core question about recency of use: "How long has it been since you last used any prescription sedative that was not prescribed for you, or that you took only for the experience or feeling it caused?" Responses to noncore questions about use of the prescription sedative Ambien[®], which were added to the survey in 2006, were not included in these measures. The question about recency of use was asked if respondents previously reported any nonmedical use of prescription sedatives in their lifetime.

Respondents were asked a series of gate questions about any nonmedical use of specific prescription sedatives in their lifetime. These gate questions were preceded by the following definitional information about sedatives: "These next questions ask about the use of sedatives or barbiturates. These drugs are also called *downers* or *sleeping pills*. People take these drugs to help them relax or to help them sleep. We are not interested in the use of *over-the-counter* sedatives such as Sominex, Unisom, Nytol, or Benadryl that can be bought in drug stores or grocery stores without a doctor's prescription. Card D shows pictures of different kinds of prescription sedatives and lists the names of some others. These pictures show only pills, but we are interested in your use of any form of prescription sedatives that were not prescribed for you or that you took only for the experience or feeling they caused."

Gate questions asked whether respondents ever, even once, used the following prescription sedatives that were not prescribed for respondents or that they took only for the experience or feeling they caused; unless indicated otherwise, pictures of these sedatives were shown on Pill Card D to aid respondents in identifying sedatives they used nonmedically: (a) Methaqualone (includes Sopor[®], Quaalude[®]) (not pictured); (b) barbiturates, such as Nembutal[®], Pentobarbital (not pictured), Seconal[®], Secobarbital (not pictured), or Butalbital (not pictured); (c) Restoril[®] or Temazepam; (d) Amytal[®]; (e) Butisol[®]; (f) Chloral Hydrate (not pictured); (g) Dalmane[®]; (h) Halcion[®]; (i) Phenobarbital;

(j) Placidyl®; (k) Tuinal®; and (l) any other prescription sedative besides the ones shown on Card D.

SEE: "Core Modules," "Current Use," "Lifetime Use," "Noncore Modules," "Nonmedical Use of Psychotherapeutics," "Pain Reliever Use," "Past Month Use," "Past Year Use," "Pill Cards," "Prevalence," "Psychotherapeutic Drugs," "Recency of Use," "Source of Psychotherapeutic Drugs," "Stimulant Use," and "Tranquilizer Use."

Self-Help Group

Respondents who reported that they received treatment for their use of alcohol or drugs in the past 12 months were asked whether they received treatment in a self-help group, such as Alcoholics Anonymous or Narcotics Anonymous. Self-help groups were not considered specialty substance use treatment facilities. Beginning with the 2006 survey, respondents also were asked whether they attended self-help groups in the past 12 months to receive help for their alcohol or drug use, regardless of whether they previously reported receiving any treatment in the past 12 months.

SEE: "Specialty Substance Use Treatment Facility" and "Treatment for a Substance Use Problem."

Serious Mental Illness (SMI)

SEE: "Mental Illness."

Serious Psychological Distress (SPD)

Serious psychological distress (SPD) for adults is defined as having a score of 13 or higher on the Kessler-6 (K6) scale. This scale consists of six questions that gather information on how frequently adult respondents experienced symptoms of psychological distress during the past month or the one month in the past year when they were at their worst emotionally. These questions ask about the frequency of feeling (1) nervous, (2) hopeless, (3) restless or fidgety, (4) sad or depressed, (5) that everything was an effort, and (6) no good or worthless.³⁵

Past month SPD estimates are presented in the mental health detailed tables from 2009 onward. Estimates of past year SPD are presented from 2005 onward. From 2005 to 2007, the K6 questions asked only about the one month in the past year when adult respondents were at their worst emotionally, and past year SPD was defined from the resulting scores. Since 2008, however, the K6 questions were asked both for the past 30 days and (if

³⁵ For a description and properties of the K6 scale, see Kessler et al. (2003a).

applicable) the one month in the past year when adult respondents were at their worst emotionally.

The maximum score of the two periods (i.e., past month and past year) was used to create the total past year score, and this score was used to define past year SPD for 2008 onward. Past year SPD estimates for 2005 through 2007 were statistically adjusted to make them comparable with those since 2008.³⁶ More information on the comparability of mental health measures for adults can be found in Appendix I of the 2013 NSDUH public use file codebook (CBHSQ, 2014c).

SEE: "Kessler-6 (K6) Scale," "Mental Illness," and "Prevalence."

Severe Impairment due to Major Depressive Episode

Severe impairment is defined by the level of role interference for adults or the level of problems for youths that were reported to be caused by major depressive episode (MDE) in the past 12 months. Impairment was defined based on the role domains for adults and for youths aged 12 to 17 in the Sheehan Disability Scale (SDS). Ratings of 7 or greater for interference (for adults) or problems (for youths) in one or more role domains are classified as severe impairment. Because of changes that were made in the 2008 NSDUH questionnaire, the comparability of MDE estimates and severe impairment due to MDE was affected for adults. Adjusted MDE variables have been developed to allow trends in adult MDE to be reported for 2005 onward (Center for Behavioral Health Statistics and Quality [CBHSQ], 2012a). However, the estimate of severe impairment due to MDE among adults was not adjusted for 2008 and therefore is not comparable with estimates of severe impairment due to MDE among adults for 2009 onward. See Section B.4.5 in Section B of this report for additional details.

SEE: "Major Depressive Episode (MDE)" and "Sheehan Disability Scale (SDS)."

Sheehan Disability Scale (SDS)

The Sheehan Disability Scale (SDS) consists of a series of four questions that are used in NSDUH to measure interference or problems in a person's daily functioning caused by major depressive episode (MDE). The SDS role domains are assessed on a 0 to 10 visual analog scale with impairment categories of "none" (0), "mild" (1-3), "moderate" (4-6), "severe" (7-9), and

³⁶ More information about the creation of the statistically adjusted SPD variables can be found in Center for Behavioral Health Statistics and Quality (CBHSQ, 2012a).

"very severe" (10). For adults aged 18 or older, the SDS role domains are (1) home management, (2) work, (3) close relationships with others, and (4) social life. For youths aged 12 to 17, the SDS role domains are (1) chores at home, (2) school or work, (3) close relationships with family, and (4) social life.

SEE: "Prevalence," "Severe Impairment due to Major Depressive Episode," and "World Health Organization Disability Assessment Schedule (WHODAS)."

Significance

Two types of statistical comparisons are presented in NSDUH reports and tables: (1) between two different time points, and (2) between members of demographic subgroups. When tables included in the detailed tables or mental health detailed tables show trends over time, statistically significant differences between estimates from two different time points (e.g., 2013 and 2014) may be identified at two levels: 0.05 and 0.01. Tables and figures showing trends over time that are included in NSDUH reports typically indicate statistical significance only at the 0.05 level. When reports compare estimates between two points in time or between demographic subgroups, a significance level of 0.05 generally is used to determine whether these estimates were statistically different. If differences do not meet the criteria for statistical significance, the values of these estimates are not considered to be different from one another. Estimates that are noted as "low precision" are not compared with other estimates.

SEE: "Low Precision."

Small Metro

SEE: "County Type."

Smokeless Tobacco Use

Measures of use of smokeless tobacco in the respondent's lifetime, the past year, and the past month were derived from responses to the questions about snuff and chewing tobacco use in the past 30 days and the recency of use (if not in the past 30 days): "Now think about the past 30 days—that is, from [DATEFILL] up to and including today. During the past 30 days, have you used snuff, even once?" "How long has it been since you last used snuff?" "Now think about the past 30 days—that is, from [DATEFILL] up to and including today. During the past 30 days, have you used chewing tobacco, even once?" and "How long has it been since you last used chewing tobacco?" Questions about use of snuff in the past 30 days or the most recent use of snuff (if not in the past 30 days) were asked if respondents previously reported any use of snuff in their lifetime. Similarly, questions about use of chewing tobacco in the past 30 days or the most recent use of chewing tobacco (if not in the past 30 days) were asked if

respondents previously reported any use of chewing tobacco in their lifetime.

The following information preceded the question about lifetime use of snuff: "These next questions are about your use of snuff, sometimes called dip." The following information preceded the question about lifetime use of chewing tobacco: "The next questions are only about chewing tobacco."

SEE: "Cigar Use," "Cigarette Use," "Current Use," "Lifetime Use," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," and "Tobacco Product Use."

Social Context of Most Recent Underage Alcohol Use

Respondents aged 12 to 20 who reported drinking at least one alcoholic beverage within the past 30 days were asked if they were alone, with one other person, or with more than one person the last time they drank.

SEE: "Alcohol Use" and "Underage Alcohol Use."

Source of Alcohol for Most Recent Underage Alcohol Use

Respondents aged 12 to 20 who reported drinking at least one alcoholic beverage within the past 30 days were asked questions pertaining to the source of the alcohol for their most recent alcohol use. The sources were (1) purchased it himself or herself; (2) it was purchased by someone else; (3) received it from a parent or guardian; (4) received it from another family member aged 21 or older; (5) received it from an unrelated person aged 21 or older; (6) received it from someone under age 21; (7) took it from own home; (8) took it from someone else's home; or (9) got it some other way.

The questions on the source of last alcohol use are presented in two categories: (a) respondent paid (he or she purchased the alcohol or gave someone else money to purchase the alcohol), and (b) respondent did not pay (he or she received the alcohol for free from someone or took the alcohol from his or her own or someone else's home).

SEE: "Alcohol Use" and "Underage Alcohol Use."

Source of Psychotherapeutic Drugs

There are two measures of the source of psychotherapeutic drugs (prescription pain relievers, prescription tranquilizers, prescription

stimulants, methamphetamine, and prescription sedatives) that were used nonmedically: (a) how respondents obtained these drugs the last time they used them nonmedically and (b) how respondents obtained these drugs for any nonmedical use in the past month. For all of these drugs except methamphetamine, response options for the source of the medications were as follows: (a) got a prescription from just one doctor; (b) got prescriptions from more than one doctor; (c) wrote a fake prescription; (d) stole from a doctor's office, clinic, hospital, or pharmacy; (e) got from a friend or relative for free; (f) bought from a friend or relative; (g) took from a friend or relative without asking; (h) bought from a drug dealer or other stranger; (i) bought on the Internet; and (j) got in some other way (includes other sources specified by respondents). Methamphetamine users were presented with options (e) through (j) only. Since 2006, respondents who reported that they obtained these drugs from a friend or relative for free were asked how the friend or relative obtained them, using the same response options (a) through (j) as the respondents' source questions.

If respondents last used a psychotherapeutic drug nonmedically in the past 30 days and reported getting that drug from only one source, the source of the psychotherapeutic drug for the most recent use measure was based on that answer. For respondents who reported getting a psychotherapeutic drug from multiple sources in the past 30 days or who last misused that drug more than 30 days ago but in the past 12 months, the source of the psychotherapeutic drug for the most recent use measure was based on their answer to a question about how they got that drug the last time they used it nonmedically. The source of the psychotherapeutic drug for any use in the past month was based only on the answer to the question about sources in the past 30 days. This same definition was applied to the questions that asked how the friend or relative obtained the medications.

Measures of the source of methamphetamine differ from all other measures regarding the source of psychotherapeutic drugs in that they include respondents who reported methamphetamine use in the stimulants module and respondents who reported methamphetamine use in the special drugs module who did not initially report methamphetamine use in the stimulants module because they did not consider it to be a prescription drug. All other measures of the source of psychotherapeutic drugs only include respondents who reported psychotherapeutic drug use in their respective core drug modules.

Respondents were asked the following question(s) if they reported nonmedical use of psychotherapeutic drugs in the past 30 days:

"Earlier, the computer recorded that, during the past 30 days, you used [prescription pain relievers, prescription tranquilizers, prescription stimulants, methamphetamine, prescription sedatives] that were not prescribed for you or that you took only for the experience or feeling it caused. How did you get these [fill in relevant drug name from above]? Please enter all of the ways that you got the [fill in relevant drug name from above] you used in the past 30 days."

Respondents were asked the following question(s) if they reported nonmedical use of psychotherapeutic drugs more than 30 days ago but within the past 12 months or if they obtained psychotherapeutic drugs from more than one source in the past 30 days: "Now think about the last time you used [a prescription pain reliever, a prescription tranquilizer, a prescription stimulant, methamphetamine, a prescription sedative] that was not prescribed for you or that you took only for the experience or feeling it caused. How did you get this [fill in relevant drug name from above]?"

SEE: "Core Modules," "Methamphetamine Use," "Noncore Modules," "Nonmedical Use of Psychotherapeutics," "Pain Reliever Use," "Psychotherapeutic Drugs," "Sedative Use," "Stimulant Use," and "Tranquilizer Use."

South Region

The states included are those in the South Atlantic Division—Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia; the East South Central Division—Alabama, Kentucky, Mississippi, and Tennessee; and the West South Central Division—Arkansas, Louisiana, Oklahoma, and Texas.

SEE: "Geographic Division" and "Region."

Specialty Substance Use Treatment Facility

This was defined as a drug or alcohol rehabilitation facility (inpatient or outpatient), a hospital (inpatient only), or a mental health center.

SEE: "Need for Illicit Drug or Alcohol Use Treatment," "Self-Help Group," and "Treatment for a Substance Use Problem."

Stimulant Use

Measures of nonmedical use of prescription-type stimulants in the respondent's lifetime, the past year, and the past month were derived from responses to the core questions about recency of use: "How long has it been since you last used any prescription

stimulant that was not prescribed for you or that you took only for the experience or feeling it caused?" and "How long has it been since you last used Methamphetamine, Desoxyn, or Methedrine?" Questions about recency of use were asked if respondents previously reported any nonmedical use of prescription stimulants or methamphetamine in their lifetime.

Estimates for the stimulant use measures from 2006 onward included responses based on the noncore methamphetamine use items that were added in 2005 and 2006. Estimates for 2002 through 2005 have been adjusted to make them comparable with estimates from 2006 onward that include responses to the noncore methamphetamine items. However, measures of stimulant use do not include data from noncore questions added to the survey in 2006 about the use of the prescription stimulant Adderall®.

Respondents were asked a series of gate questions about any nonmedical use of specific prescription stimulants in their lifetime. These gate questions were preceded by the following definitional information about stimulants: "These next questions ask about the use of drugs such as amphetamines that are known as stimulants, *uppers*, or *speed*. People sometimes take these drugs to lose weight, to stay awake, or for attention deficit disorders. We are not interested in the use of *over-the-counter* stimulants such as Dexatrim or No-Doz that can be bought in drug stores or grocery stores without a doctor's prescription. Card C shows pictures of some different kinds of prescription stimulants and lists the names of some others. These pictures show only pills, but we are interested in your use of any form of prescription stimulants that were not prescribed for you or that you took only for the experience or feeling they caused."

Gate questions asked whether respondents ever, even once, used the following prescription stimulants that were not prescribed for respondents or that they took only for the experience or feeling they caused; unless indicated otherwise, pictures of these stimulants were shown on Pill Card C to aid respondents in identifying stimulants they used nonmedically:

(a) Methamphetamine (crank, crystal, ice, or speed) (not pictured), Desoxyn®, or Methedrine® (not pictured); (b) prescription diet pills, such as Amphetamines (not pictured), Bensedrine®, Biphetamine®, Fastin®, or Phentermine; (c) Ritalin® or Methylphenidate; (d) Cylert®; (e) Dexedrine®; (f) Dextroamphetamine; (g) Didrex®; (h) Eskatrol®; (i) Ionamin®; (j) Mazanor®; (k) Obedrin-LA® (not pictured); (l) Plegine®; (m) Preludin®; (n) Sanorex®; (o) Tenuate®; and (p) any other prescription stimulant besides the ones shown on Card C.

SEE: "Core Modules," "Current Use," "Lifetime Use," "Methamphetamine Use," "Noncore Modules," "Nonmedical Use of Psychotherapeutics," "Pain Reliever Use," "Past Month Use," "Past Year Use," "Pill Cards," "Prevalence," "Psychotherapeutic Drugs," "Recency of Use," "Sedative Use," "Source of Psychotherapeutic Drugs," and "Tranquilizer Use."

Substance Use Disorder Substance use disorder is defined as meeting criteria in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* (American Psychiatric Association [APA], 1994) for either dependence or abuse for illicit drugs or alcohol.

SEE: "Abuse" and "Dependence."

Substance Use Treatment SEE: "Treatment for a Substance Use Problem."

Suicide Adults aged 18 or older were asked whether they had seriously thought about, made any plans, or attempted to kill themselves at any time during the past 12 months, or if they had received medical attention from a health professional or stayed overnight in a hospital in the past 12 months because of a suicide attempt.

SEE: "Prevalence."

Tobacco Product Use This measure indicates use of any tobacco product: cigarettes, chewing tobacco, snuff, cigars, and pipe tobacco. Tobacco product use in the past year includes past month pipe tobacco use. Tobacco product use in the past year does not include use of pipe tobacco more than 30 days ago but within 12 months of the interview because the survey did not capture this information. Measures of tobacco product use in the respondent's lifetime, the past year, or the past month also do not include reports from noncore questions about use of cigars with marijuana in them (blunts).

SEE: "Blunts," "Cigar Use," "Cigarette Use," "Core Modules," "Current Use," "Lifetime Use," "Nicotine (Cigarette) Dependence," "Noncore Modules," "Past Month Daily Cigarette Use," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," and "Smokeless Tobacco Use."

Total Family Income SEE: "Family Income."

Tranquilizer Use Measures of the nonmedical use of prescription-type tranquilizers in the respondent's lifetime, the past year, and the past month were derived from responses to the question about recency of use: "How long has it been since you last used any prescription

tranquilizer that was not prescribed for you, or that you took only for the experience or feeling it caused?" The question about recency of use was asked if respondents previously reported any nonmedical use of prescription tranquilizers in their lifetime.

Respondents were asked a series of gate questions about any nonmedical use of specific prescription tranquilizers in their lifetime. These gate questions were preceded by the following definitional information about tranquilizers: "These next questions ask about the use of tranquilizers. Tranquilizers are usually prescribed to relax people, to calm people down, to relieve anxiety, or to relax muscle spasms. Some people call tranquilizers *nerve pills*. Card B shows pictures of some different kinds of prescription tranquilizers. These pictures show only pills, but we are interested in your use of any form of prescription tranquilizers that were not prescribed for you, or that you took only for the experience or feeling they caused."

Gate questions asked whether respondents ever, even once, used the following prescription tranquilizers that were not prescribed for respondents or that they took only for the experience or feeling they caused; unless indicated otherwise, pictures of these tranquilizers were shown on Pill Card B to aid respondents in identifying tranquilizers they used nonmedically: (a) Klonopin[®] or Clonazepam; (b) Xanax[®], Alprazolam, Ativan[®], or Lorazepam; (c) Valium[®] or Diazepam; (d) Atarax[®]; (e) BuSpar[®]; (f) Equanil[®]; (g) Flexeril[®]; (h) Librium[®]; (i) Limbitrol[®]; (j) Meproamate; (k) Miltown[®]; (l) Rohypnol[®]; (m) Serax[®]; (n) Soma[®]; (o) Tranxene[®]; (p) Vistaril[®]; and (q) any other prescription tranquilizer besides the ones shown on Card B.

SEE: "Core Modules," "Current Use," "Lifetime Use," "Noncore Modules," "Nonmedical Use of Psychotherapeutics," "Pain Reliever Use," "Past Month Use," "Past Year Use," "Pill Cards," "Prevalence," "Psychotherapeutic Drugs," "Recency of Use," "Sedative Use," "Source of Psychotherapeutic Drugs," and "Stimulant Use."

Treatment for Depression Treatment for depression was defined as seeing or talking to a professional, or using prescription medication in the past year for depression.³⁷ Since 2011, treatment professionals have been subdivided into "Health Professional," "Alternative Service Professional," and "Other."

³⁷ Respondents were asked about treatment for depression regardless of whether they were classified as having a major depressive episode (MDE). To produce estimates of treatment for depression among people with MDE, the analysis needs to be restricted to respondents who had a lifetime or past year MDE.

SEE: "Alternative Service Professional," "Health Professional," and "Major Depressive Episode (MDE)."

Treatment for Major Depressive Episode

Treatment for major depressive episode (MDE) is the same as treatment for depression. Treatment for depression refers to treatment among those classified with past year MDE.

SEE: "Major Depressive Episode (MDE)" and "Treatment for Depression."

Treatment for a Mental Disorder

SEE: "Mental Health Service Utilization" and "Treatment for Depression."

Treatment for a Substance Use Problem

Respondents were defined as having received treatment for a substance use problem if they reported receiving treatment for illicit drug use, alcohol use, or both illicit drug and alcohol use in the past 12 months in any of the following locations: a hospital overnight as an inpatient, a residential drug or alcohol rehabilitation facility where they stayed overnight, a drug or alcohol rehabilitation facility as an outpatient, a mental health facility as an outpatient, an emergency room, a private doctor's office, a prison or jail, a self-help group, or some other place. Of these locations, emergency rooms, private doctors' offices, prisons or jails, and self-help groups were not considered specialty substance use treatment facilities. Reports of treatment in some other place were considered to be treatment in specialty substance use treatment facilities only if respondents specified a location that corresponded to drug or alcohol rehabilitation facilities (inpatient or outpatient), hospitals (inpatient only), or mental health centers.

SEE: "Alcohol Use," "Illicit Drugs," "Need for Illicit Drug or Alcohol Use Treatment," "Prevalence," "Self-Help Group," and "Specialty Substance Use Treatment Facility."

Two or More Races

Respondents were asked to report which racial group describes them. Response options were (1) white, (2) black or African American, (3) American Indian or Alaska Native, (4) Native Hawaiian, (5) Guamanian or Chamorro, (6) Samoan, (7) Other Pacific Islander, (8) Asian, and (9) Other. The categories for Guamanian or Chamorro and for Samoan have been included in the NSDUH questionnaire since 2013.

Respondents were allowed to choose more than one of these groups. Respondents who chose more than one category from

among Native Hawaiian, Guamanian or Chamorro, Samoan, and Other Pacific Islander (and no additional categories) were classified in a single category: Native Hawaiian or Other Pacific Islander. Otherwise, respondents reporting two or more of the above groups and that they were not of Hispanic, Latino, or Spanish origin were included in a "Two or More Races" category. People reporting two or more races do not include respondents who reported more than one Asian subgroup but who reported "Asian" as their only race. Respondents reporting two or more races and reporting that they were of Hispanic, Latino, or Spanish origin were classified as Hispanic.

SEE: "Hispanic" and "Race/Ethnicity."

Underage Alcohol Use

Underage alcohol use was defined as any use of alcohol by people aged 12 to 20 in the respondent's lifetime, past year, or past month.

SEE: "Alcohol Use," "Binge Use of Alcohol," "Current Use," "Heavy Use of Alcohol," "Lifetime Use," "Location of Most Recent Underage Alcohol Use," "Past Month Use," "Past Year Use," "Prevalence," "Recency of Use," "Social Context of Most Recent Underage Alcohol Use," and "Source of Alcohol for Most Recent Underage Alcohol Use."

Unmet Need for Mental Health Services

Unmet need for mental health services among adults was defined as a perceived need for mental health treatment in the past 12 months that was not received. This measure also included adults who received some type of mental health service in the past 12 months, but reported a perceived need for additional services they did not receive. Adults who received treatment in the past 12 months could have felt that unmet need before or after receiving treatment. Unmet need for mental health services was defined based on responses to the following question: "During the past 12 months, was there any time when you needed mental health treatment or counseling for yourself but didn't get it?"

SEE: "Mental Health Service Utilization" and "Prevalence."

West Region

The states included are those in the Mountain Division—Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming; and the Pacific Division—Alaska, California, Hawaii, Oregon, and Washington.

SEE: "Geographic Division" and "Region."

White

White, not of Hispanic, Latino, or Spanish origin. This does not include respondents reporting two or more races. Respondents reporting that they were white and of Hispanic, Latino, or Spanish origin were classified as Hispanic.

SEE: "Hispanic," "Race/Ethnicity," and "Two or More Races."

**World Health Organization
Disability Assessment
Schedule (WHODAS)**

The World Health Organization Disability Assessment Schedule (WHODAS) consists of a series of questions that are used for assessing disturbances in social adjustment and behavior (i.e., functional impairment). A reduced set of WHODAS items was used in NSDUH (Novak et al., 2010; Rehm et al., 1999). Respondents were asked if they had difficulty doing any of the following eight activities during the one month when their emotions, nerves, or mental health interfered most with their daily activities: (1) remembering to do things they needed to do; (2) concentrating on doing something important when other things were going on around them; (3) going out of the house and getting around on their own; (4) dealing with people they did not know well; (5) participating in social activities; (6) taking care of household responsibilities; (7) taking care of daily responsibilities at work or school; and (8) getting daily work done as quickly as needed. These eight items were assessed on a 0 to 3 scale with categories of "no difficulty," "don't know," and "refuse" (0); "mild difficulty" (1); "moderate difficulty" (2); and "severe difficulty" (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 the eight responses resulted in a total score with a range from 0 to 24.

SEE: "Mental Illness," "Prevalence," "Severe Impairment due to Major Depressive Episode," and "Sheehan Disability Scale (SDS)."

Section D: Other Sources of Data

The National Survey on Drug Use and Health (NSDUH) provides estimates of substance use and mental health issues (also referred to as "behavioral health issues") for the civilian, noninstitutionalized population aged 12 or older in the United States. A variety of surveys and data systems other than NSDUH also produce estimates of behavioral health indicators. Integrating information from multiple national data sources, such as those included in this section, can provide more complete information about the behavioral health of the U.S. population. Therefore, it is useful to consider the estimates produced from other data sources when discussing NSDUH estimates. When comparing estimates between surveys, it is important to understand the methodological differences between surveys and the impact that these differences could have on estimates of mental health issues and substance use. That is, the purpose, data collection, and estimation methods for various sources of mental health and substance use data are often different, making comparisons between them difficult. Some methodological differences that may affect comparisons include, but are not limited to, the populations covered, timing of data collection, sample design, mode of data collection, instruments used, operational definitions, and estimation methods.

This section briefly describes data systems that provide behavioral health indicators, including treatment. This section also presents selected comparisons of estimates with 2014 NSDUH estimates, both for populations covered and not covered by NSDUH (e.g., people receiving treatment in facilities as an inpatient or resident for an extended period, and people entering treatment as an inpatient after having been incarcerated).

Although this section provides a general overview of other relevant data sources, several reports provide details comparing estimates from NSDUH and other data sources. These reports include comparisons on the following topics: substance use estimates for adolescents (Center for Behavioral Health Statistics and Quality [CBHSQ], 2012b); substance use estimates among adult male arrestees (Lattimore et al., 2014); estimates of health conditions and health care utilization (Pemberton et al., 2013); and data for utilization of substance use treatment (Batts et al., 2014). For data systems described in this section on mental health indicators, further information about these and other data systems can be found in a report comparing NSDUH mental health data and methods with those from other data sources (Hedden et al., 2012).

D.1 National Surveys Collecting Behavioral Health Data in the Civilian, Noninstitutionalized Population

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS)—a state-based system of health surveys—collects information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. The BRFSS surveys are cross-sectional telephone surveys conducted by state health departments with technical and methodological assistance from the Centers for Disease Control and Prevention (CDC). Every year, states conduct monthly telephone surveys of adults (aged 18 or older) in households using

random-digit-dialing (RDD) methods; unlike NSDUH, BRFSS excludes people living in group quarters (e.g., dormitories).

Currently, the questionnaire has three parts: (1) a core questionnaire, (2) optional modules, and (3) state-added questions. The core questionnaire consists of a standard set of questions asked by all states every year and includes questions on demographic characteristics, alcohol use, and tobacco use. Questions about lifetime depression have been included in the core since 2011. Optional modules consist of questions on specific topics that states can elect to include. Although the modules are optional, CDC standards require that states use them without modification. Optional modules addressing mental health topics, such as anxiety, depression, or psychological distress, were included from 2006 to 2013. However, the number of states administering optional modules has varied from year to year. For example, 11 states and Puerto Rico administered the mental illness and stigma module in 2012, but only 5 states did so in 2013.³⁸ States also may include state-added questions at their own expense. However, these questions are not part of the official BRFSS questionnaire. Development of these questions and analysis of data from them are not supported by the CDC.

Since 1994, BRFSS has collected data from all 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands using a computer-assisted telephone interviewing (CATI) design. More than 400,000 adults are interviewed each year. Prior to 2011, the sample included only households with landline telephones, and the weighting methodology included a poststratification step. Beginning with the 2011 BRFSS, the sample was expanded to include households with only cellular telephones in addition to those that were covered by landline telephones, and the weighting methodology replaced the poststratification step with raking in order to incorporate more demographic variables (e.g., education level, home ownership) as well as telephone source (landline or cellular telephone). These changes were recognized as having the potential to produce shifts in prevalence estimates in 2011 and subsequent years relative to estimates in prior years that were based on the previous methodology (CDC, 2012). The CDC has since concluded that the BRFSS 2011 prevalence data should be considered a baseline year because of these methodological changes.

National estimates obtained through the BRFSS online analysis tool or in publications that cite BRFSS data typically are presented as medians.³⁹ BRFSS includes questions on alcohol consumption and tobacco use. However, definitions of binge alcohol use and current cigarette use differ between NSDUH and BRFSS. Since 2006, BRFSS has used a lower threshold for binge alcohol use for females (four or more drinks on an occasion) than for males (five or more drinks on an occasion), whereas NSDUH uses the same criterion for males and females (i.e., consumption of five or more drinks on an occasion). Current cigarette users in BRFSS are defined as adults who have smoked 100 or more cigarettes in their lifetime and who report that they currently smoke cigarettes. In NSDUH, current cigarette use is defined as any cigarette use in the 30 days prior to the interview.

³⁸ The BRFSS website may not count states as administering the mental illness and stigma module if they administered the module to less than the full sample of respondents in that state.

³⁹ The BRFSS online analysis tool is available by clicking on the "Prevalence Data and Data Analysis Tools" link at <http://www.cdc.gov/brfss/>.

These differences in definitions and methodological differences can affect the comparability of estimates between BRFSS and NSDUH. For example, the prevalence of current cigarette use among adults in NSDUH in 2013 was 22.9 percent, and the median BRFSS prevalence for the 50 states and the District of Columbia was 19.0 percent. Although BRFSS data are presented as medians and NSDUH estimates are not, BRFSS rates of binge drinking were somewhat lower than the NSDUH estimates among adults aged 18 or older in 2013, despite the lower threshold for women (e.g., for females: 11.3 percent for BRFSS and 17.0 percent for NSDUH). The use of audio computer-assisted self-interviewing (ACASI) in NSDUH, which is considered to be more anonymous than CATI in BRFSS and yields higher reporting of sensitive behaviors, may explain lower binge alcohol use rates in combined 1999 and 2000 BRFSS data than in corresponding NSDUH data (Miller et al., 2004).⁴⁰ Response rates also have been higher in NSDUH than BRFSS, which could result in differential nonresponse bias patterns in the two surveys.

For further details, see the BRFSS website at <http://www.cdc.gov/brfss/>.

Monitoring the Future (MTF)

The Monitoring the Future (MTF) study is an ongoing study of substance use trends and related attitudes among America's secondary school students, college students, and adults through age 50. The MTF provides information on the use of alcohol, illicit drugs, and tobacco. The study is conducted annually by the Institute for Social Research at the University of Michigan through grants awarded by the National Institute on Drug Abuse (NIDA). The MTF and NSDUH are the federal government's largest and primary tools for tracking youth substance use. The MTF is composed of three substudies: (a) an annual survey of high school seniors that was initiated in 1975; (b) ongoing panel studies of representative samples from each graduating class (i.e., 12th graders) that have been conducted by mail since 1976; and (c) annual surveys of 8th and 10th graders that were initiated in 1991. Each spring, students in the 8th, 10th, and 12th grades complete a self-administered, machine-readable questionnaire during a regular class period. In the latest MTF that was conducted in 2014, approximately 41,600 students in 377 public and private secondary schools were surveyed for the cross-sectional study (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2015). In addition, approximately 2,400 respondents who participated in the survey of 12th graders are followed longitudinally.⁴¹

Comparisons between the MTF estimates and estimates based on students sampled in NSDUH generally have shown NSDUH substance use prevalence levels to be lower than MTF estimates (see [Table D.1](#) at the end of this section and CBHSQ, 2012b).⁴² The lower estimates in NSDUH may be due to more underreporting in the household setting as compared with the MTF school setting and some overreporting in the school settings. However, NSDUH and MTF have

⁴⁰ NSDUH and BRFSS in 1999 and 2000 used a threshold of five or more drinks for both males and females; see the BRFSS online analysis tool at <http://www.cdc.gov/brfss/>.

⁴¹ Prior to 2002, respondents were surveyed every other year until the age of 31 or 32 (i.e., up to seven times after graduation). In 2002, the seventh biennial follow-up was discontinued, with respondents being surveyed every other year until they reach the age of 29 or 30. Additional follow-ups then occur at 5-year intervals at ages 35, 40, 45, 50, and 55; follow-up of 55 year olds began in 2013.

⁴² To examine estimates that are comparable with MTF data, NSDUH estimates presented in [Table D.1](#) are based on data collected in the first 6 months of the survey year and are subset to ages 12 to 20.

generally shown parallel trends in the prevalence of substance use for both youths and young adults, as indicated in the 2013 NSDUH national findings report (CBHSQ, 2014d).

The population of inference for the MTF school-based data collection is adolescents who were in the 8th, 10th, and 12th grades; therefore, the MTF does not survey dropouts. The MTF also does not include students who were absent from school on the day of the survey, although they are part of the population of inference. NSDUH has shown that dropouts and adolescents who frequently were absent from school have higher rates of illicit drug use (CBHSQ, 2012b; Gfroerer et al., 1997b). In October 2013, the percentages of individuals who were not currently enrolled in school and had not graduated from high school were 1.6 percent for adolescents aged 14 or 15, 4.9 percent for those aged 16 or 17, 6.2 percent for young adults aged 18 or 19, and 7.3 percent for those aged 20 or 21.⁴³ Depending on the effects of the exclusion of dropouts and frequent absentees, data from MTF may not generalize to the population of adolescents as a whole, especially for older adolescents.

For further details, see the MTF website at <http://www.monitoringthefuture.org/>.

National Comorbidity Survey (NCS) Series

National Comorbidity Survey (NCS)

Conducted by the University of Michigan's Survey Research Center, the National Comorbidity Survey (NCS) was sponsored by the National Institute of Mental Health (NIMH), the National Institute on Drug Abuse (NIDA), and the W.T. Grant Foundation. It was designed to measure in the general population the prevalence, risk factors, and consequences of psychiatric morbidity and comorbidity. The first wave of the NCS was an interviewer-administered household survey of individuals in the continental United States (i.e., excluding Alaska and Hawaii) that collected data from 8,098 respondents aged 15 to 54 using paper-and-pencil interviewing (PAPI). These responses were weighted to produce nationally representative estimates. The interviews took place between 1990 and 1992. The NCS used a modified version of the Composite International Diagnostic Interview (the University of Michigan [UM]-CIDI) to estimate the prevalence of mental disorders according to the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, 3rd revised edition (DSM-III-R) (American Psychiatric Association [APA], 1987).

The NCS provides information on the use of alcohol, illicit drugs, and tobacco. The NCS data also allow estimates to be produced from the following classes of disorders: mood disorders (major depressive episode [MDE], manic episode, dysthymia), anxiety disorders (panic disorder, agoraphobia, social phobia, simple phobia, generalized anxiety disorder), substance use disorders (SUDs) (alcohol abuse, alcohol dependence, drug abuse, drug dependence), antisocial

⁴³ These data were taken from the U.S. Census Bureau's Current Population Survey (CPS) and were available (at the time of publication) at <http://www.census.gov/> by choosing the "Topics" menu, then choosing "Education" from the "Topics" page. Data on "School Enrollment" can be accessed from the "Education" page. Finally, the detailed tables for "School Enrollment in the United States: 2013" are accessible from the "School Enrollment" page. Percentages cited in this section are from the Census Bureau's Table 1, which is titled "Enrollment Status of the Population 3 Years Old and Over, by Sex, Age, Race, Hispanic Origin, Foreign Born, and Foreign-Born Parentage: October 2013."

personality disorder (ASPD), and nonaffective psychosis (including schizophrenia and other psychotic disorders).

A published estimate from the 1990 to 1992 NCS of the prevalence of one or more disorders (including SUDs) was 29.5 percent in the past 12 months among adults aged 18 to 54 (Kessler et al., 1994). The NSDUH estimate for the prevalence of any mental illness (AMI) (excluding SUDs) was 18.1 percent in 2014.⁴⁴ One difference between the two studies is how they define "one or more disorders." The NCS included respondents with SUDs. For NSDUH, the operational definition of AMI excludes SUDs (see the definition for mental illness in Section C of this report). Methodological differences between the two surveys that could affect the estimates include the following: (a) *age ranges of the target populations* (18 or older for NSDUH vs. 18 to 54 for the NCS); (b) *the modes of administration* (ACASI for NSDUH vs. PAPI for the NCS); (c) *differences in disorders other than SUD* that were assessed in the NCS or in clinical interviews for NSDUH; and (d) *differences in the instruments and estimation methods* used to estimate the prevalence of mental disorders (a prediction model created from clinical interview data in 2008 to 2012 based on criteria in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition [DSM-IV, APA, 1994] from a subset of adult respondents in combination with data in 2014 on age, psychological distress, functional impairment, suicidal thoughts, and depression for all adult NSDUH respondents vs. the UM-CIDI based on criteria in the DSM-III-R [APA, 1987] for the NCS). Furthermore, given that data from the surveys were collected at different times (2013 for NSDUH vs. 1990 to 1992 for the NCS), differences in estimates could reflect changes in population prevalence.

For further details, see the NCS website at <http://www.hcp.med.harvard.edu/ncs/>.

National Comorbidity Survey Replication (NCS-R)

There have been several follow-ups to and replications of the original NCS, including a replication study (the National Comorbidity Survey Replication, NCS-R) conducted in 2001 to 2003 with a newly recruited, nationally representative multistage, clustered-area probability sample of 9,282 U.S. respondents aged 18 or older (Kessler et al., 2004a). As in the NCS, the sample for the NCS-R excluded Alaska and Hawaii. Conducted by the University of Michigan's Survey Research Center, the NCS-R was sponsored through a grant by the NIMH, with supplemental support from NIDA, SAMHSA, the Robert Wood Johnson Foundation, and the John W. Alden Trust. Interviews were conducted using computer-assisted personal interviewing (CAPI). Unlike the NCS, which used DSM-III-R criteria, the NCS-R used DSM-IV criteria for measuring substance use and mental disorders. Specifically, the NCS-R used a modified version of the World Mental Health Version of the Composite International Diagnostic Interview (the WMH-CIDI) (Kessler & Üstün, 2004) to generate diagnoses according to the definitions and criteria of the DSM-IV. Disorders assessed in the NCS-R included anxiety disorders (adult separation anxiety disorder, agoraphobia, generalized anxiety disorder, panic attack, panic disorder, posttraumatic stress disorder, separation anxiety disorder, social phobia, specific phobia), mood disorders (bipolar I, bipolar II, dysthymia, hypomania, major depressive

⁴⁴ See the "Mental Illness" glossary entry in Section C of this report for definitions of AMI and serious mental illness (SMI), including the specific disorders that were assessed in clinical interviews that were conducted for the NSDUH Mental Health Surveillance Study (MHSS). See Section B.4.4 in Section B of this report for information on the procedures in NSDUH for estimating AMI and SMI among adults.

disorder), impulse control disorders (attention deficit disorder, conduct disorder, intermittent explosive disorder, oppositional-defiant disorder), and SUDs (alcohol abuse, alcohol dependence, drug abuse, drug dependence, nicotine dependence).

For SUDs, however, it should be noted that in several NCS-R studies (e.g., Kessler, Chiu, Demler, Merikangas, & Walters, 2005), the diagnosis for abuse also includes those who meet the diagnosis for dependence. In contrast, NSDUH follows DSM-IV guidelines and limits the definition of abuse to individuals who do not meet the criteria for dependence. To make the NCS definition of abuse comparable with that of NSDUH, the rate for dependence must be subtracted from the rate for abuse. Rates of alcohol dependence or abuse and rates of illicit drug dependence or abuse were generally lower in NCS-R than in NSDUH. However, NCS-R respondents needed to report at least one symptom of abuse in order to be asked questions about dependence. Consequently, the 2001 to 2003 NCS-R estimate of any past year alcohol or illicit drug use disorder among adults was 3.8 percent (Kessler et al., 2005). NSDUH estimates of past year SUD among adults were 9.4 percent in 2002 and 9.1 percent in 2003 (Office of Applied Studies [OAS], 2004).

In an analysis of the NCS-R data, respondents with a 12-month mental disorder (excluding SUD) were identified as having past year SMI if they also had at least one of the following: bipolar I or nonaffective psychosis, suicide attempt, at least two areas in which severe role impairment occurred as measured by the Sheehan Disability Scale (SDS; Leon et al., 1997), or the presence of functional impairment consistent with a Global Assessment of Functioning (GAF) (Endicott et al., 1976) score of 50 or less (Kessler et al., 2006). This produced an estimate of SMI among adults of 5.8 percent in the past year for 2001 to 2003 compared with a NSDUH estimate of 4.1 percent in 2014 (CBHSQ, 2015c). Furthermore, for the NCS-R, 26.2 percent of respondents aged 18 or older were estimated to have any disorder in the past 12 months (including SUDs) (Kessler et al., 2006); when SUDs were excluded, the estimate of any disorder was 24.8 percent (Druss et al., 2009; Kessler et al., 2006).

Differences in estimates of SMI and AMI between the NCS-R and NSDUH could be due in part to various methodological differences between the surveys. In addition to the different years represented in each survey (the NCS-R data were collected in 2001 to 2003 vs. NSDUH's in 2014), the NCS-R data were collected using interviewer-administered questionnaires, while NSDUH employs self-administration. The NCS-R and NSDUH also used different methods for estimating SMI and AMI. The NSDUH estimates for SMI and AMI were based on statistical prediction models that were developed using clinical and main interview data from a subsample of respondents who were interviewed in 2008 to 2012 (see Section B.4.4 in Section B of this report). That is, information derived from the NSDUH interview (age, psychological distress, functional impairment, suicidal thoughts, and depression) was used for the independent variables in a statistical model that predicts mental illness. The dependent variable was the presence of SMI and was based on in-depth structured clinical interviews conducted by trained clinical interviewers. This model was used to produce estimates of SMI and AMI in the full NSDUH sample. In contrast, the NCS-R measures were directly estimated based on structured, diagnostic interviews by lay interviewers.

The definitions and disorders covered by NSDUH and the NCS-R also differ. Several published estimates of any disorder that used NCS-R data have included individuals with SUDs

(Kessler et al., 2006), while NSDUH's estimates of AMI exclude people with SUDs. The NCS-R also included mental disorders that were not assessed in the subsample of NSDUH adults who received clinical interviews. In addition, several estimates of SMI have been published with NCS-R data using various operational definitions (Kessler et al., 2006) that differ slightly from those that use NSDUH data for estimates of SMI.

Estimates of past year MDE (7.6 percent), serious thoughts of suicide (2.6 percent), and suicide plans (0.7 percent) and attempts (0.4 percent) among adults also have been produced using the NCS-R data. The estimate of past year MDE was lower for the 2014 NSDUH (6.6 percent) compared with the 2001 to 2003 NCS-R's estimate. NSDUH estimates of suicidal thoughts and suicide plans in 2014 were 3.9 and 1.1 percent, respectively (CBHSQ, 2015f). Although the items used to develop the MDE estimate from NSDUH are based on the items used in the NCS-R, slight revisions to the items were required for the ACASI environment. More importantly, the context in which the depression items are presented and the placement of the depression items differ between the NCS-R and NSDUH. In the NCS-R, the three screening questions for MDE were followed by screening questions for potential indicators of bipolar disorder, irritable depression, anxiety, SUD, phobias, and impulse control disorders. Following the screening questions, NCS-R respondents who reported any of the problems in the screening questions for depression were asked about depression symptoms, and questions about depression appeared relatively early in the NCS-R interview. For NSDUH, adults who report any of the three same screening questions for MDE that are in the NCS-R are routed directly to further questions about depression without being asked screening questions for other disorders. The depression questions for adults also appear later in the NSDUH interview, after respondents have been asked questions about substance use, SUD (if applicable), arrests, treatment for problems with substance use (if applicable), physical health conditions, use of mental health services, and additional mental health issues (i.e., psychological distress, difficulty carrying out activities because of psychological distress, and suicidal thoughts and behavior).

In addition, the items used in the NCS-R and NSDUH to assess serious thoughts of suicide and suicidal behavior were different. The NCS-R first required respondents to report lifetime suicidal thoughts, plans, or behavior before they were asked whether these occurred in the past 12 months. In NSDUH, adult respondents are asked directly about suicidal thoughts and behavior in the past 12 months.

For further details, see the NCS website at <http://www.hcp.med.harvard.edu/ncs/>.

National Comorbidity Survey Replication Adolescent Supplement (NCS-A)

The National Comorbidity Survey Replication Adolescent Supplement (NCS-A) was designed to estimate the lifetime and current prevalence, age of onset, course, and comorbidity of DSM-IV disorders among adolescents in the United States; to identify risk and protective factors for the onset and persistence of these disorders; to describe patterns and correlates of service use for these disorders; and to lay the groundwork for subsequent follow-up studies that can be used to identify early expressions of adult mental disorders. Similar to the NCS-R, the NCS-A was conducted by the University of Michigan's Survey Research Center and was sponsored through a grant by the NIMH, with supplemental support from NIDA, SAMHSA, the Robert Wood Johnson Foundation, and the John W. Alden Trust. The NCS-A consisted of a sample, collected

from 2001 to 2004, of adolescents aged 13 to 17. The sample included 904 adolescents from households that participated in the NCS-R and 9,244 respondents from a nationally representative sample of 320 schools (Kessler et al., 2009). Similar to the NCS and NCS-R, the sample for the NCS-A excluded Alaska and Hawaii. All adolescents were interviewed in their homes using CAPI.⁴⁵

Findings from the NCS-A indicated that 8.2 percent of adolescents aged 13 to 17 had major depression or dysthymia⁴⁶ in the past 12 months (Kessler et al., 2012). The 2014 NSDUH estimate of MDE in the past year among adolescents aged 12 to 17 was 11.4 percent (CBHSQ, 2015c). However, these estimates are not strictly comparable because major depressive disorder, dysthymia, and MDE have different diagnostic criteria. Estimates from these surveys also could be affected by differences such as mode of administration (ACASI for NSDUH vs. CAPI for the NCS-A) and when the data were collected (2014 for NSDUH vs. 2001 to 2004 for the NCS-A). Estimates of any SUD in the past year among adolescents (excluding nicotine dependence) were similar for the NCS-A (7.8 percent) and the 2010 NSDUH (7.3 percent) (Kandel, Hu, & Griesler, 2013). The 2010 NSDUH estimates of dependence (alcohol: 1.7 percent; illicit drugs: 2.5 percent) tended to be higher than the NCS-A estimates (alcohol: 1.0 percent; illicit drugs: 1.1 percent). However, the NCS-A estimate for illicit drug abuse (4.5 percent) was higher than the 2010 NSDUH estimate (2.2 percent). As for the NCS-R, adolescents in the NCS-A needed to report at least one symptom of abuse in order to be asked questions about dependence.

For further details, see the NCS website at <http://www.hcp.med.harvard.edu/ncs/>.

Uniform Reporting System (URS)

The NCS data mentioned previously have been used by the Uniform Reporting System (URS) of the Center for Mental Health Services (CMHS) to produce state-level SMI estimates (Kessler et al., 2003a, 2003b, 2006). Using data from the NCS and the Baltimore site of the Epidemiologic Catchment Area (ECA) research project, methods were developed to estimate SMI (Kessler et al., 1996, 1998, 2001). The definition of SMI was operationalized as respondents having met the following criteria: (1) presence of a "severe" and persistent mental illness as defined by the National Advisory Mental Health Council of the NIMH (National Advisory Mental Health Council, 1993) or (2) respondents with another past 12-month DSM-III-R mental disorder (excluding "V" codes in the DSM,⁴⁷ SUD, and developmental disorders) and a planned suicide, attempted suicide, lack of a productive role, serious role impairment, or serious interpersonal impairment (Kessler et al., 1996, 2001). Impairment was

⁴⁵ The school sample frame for the NCS-A was used to identify students for sample selection. As for the adolescents from households that participated in the NCS-R, adolescents selected from the school sample were interviewed in their homes.

⁴⁶ The DSM-IV (APA, 1994) defines dysthymic disorder in children as a chronically depressed or irritable mood that causes clinically significant functional impairment and occurs most of the day for more days than not for at least 1 year. At least two of the following symptoms must accompany the depressed or irritable mood: (1) poor appetite or overeating; (2) insomnia or hypersomnia; (3) low energy or fatigue; (4) low self-esteem; (5) poor concentration and/or difficulty making decisions; and (6) feelings of hopelessness; there cannot be more than a 2-month period of time when the dysthymia symptoms were in remission. In addition, the diagnosis of dysthymic disorder in children can be made only if the initial 1-year period of symptoms does not include an MDE.

⁴⁷ V codes denote conditions that are a focus of clinical attention or treatment but are not attributable to a mental disorder (e.g., marital problems).

assessed using questions that were included in the NCS and the ECA for other purposes (Kessler et al., 2001; Narrow, Rae, Robins, & Regier, 2002). The SMI prevalence for the total population aged 18 or older based on the NCS and the ECA was 5.4 percent (Kessler et al., 1996).

Specifically, the URS selected a method for estimating state-level SMI prevalence that used the combined NCS data and data from the Baltimore site of the ECA by applying a model that controlled for demographic and geographic characteristics and corresponding census data (Kessler et al., 1998, 2004b). CMHS (1999) announced this methodology in the *Federal Register* as its final procedure for estimating the number of adults with SMI within each state. Through the URS, the CMHS has continued to provide state and national estimates of the prevalence of SMI among the civilian population aged 18 years or older that fixes the national SMI prevalence at 5.4 percent. Estimates of SMI by state are updated annually by applying updated population characteristics when new population data become available through the U.S. Census Bureau. Notably, this estimation method assumes that the prevalence of SMI in the adult population within the modeled demographic and geographic categories is homogeneous across states and does not change over time.

In contrast to the estimated prevalence of 5.4 percent among adults based on the NCS and the ECA, the estimated prevalence of SMI based on 2014 NSDUH data was 4.1 percent among adults (CBHSQ, 2015c). Several important differences between NSDUH and the URS that could affect estimates of mental illness warrant discussion. Most importantly, the URS assumes a national prevalence of SMI of 5.4 percent that is based on research conducted in the mid-1990s and the assumption that estimates for Baltimore hold true for the rest of the nation. In contrast, the 2014 NSDUH estimates are based on a statistical model developed using clinical interview data from a subsample of NSDUH respondents that were collected in 2008 to 2012, in combination with data from NSDUH interviews for all adults that were conducted in 2014. Further differences between the two surveys that could affect estimates of SMI include the different methods for measuring functional impairment between the NCS/ECA and NSDUH. The NCS/ECA defined impairment according to information about disability and duration associated with individual disorders, planned or attempted suicide, vocational interference (as measured by unemployment or lost time from work due to mental health issues), and impairment of interpersonal relationships (based on self-reports about confiding relationships, frequency of interactions with friends or relatives, or the quality of interpersonal relationships). The 2014 NSDUH used a reduced set of questions based on a standard screening scale for impairment (see Section B.4.4 in Section B of this report) that specifically asked about difficulty in carrying out specific tasks or responsibilities because of their emotions, nerves, or mental health, along with clinical interview information on impairment from a subset of adult respondents. Also, the NCS and the ECA both were designed to estimate the lifetime prevalence of mental disorders; therefore, the emphasis of the diagnosis was on lifetime over past year assessment. For NSDUH, SMI was estimated for the past year. Also, SMI estimates using the pooled NCS and ECA data used DSM-III (APA, 1980) and DSM-III-R (APA, 1987) diagnostic criteria. NSDUH interview data were based on DSM-IV (APA, 1994) criteria. Furthermore, the mode of survey administration differed for the NCS and the ECA (interviewer administration) versus the NSDUH (ACASI).

National Health and Nutrition Examination Survey (NHANES)

The National Health and Nutrition Examination Survey (NHANES) has assessed the health and nutritional status of children and adults in the United States since the 1960s through the use of both survey and physical examination components. It is sponsored by the National Center for Health Statistics (NCHS) and began as a series of periodic surveys in which several years of data were combined into a single data release. Since 1999, it has been a continuous survey, with interview data collected each year for approximately 5,000 individuals of all ages. The target population for NHANES is the civilian, noninstitutionalized population from birth onward. Data for 2011-2012 are the most currently available for public use; 2 years of data are combined to protect respondent confidentiality.

NHANES interviews are conducted in respondents' homes. NHANES also collects physical health measurements and data on sensitive topics through ACASI in mobile examination centers (MECs), which travel to locations throughout the United States. The NHANES MEC interview includes questions on alcohol, illicit drug, and tobacco use.

Both NSDUH and NHANES use complex cluster sample designs that affect the precision of estimates. In addition, the smaller sample sizes for NHANES (i.e., 5,000 per year vs. 67,500 per year for NSDUH) are likely to yield estimates that are less precise than those in NSDUH. The sources of nonresponse and coverage bias also differ for the two surveys. For example, NHANES respondents have to travel to a MEC to respond to the substance use items, which may eliminate homebound respondents or affect the participation of respondents with limited access to transportation.

The most recently available and comparable substance use estimates from NHANES were based on combined data from 1999 to 2004 and indicated that 13.0 percent of youths aged 12 to 17 had smoked cigarettes in the past 30 days, 21.1 percent had used alcohol in the past 30 days, and 10.4 percent were past month binge alcohol users. An estimated 21.1 percent of youths had ever tried marijuana, and 2.4 percent had ever used cocaine (Fryar, Merino, Hirsch, & Porter, 2009). NSDUH estimates for youths aged 12 to 17 in 2002 to 2004 ranged from 11.9 to 13.0 percent for past month use of cigarettes, from 17.6 to 17.7 percent for past month alcohol use, and from 10.6 to 11.1 percent for past month binge alcohol use. Lifetime use of marijuana in 2002 to 2004 among youths ranged from 19.0 to 20.6 percent, and lifetime use of cocaine ranged from 2.4 to 2.7 percent.

For further details, see the NHANES website at <http://www.cdc.gov/nchs/nhanes.htm>.

National Health Interview Survey (NHIS)

The National Health Interview Survey (NHIS) is a continuous, nationally representative sample survey that collects data using personal household interviews through CAPI. The survey is sponsored by the NCHS and provides national estimates of the health status, access to care and insurance, health service utilization, and health behaviors of the civilian, noninstitutionalized population, including cigarette smoking and alcohol use among adults aged 18 or older. NHIS data have been collected since 1957. In 2013, there were three core components of the survey: the Family Core, which collects information from all family members aged 18 or older in each

household; the Sample Adult Core, which collects information from one adult aged 18 or older in each family; and the Sample Child Core, which collects information on youths under age 18 from a knowledgeable family member, usually a parent, in households with a child. In 2013, NHIS sample sizes were 104,520 individuals for the Family Core, 34,557 adults for the Sample Adult Core, and 12,860 children for the Sample Child Core (NCHS, 2014).

The NHIS estimates of substance use for adults are not strictly comparable with NSDUH estimates. For example, in the NHIS, consumption of five or more drinks on at least 1 day is measured for the past year, whereas the reference period for NSDUH is the past 30 days. As for BRFSS, adults in the NHIS are defined as current cigarette users if they smoked at least 100 cigarettes in their lifetime and also reported that they currently smoke. In 2012, 18.1 percent of adults were current cigarette users based on the definition used in the NHIS (Blackwell, Lucas, & Clarke, 2014). The 2012 NSDUH estimate of current cigarette use among adults was 23.8 percent.

For further details, see the NHIS website at <http://www.cdc.gov/nchs/nhis.htm>.

National Longitudinal Alcohol Epidemiologic Survey (NLAES) and National Epidemiologic Survey on Alcohol and Related Conditions (NESARC)

The National Longitudinal Alcohol Epidemiologic Survey (NLAES) was conducted in 1991 and 1992 by the U.S. Bureau of the Census for the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Face-to-face, interviewer-administered interviews using paper-and-pencil questionnaires were conducted with 42,862 respondents aged 18 or older in households in the contiguous United States. Despite the survey name, the design was cross-sectional.

The first wave of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) was conducted using CAPI in 2001 and 2002, also by the U.S. Bureau of the Census for NIAAA. The NESARC sample of adults aged 18 or older was designed to make inferences for the adult civilian, noninstitutionalized population of the United States, including Alaska, Hawaii, and the District of Columbia, and including people living in noninstitutional group quarters. NESARC is longitudinal in design. The first wave was conducted in 2001 and 2002, with a final sample size of 43,093 respondents aged 18 or older. The second wave was conducted in 2004 and 2005, in which 34,653 respondents were reinterviewed (Grant & Dawson, 2006; NIAAA, 2010).

NESARC-III is a new cross-sectional survey based on a nationally representative sample of the civilian, noninstitutionalized population of the United States aged 18 years or older. Black, Hispanic, and Asian adults were oversampled to allow reliable estimates to be made for these groups. The survey was conducted by Westat for NIAAA from April 2012 through June 2013 using CAPI. The final sample size of adults was 36,309, including adults living in households and in selected noninstitutional group quarters (Grant et al., 2015).

NESARC contains assessments of alcohol and illegal drug use, dependence and abuse, and certain mental disorders. NESARC included an extensive set of questions based on DSM-IV criteria (APA, 1994) and was designed to assess the presence of symptoms of alcohol or drug dependence or abuse in people's lifetimes and during the prior 12 months. For the 2001 and 2002

NESARC, estimates of the prevalence of major mental disorders based on the DSM-IV were generated using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-version 4 (AUDADIS-IV), which is a structured, diagnostic interview that captures major DSM-IV axis I and axis II disorders. NESARC-III used the AUDADIS-5, which assesses SUD based on DSM-5 criteria (APA, 2013; Hasin et al., 2015). Mood disorders assessed in NESARC included major depression, dysthymia, mania, and hypomania. Anxiety disorders that were assessed included panic disorder (with or without agoraphobia), social phobia, specific phobia, and generalized anxiety disorder (Grant et al., 2004). An additional component of NESARC-III was collection of saliva samples from consenting respondents to obtain DNA.

Prior research has indicated that (a) prevalence estimates for substance use were generally higher in NSDUH than in NESARC; (b) rates of past year SUD for cocaine and heroin use were higher in NSDUH than in NESARC; (c) rates of past year SUD for use of alcohol, marijuana, and hallucinogens were similar between NSDUH and NESARC; and (d) prevalence estimates for past year SUD conditional on past year use were substantially lower in NSDUH for the use of marijuana, hallucinogens, and cocaine (Gruza, Abbacchi, Przybeck, & Gfroerer, 2007). However, NESARC-III estimates of past year alcohol use among adults were greater than corresponding NSDUH estimates in 2012 and 2013. An estimated 72.7 percent of adults aged 18 or older in 2012-2013 were past year alcohol users based on NESARC-III (Dawson, Goldstein, Saha, & Grant, 2015). Corresponding NSDUH estimates for past year alcohol use among adults were 71.0 percent for 2012 and 70.7 percent for 2013. NESARC wave I data indicated that 7.1 percent of adults were estimated to have had MDE in the past year (Compton, Conway, Stinson, & Grant, 2006; Grant et al., 2004). The estimate of past year MDE among adults in the 2013 NSDUH was 6.7 percent. The NESARC estimate excluded depressive symptoms induced by substance use, a medical illness, or bereavement; these exclusions were not made for the NSDUH estimate of MDE.⁴⁸ In addition, the main NSDUH interview does not include questions to assess anxiety disorders or mood disorders other than MDE.

A number of methodological factors might have contributed to prior differences in estimates between NSDUH and NESARC, including privacy and anonymity. Questions about sensitive topics in NSDUH are self-administered, while similar questions are interviewer administered in NESARC, which may have resulted in higher use estimates in NSDUH. In addition, differences in SUD diagnostic instrumentation may have resulted in higher SUD prevalence among past year substance users in NESARC.

National Longitudinal Study of Adolescent Health (Add Health)

The National Longitudinal Study of Adolescent Health (Add Health) was conducted to measure the effects of family, peer group, school, neighborhood, religious institution, and community influences on health risks, such as tobacco, drug, and alcohol use. Add Health was initiated in 1994 and supported by grants from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) with cofunding from 23 other federal agencies and foundations.

⁴⁸ The NESARC estimate reported by Grant et al. (2004) excluded substance-induced depression, while the estimate reported by Compton et al. (2006) did not. However, Compton et al. noted that the prevalence of substance-induced depression was low and not likely to have a large effect on estimates of MDE.

The study began in 1994-1995 (Wave I) with an in-school questionnaire administered to a nationally representative sample of 90,000 students in grades 7 to 12 in 144 schools and followed up with an in-home interview. In Wave I, the students were administered brief, machine-readable questionnaires during a regular class period. Interviews also were conducted with about 20,000 students and their parents in the students' homes using a combined CAPI and ACASI design. In Wave II, conducted in 1996, about 15,000 students in grades 8 to 12 were interviewed a second time in their homes. In Wave III in 2001-2002, about 15,000 of the original Add Health respondents, then aged 18 to 26, were reinterviewed to investigate how adolescent experiences and behaviors are related to outcomes during the transition to adulthood. Wave IV was conducted in 2007-2008 when the approximately 15,000 respondents were aged 24 to 32.

The study provides information on the use of alcohol, illicit drugs, and tobacco and measured SUDs in some waves of the study. The longitudinal design of Add Health, in which the same sample of respondents is followed over time (and is subject to attrition in later waves of the survey), limits the kinds of comparisons that can be made with cross-sectional NSDUH data, in which estimates are based on independent samples. Consequently, findings for Add Health tend to be reported for behavioral health measures either as predictor variables (e.g., whether substance use in an earlier wave predicts another outcome in a later wave) or as outcome variables (e.g., whether other characteristics in an earlier wave predict substance use in later waves). Another factor that affects comparability of Add Health and NSDUH data is differences in measures. For example, binge alcohol use for Add Health has been defined as having five or more drinks in one setting more than once a month in the past year (Humensky, 2010), whereas NSDUH defines binge alcohol use in terms of consumption of five or more drinks on 1 or more days in the past month, regardless of the frequency of this behavior in the past year. Also, estimates of alcohol dependence or abuse have been reported for the lifetime period for Add Health (Haberstick et al., 2014) and for the past year for NSDUH.

Nevertheless, one study that analyzed Add Health data reported that the estimates of past month cigarette smoking ranged from 28 percent in Wave I to 35 percent based on respondents followed through Waves II and III (i.e., when respondents were young adults), and 39 percent in Wave IV, when respondents were in their mid-20s to early 30s (Pampel, Mollborn, & Lawrence, 2014). In another study, estimates of past month marijuana use were 13.70 percent in Wave I and 23.98 percent in Wave III. Past month cocaine use went from 1.10 percent in Wave I to 3.69 percent in Wave III (Humensky, 2010).

For further details, see the Add Health website at <http://www.cpc.unc.edu/projects/addhealth>.

National Survey of Children's Health (NSCH)

The National Survey of Children's Health (NSCH) is a cross-sectional telephone survey of households in the United States with at least one child aged 0 to 17 years living in the household at the time of the interview. The NSCH provides national and state-level prevalence estimates for a variety of physical, emotional, and behavioral child health indicators among children in the United States. The survey most recently was conducted during 2011 and 2012, with previous administrations in 2003 to 2004 and 2007 to 2008. Primary funding for the 2011-2012 NSCH was provided by the Maternal and Child Health Bureau within the Health

Resources and Services Administration. NCHS oversaw the sampling and telephone interviews. The NSCH collects data using RDD methods from a large national probability sample in all 50 states and the District of Columbia (e.g., nearly 96,000 child-level interviews nationally in 2011 and 2012, with approximately 1,850 interviews per state). Beginning with the 2011-2012 NSCH, the survey included a dual-frame sample for landline and cellular phone numbers.⁴⁹ Households containing one or more children aged 0 to 17 years are identified from sampled telephone numbers, and one child within these households is randomly selected to be the subject of the interview. The adult parent or guardian in the household who knows the most about the child's health and health care is asked to complete an interview using CATI; in addition to English, respondents could complete the interview in Spanish, Mandarin, Cantonese, Vietnamese, or Korean.⁵⁰ NSCH results are weighted to represent the population of noninstitutionalized children aged 0 to 17 years nationally and in each state.

If the sampled child in the household is aged 2 to 17, the parent being interviewed is asked whether a doctor or other health professional ever told the parent that the child had specific mental health conditions, including depression. If the parent reported being told that the child ever had depression, the parent is asked whether the child currently has depression, and if so, whether the adult would describe the child's depression as mild, moderate, or severe. Based on NSCH data for 2011 and 2012, the estimated prevalence of current depression nationally among adolescents aged 12 to 17 was 4.0 percent, and 1.8 percent of adolescents were described as currently having moderate or severe depression.⁵¹ The 2013 NSDUH estimate of MDE in the past year among adolescents aged 12 to 17 was 10.7 percent, and 7.7 percent had MDE with severe impairment.

Methodological differences between the two surveys that could affect the estimates of depression among adolescents include the following: (a) *the modes of administration and available languages* (ACASI in English or Spanish for NSDUH vs. CATI and availability of the interview in Asian languages in addition to English or Spanish for the NSCH); (b) *the source of information* about an adolescent's health (direct self-reports from an adolescent respondent in NSDUH vs. parental reports in the NSCH); (c) *differences in measures* for estimating the prevalence and severity of depression (specific symptoms of depression, frequency of symptoms, and interference of depression with adolescents' life activities [see Section B.4.5 in Section B of this report] in NSDUH vs. reports in the NSCH of whether the parent was told that the child had depression and the parent's self-assessment of the severity of current depression); and (d) *differences in the reference period* for recent depression (past 12 months in NSDUH vs. "currently" in the NSCH). Response rates also have been higher in NSDUH (e.g., 80.0 percent for youths aged 12 to 17 and 70.3 percent for adults aged 18 or older in 2014; see [Table B.4](#) in Section B of this report) than in the NSCH (e.g., 38.2 percent for the landline telephone sample

⁴⁹ The NSCH used the same sampling frame as the CDC's National Immunization Survey (NIS) and immediately followed the NIS interview in selected households, using the NIS sample for efficiency and economy.

⁵⁰ Most interviews in 2011 or 2012 that were not conducted in English were conducted in Spanish (NCHS, 2013).

⁵¹ NSCH data can be analyzed online at <http://www.childhealthdata.org/learn/NSCH> by selecting "Browse the Data" and "Browse by Survey & Topic." Data on current depression for a given year of the NSCH are available by selecting "Physical and Dental Health" from "Child Health Measures," then selecting "Prevalence of current depression, age 2-17 years" from the list of topics for "1.9b: Prevalence of current chronic health conditions." The online analysis tool allows estimates to be shown by age group.

in 2011 and 2012, 15.5 percent for the cellular telephone sample, and 23.0 percent for the combined dual-frame sample) (NCHS, 2013), which could result in differential nonresponse bias patterns in the two surveys.

For further details, see the NSCH website at <http://www.cdc.gov/nchs/slait/nsch.htm>.

Partnership Attitude Tracking Study (PATS)

The Partnership Attitude Tracking Study (PATS), an annual national research study that tracks attitudes about illegal drugs, is sponsored by the Partnership for Drug-Free Kids and the MetLife Foundation. PATS consists of two nationally representative samples—a teenage sample for students in grades 9 through 12 and a parent sample. Adolescents complete self-administered, machine-readable questionnaires during a regular class period. The latest PATS surveys of teenagers and parents were conducted in 2013. The 2013 survey of adolescents included questions about use of cigarettes, alcohol, and illicit drugs. In 2013, 3,705 teenagers were surveyed nationwide in the 25th wave of the survey conducted since 1987, and 750 parents or caregivers of children in grades 9 to 12 were surveyed (Partnership for Drug-Free Kids & MetLife Foundation, 2014).

In general, NSDUH estimates of substance use prevalence for adolescents are lower than PATS estimates for youths in that age group. In 2013, for example, PATS estimates of marijuana use among adolescents in grades 9 through 12 were 44 percent for lifetime use and 24 percent for use in the past month (Partnership for Drug-Free Kids & MetLife Foundation, 2014). In 2013, corresponding estimates of lifetime marijuana use in NSDUH were 24.5 percent for 10th graders and 38.1 percent for 12th graders (see [Table D.1](#) at the end of this section). Rates of past month marijuana use in NSDUH were 11.4 percent for 10th graders and 17.4 percent for 12th graders. The differences in prevalence estimates may be due to the different study designs. The youth portion of PATS is a school-based survey, which, similar to other school-based surveys (e.g., MTF), may elicit more reporting of illicit drug use than the home-based NSDUH.

For further details, see the Partnership for Drug-Free Kids website at <http://www.drugfree.org/>.

Youth Risk Behavior Survey (YRBS)

Since 1991, the Youth Risk Behavior Survey (YRBS) has been a component of the CDC's Youth Risk Behavior Surveillance System (YRBSS), which measures the prevalence of six priority health risk behavior categories: (a) behaviors that contribute to unintentional injuries and violence; (b) tobacco use; (c) alcohol and other drug use; (d) sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including human immunodeficiency virus infection; (e) unhealthy dietary behaviors; and (f) physical inactivity. The YRBSS includes national, state, territorial, tribal, and local school-based surveys of high school students conducted every 2 years. The national school-based survey uses a three-stage cluster sample design to produce a nationally representative sample of students in grades 9 through 12 who attend public and private schools. The state and local surveys use a two-stage cluster sample design to produce representative samples of public school students in grades 9 through 12 in their jurisdictions. The national YRBS is conducted during the spring, with students completing

a self-administered, machine-readable questionnaire during a regular class period. For the 2013 national YRBS (the latest that has been conducted), 13,583 usable questionnaires were obtained from students in 148 schools.

In general, the YRBS school-based survey has found higher rates of substance use for youths than those found in NSDUH (Table D.2).⁵² The lower prevalence rates in NSDUH are likely due to the differences in study design. As in the case of comparisons with estimates from the MTF and other surveys, the lower prevalences in NSDUH may be due to more underreporting in the household setting, as compared with the YRBS school setting, and some overreporting in the school settings (CBHSQ, 2012b).

Similar to other school-based surveys, the population of inference for the YRBS is the population of adolescents who are in school, specifically those in the 9th through 12th grades. Consequently, the YRBS does not include data from dropouts. The YRBS makes follow-up attempts to obtain data from youths who were absent on the day of survey administration, but nevertheless does not obtain complete coverage of these youths. For these reasons, YRBS data are not intended to be used for making inferences about the adolescent population of the United States as a whole.

For further details, see the YRBS website at <http://www.cdc.gov/HealthyYouth/yrbs/>.

D.2 Substance Abuse Treatment Data Sources

The Substance Abuse and Mental Health Services Administration's (SAMHSA's) Behavioral Health Services Information System (BHSIS, formerly the Drug and Alcohol Services Information System, or DASIS) includes three components that provide national- and state-level information on the numbers and characteristics of individuals admitted to substance abuse treatment programs and that describe the facilities that deliver care to those individuals. The core of BHSIS is the Inventory of Behavioral Health Services (I-BHS), a comprehensive listing of all known substance abuse and mental health treatment facilities. The focus of I-BHS is to continually update information; therefore, summary statistics about I-BHS are not included in this section. The two other components of BHSIS are described in this section: the National Survey of Substance Abuse Treatment Services (N-SSATS) and the Treatment Episode Data Set (TEDS).

National Survey of Substance Abuse Treatment Services (N-SSATS)

The National Survey of Substance Abuse Treatment Services (N-SSATS) started in 2000 and is an annual census of all known drug and alcohol abuse treatment facilities in the United States and U.S. jurisdictions. The 2013 N-SSATS facility universe totaled 18,048 facilities. About 14 percent of the facilities in 2013 were found to be ineligible because they had closed or did not provide substance abuse treatment or detoxification. Of the remaining eligible facilities, more than 14,000 (94 percent) completed the survey. The 2013 N-SSATS employed three sequential data collection modes: a secure web-based questionnaire, a paper questionnaire sent by mail upon request to facilities that had not responded to the web-based questionnaire, and a

⁵² To examine estimates that are comparable with YRBS data, NSDUH estimates presented in Table D.2 are based on data collected in the first 6 months of the survey year and are subset to ages 12 to 20.

telephone interview for facilities that had not responded to the web or paper questionnaire. The percentage of facilities responding via the web increased from 44 percent in 2007 to 87 percent in 2013 (CBHSQ, 2014b).

In N-SSATS, facilities provide information on the characteristics of the treatment facility, including (but not limited to) client payment sources, services provided, and hospital and residential capacity. N-SSATS also collects data from facilities on the number of clients in treatment on the survey reference date (i.e., the last working day of March in the survey year, such as March 29, 2013) and the percentages of clients in treatment on the reference date for abuse of alcohol and other drugs, alcohol abuse only, other drug abuse only, and co-occurring substance abuse and mental health disorders. Average counts of the number of people in treatment for alcohol or illicit drug abuse on a single day were about 1.2 million based on N-SSATS data from 2007 to 2009. Corresponding average single-day counts from NSDUH were about 1.4 million based on the questionnaire item asking about treatment on October 1st and 1.2 million based on the item about currently being in treatment at the time of the interview.⁵³ Compared with data reported by facilities in N-SSATS, NSDUH respondents were more likely to report treatment only for alcohol and were less likely to report treatment only for illicit drugs (Batts et al., 2014).

As noted previously, N-SSATS collects data on substance abuse treatment utilization from facilities. In contrast, NSDUH estimates of treatment utilization are based on self-reports of treatment from respondents in the general population. The validity of N-SSATS data on treatment utilization depends on the accuracy of the reports provided by the individual(s) responding on behalf of the facility just as the validity of NSDUH estimates on the receipt of substance abuse treatment depends on accurate respondent self-reports. Also, N-SSATS counts of clients who received treatment cover clients who may be outside of the NSDUH target population (e.g., homeless people not living in shelters, active-duty military personnel). In addition, N-SSATS percentages of clients receiving treatment both for alcohol and other drugs, only alcohol, and only other drugs are based on responses to a single question that asks a facility staff member to assign these percentages to each category. In contrast, NSDUH respondents who reported receiving treatment at a specialty facility are asked about the substances for which they received treatment.

For further details, see the SAMHSA website at <http://www.samhsa.gov/data/>.

Treatment Episode Data Set (TEDS)

The Treatment Episode Data Set (TEDS) is a compilation of data on the demographic characteristics and substance abuse problems of those aged 12 or older who are admitted for substance abuse treatment, based on administrative data that are routinely collected by state substance abuse agencies (SSAs) for substance abuse treatment. SSAs report data to TEDS for approximately 2 million annual admissions to treatment in the United States and Puerto Rico

⁵³ Counts of the number of people in treatment on a single day in N-SSATS were based on reports of the number of people in treatment on the last working day of March. Corresponding NSDUH estimates were based on data from respondents from the 2008 to 2010 NSDUHs who reported that they were enrolled in a specialty substance use treatment program on October 1st of the year prior to the interview or those from the 2007 to 2009 NSDUHs who were in specialty substance use treatment at the time of the interview (Batts et al., 2014).

primarily from facilities that receive some public funding. The TEDS system consists of two major components—the Admissions Data Set and the Discharge Data Set. The TEDS Admissions Data Set includes annual client-level data on substance abuse treatment admissions since 1992. The TEDS Discharge Data Set can be linked at the record level to admissions and includes information from clients discharged in 2000 and later. The most current TEDS data at the time this report was written were the 2012 admissions data and the 2011 discharge data.

The TEDS Admissions Data Set consists of a Minimum Data Set collected by all states and a Supplemental Data Set collected by some states. The Minimum Data Set consists of 19 items that include demographic information; primary, secondary, and tertiary substance problems at admission; source of referral; number of prior treatment episodes; and service type at admission. Supplemental Data Set items consist of 17 items that include psychiatric, social, and economic measures. The TEDS Discharge Data Set consists of items on service type at discharge, reason for discharge (e.g., completed treatment, transferred to another program or facility, dropped out), and length of stay (LOS). LOS is calculated by subtracting the admission date from the discharge date (or date of last contact). Based on linked admissions and discharge data, the average number of individuals who received treatment in the past year based on TEDS data from 2007 to 2009 was about 22 percent lower than the average from 2005 to 2010 in NSDUH for treatment in a specialty facility (1.9 million vs. 2.4 million). The single-day count of individuals in treatment from TEDS was about 0.5 million, which was lower than the single-day counts for N-SSATS (1.2 million) and NSDUH (1.2 million to 1.4 million, depending on the questions that were used; see the N-SSATS description in this section).⁵⁴ Thus, TEDS may underestimate the number of individuals in treatment on a single day (Batts et al., 2014).

Although TEDS includes data for a sizable proportion of admissions to substance abuse treatment, it does not include all admissions. Because TEDS is a compilation of data from state administrative systems, the scope of facilities included in TEDS is affected by differences in state reporting requirements, licensure, certification, and accreditation practices, as well as disbursement of public funds. Many SSAs require facilities that receive public funding (including federal block grant funds) for substance abuse treatment services to report data to the SSA, whereas others require all facilities that are licensed or certified by the state to report TEDS data. States also vary in terms of the specific admissions that are reported to TEDS (e.g., all admissions to eligible facilities that report to TEDS vs. admissions financed by public funds).

For further details, see the SAMHSA website at <http://www.samhsa.gov/data/>.

⁵⁴ The numbers of people in TEDS who received treatment were derived from linked admissions and discharge data or from adjusted admissions data for states that did not submit discharge data. Multiple admissions that were linked by a single unique identifier represented one individual. Three states (Alabama, Alaska, and Georgia) and the District of Columbia were not included in the TEDS data because they did not report TEDS data or reported incomplete data. For comparison purposes, data from these states were excluded from NSDUH data on average numbers who received treatment in the past year. However, single-day counts for people in treatment from N-SSATS and NSDUH included data from these states (Batts et al., 2014).

D.3 Surveys of Populations Not Covered by NSDUH

Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)

The Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS) is a multicomponent epidemiologic and neurobiological study to inform health promotion, risk reduction, and suicide prevention efforts in the U.S. Army. A primary aim of the study is to increase knowledge about determinants of suicidal thoughts and behaviors among soldiers. Army STARRS is supported through the Henry M. Jackson Foundation under a cooperative agreement between the NIMH and a consortium of scientific collaborators at the Uniformed Services University of the Health Sciences, the University of California San Diego, Harvard Medical School, and the University of Michigan, with additional collaborating scientists and consultants from the NIMH and the Army. Army STARRS includes six component studies: (1) the Historical Administrative Data Study (HADS), an integrated analysis of over 200 administrative data systems to provide data on significant administrative predictors of suicides among the more than 1.6 million soldiers who were on active duty during 2004 through 2009; (2) the Soldier Health Outcomes Study A (SHOS-A), a retrospective case-control study of soldiers who made nonfatal suicide attempts; (3) the Soldier Health Outcomes Study B (SHOS-B), a case-control study of soldiers whose suicide attempts were fatal; (4) the New Soldier Study (NSS), a cross-sectional survey in 2011 and 2012 of new soldiers in the 2 days after their arrival for Basic Combat Training (BCT); (5) the All-Army Study (AAS), a cross-sectional survey in 2011 and 2012 of active-duty personnel other than those in BCT; and (6) the Pre-Post Deployment Survey (PPDS), in which NSS and AAS respondents are tracked longitudinally through their administrative records to obtain information on outcomes, such as suicide fatalities, nonfatal suicide attempts of sufficient severity to come to the attention of the military health care system, and treatment in the military health care system for mental illness. More information about these component studies can be found in Kessler et al. (2013).

The questionnaires for both the NSS and AAS were self-administered in group sessions and collected information on *physical health* (including periods of insomnia and chronic pain); *internalizing mental disorders* (e.g., major depressive disorder, bipolar disorder [BPD], panic disorder, generalized anxiety disorder [GAD], posttraumatic stress disorder [PTSD], specific phobia, social phobia, obsessive-compulsive disorder [OCD]); *externalizing mental disorders* (e.g., attention-deficit/hyperactivity disorder [ADHD], conduct disorder, intermittent explosive disorder [IED], oppositional defiant disorder [ODD], SUD) (Nock et al., 2014; Rosellini et al., 2015); *receipt of mental health services*; *substance use*; and *suicidal thoughts and behaviors*. Assessment of mental disorders or SUDs was based on DSM-IV criteria for the lifetime, past 12-month, and past 30-day periods, except that disorders were assessed without regard to diagnostic hierarchy or organic exclusion rules (Kessler et al., 2014). The NSS questionnaire used computer-assisted self-interviewing (CASI) and was administered on laptop computers. The AAS questionnaire was shorter than the NSS questionnaire (i.e., designed for a single 90-minute group administration instead of two 90-minute administrations for the NSS), and it was designed for CASI administration or as a paper-and-pencil questionnaire. In addition, the NSS included neurocognitive tests and blood samples for genetic testing that were obtained from consenting participants as part of the physical examination process prior to the beginning of BCT. The AAS did not collect neurocognitive data or physical specimens for genetic testing. Both NSS and AAS respondents were asked for additional consent to link their Army or

Department of Defense (DoD) administrative records to their questionnaire responses and to participate in to-be-determined future longitudinal data collections (Kessler et al., 2013).

Based on AAS data from 5,428 soldiers who completed questionnaires and consented to linkage of questionnaire responses with administrative records, 25.1 percent of respondents met criteria for any mental disorder or SUD in the past 30 days, including 15.0 percent for any internalizing disorders (BPD, GAD, major depressive disorder, panic disorder, or PTSD), 18.4 percent for any externalizing disorders (ADHD, conduct disorder, IED, ODD, or SUD), and 11.1 percent for multiple disorders (internalizing or externalizing). About three fourths of cases with any disorder in the past 30 days (76.6 percent) reported an age at onset prior to enlistment (Kessler et al., 2014). Lifetime estimates for suicidal thoughts and behaviors were 13.9 percent for having suicidal thoughts, 5.3 percent for making a suicide plan, and 2.4 percent for making a (nonfatal) suicide attempt (Nock et al., 2014).

NSS data from 38,507 new soldiers indicated that 38.7 percent of new soldiers had one or more of the 10 assessed DSM-IV disorders in their lifetime, including 19.8 percent who had an internalizing disorder (BPD, GAD, major depressive disorder, panic disorder, or PTSD) and 31.8 percent who had an externalizing disorder (ADHD, conduct disorder, IED, ODD, or SUD). Comparison of NSS estimates with NCS-R estimates that controlled for demographic differences between the NSS and civilian populations⁵⁵ indicated similar overall estimates of any lifetime disorder in the two populations. However, new soldiers were more likely than adults in the general civilian population to have GAD, PTSD, conduct disorder, or multiple (i.e., three or more) disorders in their lifetime (Rosellini et al., 2015). NSS also yielded lifetime pre-enlistment estimates of 14.1 percent for suicidal thoughts, 2.3 percent for suicide plans, and 1.9 percent for suicide attempts (Ursano et al., 2015).

For further details, see the Army STARRS website at <http://www.armystarrs.org/>.

Department of Defense (DoD) Health Related Behaviors Survey of Active Duty Military Personnel (HRB Survey)

The Department of Defense (DoD) Health Related Behaviors Survey of Active Duty Military Personnel (HRB Survey) provides information about the behavioral health of active-duty military personnel for best informing policies and programs to address the needs of service members and their families. The survey was first conducted in 1980 and has been conducted approximately every 3 years. The HRB Survey provides information about the use of alcohol, illicit drugs, and tobacco and about mental health issues among military personnel. In addition, HRB Surveys of Reserve component personnel have been conducted in 2006, 2009-2010, and 2014; the HRB Surveys of Reserve component personnel have included questions about health-related behaviors or issues, such as diet, exercise, stress, alcohol use, and tobacco use.

The 2011 HRB Survey was the 11th survey in the series and was updated extensively since its last iteration in 2008. For the first time, the survey was administered using a web-based, individual self-administered questionnaire rather than through an onsite group administration of paper-and-pencil questionnaires. Because of this change in survey administration, the 2011

⁵⁵ NCS-R respondents also were excluded from the analysis if they self-reported being ineligible for Army service because of histories of criminal behaviors, severe physical disorders or handicaps, or severe mental illness.

sample was no longer clustered geographically. The questionnaire also was revised to allow the use of skip logic to reduce respondent burden and additional alignment with questions in national surveys of civilian populations. The 2011 HRB Survey sample consisted of 39,877 active-duty, nondeployed service members in the Army, Navy, Marine Corps, Air Force, and Coast Guard (Barlas, Higgins, Pflieger, & Diecker, 2013). Because of changes to procedures for sampling, data collection (including questionnaire changes), weighting, data processing, and analysis, estimates from the 2011 HRB Survey are not directly comparable with estimates from prior HRB Survey administrations. Consequently, the 2011 HRB Survey represents a new baseline.

In 2011, 9.6 percent of military personnel in all services (including the Coast Guard) reported symptoms that suggested a high level of depression in the past week, 3.9 percent reported suicidal ideation (i.e., suicidal thoughts) in the past year, and 0.5 percent reported a suicide attempt in that period. In addition, 25.6 percent of military personnel perceived the need for mental health counseling in the past year, and 24.9 percent received counseling (Barlas et al., 2013).

National Inmate Surveys (NIS)

The National Inmate Surveys (NIS) were initiated to fulfill the requirements of the Prison Rape Elimination Act of 2003 for the Bureau of Justice Statistics (BJS) to provide a list of prisons and jails according to the prevalence of sexual victimization. The BJS also added a companion survey on drug and alcohol use and treatment as part of the NIS. Inclusion of the companion survey on substance use and treatment was designed to prevent facility staff from knowing whether inmates were selected to receive the survey on sexual victimization or the companion survey and also was intended to provide more recent information on substance use and related issues among correctional populations in the United States compared with the Surveys of Inmates in State and Federal Correctional Facilities (see the next survey summary in this section). The NIS were conducted in 2007 (NIS-1), in 2008-2009 (NIS-2), and in 2011-2012 (NIS-3). Questions about mental health were included for the first time in the NIS-3.

The NIS used a two-stage probability sample design first to select state and federal correctional facilities,⁵⁶ then to select inmates within sampled facilities. At least one facility in every state was selected; federal facilities were grouped together and treated like a state for sampling purposes. The sample design also ensured a sufficient number of women in the sample. Samples were restricted to confinement facilities (i.e., institutions in which fewer than 50 percent of the inmates were regularly permitted to leave for work, study, or treatment without being accompanied by facility staff). The NIS samples also excluded community-based facilities, such as halfway houses, group homes, and work release centers. Inmates aged 18 or older within sampled facilities were randomly selected for the interview.

The NIS-1 was conducted in 146 state and federal prisons and in 282 local jails between April and August 2007. Overall NIS-1 response rates for both survey forms were 72 percent for prison inmates and 67 percent for jail inmates. A total of 7,754 prison or jail inmates completed the drug and alcohol survey for the NIS-1. The NIS-2 was conducted in 167 state and federal

⁵⁶ This selection was based on adult confinement facilities identified in the 2005 Census of State and Federal Adult Correctional Facilities, supplemented with updated information from websites maintained by each state's department of corrections.

prisons and 286 jails between October 2008 and August 2009. NIS-2 response rates were 71 percent for prison inmates and 68 percent for jail inmates. A total of 5,015 prison or jail inmates completed the drug and alcohol survey for the NIS-2. The NIS-3 was conducted in 233 state and federal prisons, 358 local jails, and 15 special facilities (military, Indian country, and U.S. Immigration and Customs Enforcement) between February 2011 and May 2012. A total of 106,532 inmates participated in NIS-3 (either survey form), including 43,721 state or federal prison inmates, 61,351 jail inmates, and 1,460 inmates in special facilities. Overall NIS-3 response rates for both survey forms were 60 percent for prison inmates and 61 percent for jail inmates (Beck, Berzofsky, Caspar, & Krebs, 2013).

The interviews used CAPI for general background information at the beginning of the interview and ACASI for the remainder. Respondents completed the ACASI portion of the interview in private, with the interviewer either leaving the room or moving away from the computer. Sampled inmates were randomly assigned to receive the sexual victimization survey or the companion survey on substance use and treatment. Substance use questions were based on items from past inmate surveys conducted by BJS, such as the 2004 Survey of Inmates in State Correctional Facilities (SISCF), and included questions about lifetime and first use of drugs or alcohol, being under the influence of drugs or alcohol at the time of their current offense, substance use prior to being admitted to the facility, problems associated with substance use, and treatment for use of drugs or alcohol.

The NIS-3 included questions on the following mental health issues: (a) psychological distress in the past 30 days, based on the Kessler-6 (K6) questions (see Section B.4.4 in Section B of this report for a list of the K6 questions); (b) occurrence of specific mental disorders in the lifetime and past 12-month periods; (c) whether respondents had ever been told that they had specific mental disorders; and (d) mental health service utilization.

An estimated 36.6 percent of prison inmates and 43.7 percent of jail inmates in the NIS-3 reported having ever been told by a mental health professional that they had a mental disorder (manic depression, bipolar disorder, other depressive disorder, schizophrenia or another psychotic disorder, PTSD, or an anxiety or personality disorder). More than a third of inmates (35.8 percent of prison inmates and 39.2 percent of jail inmates) reported that they received counseling or therapy for these problems. An estimated 15.4 percent of prisoners and 19.7 percent of jail inmates reported taking prescription medication for a behavioral health condition at the time of the offense for which they were currently being held. Inmates who had ever been told by a mental health professional that they had a mental disorder were more likely than other inmates to report sexual victimization while they were incarcerated (Beck et al., 2013).

For further details about the NIS, see the BJS's "All Data Collections" web page at <http://bjs.ojp.usdoj.gov/index.cfm?ty=dca>. Results from the drug and alcohol use and treatment surveys from NIS-1 and NIS-2 are expected in 2016. Release of additional mental health findings is expected in the fall of 2015. Upon release of the findings, data will be made available at the National Archive of Criminal Justice Data at <http://www.icpsr.umich.edu/NACJD/>.

Survey of Inmates in State and Federal Correctional Facilities (SISCF, SIFCF)

The Survey of Inmates in State Correctional Facilities (SISCF) and the Survey of Inmates in Federal Correctional Facilities (SIFCF) have provided nationally representative data on state prison inmates and sentenced federal inmates held in federally owned and operated facilities. The Survey of State Inmates was conducted in 1974, 1979, 1986, 1991, 1997, and 2004, and the Survey of Federal Inmates in 1991, 1997, and 2004. The SISCF was conducted for the BJS by the U.S. Census Bureau, which also conducted the SIFCF for the BJS and the Federal Bureau of Prisons. Both surveys provide information about current offense and criminal history, family background and personal characteristics, prior drug and alcohol use and treatment, gun possession, and prison treatment, programs, and services. These surveys provide detailed information on criminal offenders, particularly special populations such as drug and alcohol users and offenders who have mental disorders. Systematic random sampling was used to select the inmates, and the SISCF and SIFCF in 2004 were administered through CAPI. In 2004, 14,499 state prisoners in 287 state prisons and 3,686 federal prisoners in 39 federal prisons were interviewed.

In 2004, 56 percent of inmates in state prisons and 45 percent of inmates in federal prisons had a mental disorder in the past year. More than two fifths of state prisoners (43 percent) reported symptoms of mania disorder, 24 percent reported symptoms of major depression, and 15 percent reported symptoms of a psychotic disorder. Comparable percentages for inmates in federal prisons were 35, 16, and 10 percent, respectively (James & Glaze, 2006). However, these inmate surveys asked about depression symptoms only for the past 12 months and did not assess the duration of symptoms. Therefore, measures of depression from these surveys are not strictly comparable with measures of MDE in NSDUH.

For further details, see the BJS's "All Data Collections" web page at <http://bjs.ojp.usdoj.gov/index.cfm?ty=dca>.

Table D.1 Use of Specific Substances in the Lifetime, Past Year, and Past Month among 8th, 10th, and 12th Graders in MTF and NSDUH: Percentages, 2013 and 2014

Drug/Current Grade Level	MTF Lifetime (2013)	MTF Lifetime (2014)	NSDUH Lifetime (2013)	NSDUH Lifetime (2014)	MTF Past Year (2013)	MTF Past Year (2014)	NSDUH Past Year (2013)	NSDUH Past Year (2014)	MTF Past Month (2013)	MTF Past Month (2014)	NSDUH Past Month (2013)	NSDUH Past Month (2014)
MARIJUANA												
8th Grade	16.5	15.6	6.8	7.5	12.7	11.7	5.6	6.0	7.0	6.5	2.5	3.1
10th Grade	35.8	33.7	24.5	22.6	29.8 ^a	27.3	19.7	18.5	18.0	16.6	11.4	9.5
12th Grade	45.5	44.4	38.1	34.3	36.4	35.1	31.1 ^a	25.4	22.7	21.2	17.4	15.0
COCAINE												
8th Grade	1.7	1.8	0.2	0.0	1.0	1.0	0.1	0.0	0.5	0.5	0.1	*
10th Grade	3.3	2.6	1.0	1.3	1.9	1.5	0.6	0.9	0.8	0.6	0.0	0.2
12th Grade	4.5	4.6	3.1	2.0	2.6	2.6	1.7	1.1	1.1	1.0	0.2	0.3
INHALANTS												
8th Grade	10.8	10.8	6.4	6.2	5.2	5.3	2.5	2.6	2.3	2.2	0.9	0.7
10th Grade	8.7	8.7	6.5	5.4	3.5	3.3	1.8	2.0	1.3	1.1	0.6	0.5
12th Grade	6.9	6.5	5.3	4.2	2.5	1.9	1.1	1.2	1.0	0.7	0.1	0.3
CIGARETTES												
8th Grade	14.8	13.5	9.0	8.7	--	--	5.6	4.9	4.5	4.0	2.1	2.0
10th Grade	25.7 ^b	22.6	22.5	19.3	--	--	15.4	12.6	9.1 ^b	7.2	8.8 ^a	5.8
12th Grade	38.1 ^b	34.4	35.0	32.4	--	--	24.9	22.4	16.3 ^b	13.6	16.9	13.7
ALCOHOL												
8th Grade	27.8	26.8	18.9	17.1	22.1	20.8	13.8	12.4	10.2	9.0	5.4	4.6
10th Grade	52.1 ^a	49.3	44.3 ^a	39.0	47.1 ^b	44.0	36.8	32.8	25.7 ^a	23.5	17.7	16.1
12th Grade	68.2 ^a	66.0	61.7 ^a	56.6	62.0	60.2	52.6	49.0	39.2	37.4	30.7	28.2

MTF = Monitoring the Future; NSDUH = National Survey on Drug Use and Health.

*Low precision; no estimate reported.

-- Not available.

NOTE: NSDUH data have been drawn from January to June of each survey year and subset to individuals aged 12 to 20 to be more comparable with MTF data.

^a Difference between estimate and 2014 estimate is statistically significant at the .05 level.

^b Difference between estimate and 2014 estimate is statistically significant at the .01 level.

Sources: National Institute on Drug Abuse, Monitoring the Future Study, University of Michigan, 2013 and 2014. SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2013 and 2014 (January-June).

Table D.2 Lifetime and Past Month Substance Use among Students in Grades 9 to 12 in YRBS and NSDUH: Percentages, 2005, 2007, 2009, 2011, and 2013

Substance/ Period of Use	YRBS (2005)	YRBS (2007)	YRBS (2009)	YRBS (2011)	YRBS (2013)	NSDUH (2005)	NSDUH (2007)	NSDUH (2009)	NSDUH (2011)	NSDUH (2013)
Marijuana										
Lifetime Use	38.4	38.1	36.8 ^a	39.9	40.7	28.1	26.4	27.8	29.3 ^a	27.1
Past Month Use	20.2 ^a	19.7 ^b	20.8 ^a	23.1	23.4	11.2	10.9	12.0	13.3	12.1
Cocaine										
Lifetime Use	7.6 ^b	7.2 ^a	6.4	6.8 ^a	5.5	3.8 ^b	3.8 ^b	2.9 ^b	2.3 ^a	1.6
Past Month Use	3.4	3.3	2.8	3.0	--	0.8 ^b	0.6 ^b	0.4	0.5 ^a	0.2
Ecstasy										
Lifetime Use	6.3	5.8	6.7	8.2 ^a	6.6	2.8	2.9	3.3	4.3 ^b	3.1
Past Month Use	--	--	--	--	--	0.4	0.4	0.8 ^b	0.7 ^a	0.3
Inhalants										
Lifetime Use	12.4 ^b	13.3 ^b	11.7 ^b	11.4 ^b	8.9	12.0 ^b	10.7 ^b	10.1 ^b	8.1 ^b	6.0
Past Month Use	--	--	--	--	--	1.1 ^b	1.1 ^b	0.6	0.6	0.4
Cigarettes										
Lifetime Use	54.3 ^b	50.3 ^b	46.3 ^b	44.7 ^a	41.1	39.0 ^b	35.2 ^b	33.7 ^b	31.3 ^b	25.3
Past Month Use	23.0 ^b	20.0 ^b	19.5 ^b	18.1	15.7	17.0 ^b	15.5 ^b	14.9 ^b	14.5 ^b	10.4
Alcohol										
Lifetime Use	74.3 ^b	75.0 ^b	72.5 ^b	70.8 ^b	66.2	57.5 ^b	57.6 ^b	56.5 ^b	52.4 ^b	47.8
Past Month Use	43.3 ^b	44.7 ^b	41.8 ^b	38.7 ^b	34.9	26.0 ^b	26.3 ^b	25.8 ^b	23.7 ^b	20.1

NSDUH = National Survey on Drug Use and Health; YRBS = Youth Risk Behavior Survey.

-- Not available.

NOTE: NSDUH data have been drawn from January to June of each survey year and subset to individuals aged 12 to 20 to be more comparable with YRBS data. Some 2007 and 2009 NSDUH estimates may differ from previously published estimates due to updates (see Section B.3 in Section B of this report).

NOTE: Statistical tests for the YRBS were conducted using the "Youth Online" tool at <http://www.cdc.gov/HealthyYouth/yrbs/>. Results of testing for statistical significance in this table may differ from published YRBS reports of change.

^a Difference between this estimate and the 2013 estimate within the same survey is statistically significant at the .05 level.

^b Difference between this estimate and the 2013 estimate within the same survey is statistically significant at the .01 level.

Sources: Centers for Disease Control and Prevention, Youth Risk Behavior Survey, 2005, 2007, 2009, 2011, and 2013.

SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, January-June for 2005, 2007, 2009, 2011, and 2013.

Section E: References

- Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) Reorganization Act, Pub. L. No. 102-321 (1992).
- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders (DSM-III)* (3rd ed.). Washington, DC: Author.
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders (DSM-III-R)* (3rd rev. ed.). Washington, DC: Author.
- 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.
- Aquilino, W. S. (1994). Interview mode effects in surveys of drug and alcohol use: A field experiment. *Public Opinion Quarterly*, 58, 210-240.
- Barlas, F. M., Higgins, W. B., Pflieger, J. C., & Diecker, K. (2013, February). *2011 Department of Defense Health Related Behaviors Survey of Active Duty Military Personnel* (prepared under Contract No. GS-23F-8182H, Task Order No. W81XWH-10-F-0608 for the Assistant Secretary of Defense – Health Affairs and Task Order No. HSCG23-11-F-PMD008 for the U.S. Coast Guard). Fairfax, VA: ICF International.
- Batts, K., Pemberton, M., Bose, J., Weimer, B., Henderson, L., Penne, M., Gfroerer, J., Trunzo, D., & Strashny, A. (2014, April). *CBHSQ Data Review: Comparing and evaluating substance use treatment utilization estimates from the National Survey on Drug Use and Health and other data sources*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality.
- Beck, A. J., Berzofsky, M., Caspar, R., & Krebs, C. (2013, May). *Sexual victimization in prisons and jails reported by inmates, 2011-12: National Inmate Survey, 2011-12* (NCJ 241399). Washington, DC: U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
- Blackwell, D. L., Lucas, J. W., & Clarke, T. C. (2014, February). Summary health statistics for U.S. adults: National Health Interview Survey, 2012. *Vital and Health Statistics, Series 10*(260), 1-161.
- Brener, N. D., Eaton, D. K., Kann, L., Grunbaum, J. A., Gross, L. A., Kyle, T. M., & Ross, J. G. (2006). The association of survey setting and mode with self-reported health risk behaviors among high school students. *Public Opinion Quarterly*, 70, 354-374.

Center for Behavioral Health Statistics and Quality. (2010). *Results from the 2009 National Survey on Drug Use and Health: Mental health findings* (HHS Publication No. SMA 10-4609, NSDUH Series H-39). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2012a). *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)*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2012b). *Comparing and evaluating youth substance use estimates from the National Survey on Drug Use and Health and other surveys* (HHS Publication No. SMA 12-4727, Methodology Series M-9). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2012c). *Results from the 2011 National Survey on Drug Use and Health: Mental health findings* (HHS Publication No. SMA 12-4725, NSDUH Series H-45). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2012d). *Results from the 2011 National Survey on Drug Use and Health: Summary of national findings* (HHS Publication No. SMA 12-4713, NSDUH Series H-44). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2013a). *2012 National Survey on Drug Use and Health: Methodological resource book (Section 2, Sample design report)*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2013b). *Results from the 2012 National Survey on Drug Use and Health: Mental health findings* (HHS Publication No. SMA 13-4805, NSDUH Series H-47). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2014a). *2012 National Survey on Drug Use and Health: Methodological Resource Book (Section 16a, 2012 Mental Health Surveillance Study: Design and estimation report)*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2014b). *National Survey of Substance Abuse Treatment Services (N-SSATS): 2013. Data on substance abuse treatment facilities* (HHS Publication No. SMA 14-489, Behavioral Health Services Information System Series S-73). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2014c). *National Survey on Drug Use and Health: 2013 public use file and codebook*. Retrieved from <http://www.datafiles.samhsa.gov>

Center for Behavioral Health Statistics and Quality. (2014d). *Results from the 2013 National Survey on Drug Use and Health: Summary of national findings* (HHS Publication No. SMA 14-4863, NSDUH Series H-48). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2015a). *2013 National Survey on Drug Use and Health: Methodological resource book*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2015b). *2014 National Survey on Drug Use and Health: Methodological resource book (Section 2, Sample design report)*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Center for Behavioral Health Statistics and Quality. (2015c). *Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health* (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from <http://www.samhsa.gov/data/>

Center for Behavioral Health Statistics and Quality. (2015d). *Receipt of services for behavioral health problems: Results from the 2014 National Survey on Drug Use and Health*. Retrieved from <http://www.samhsa.gov/data/>

Center for Behavioral Health Statistics and Quality. (2015e). *Risk and protective factors and initiation of substance use: Results from the 2014 National Survey on Drug Use and Health*. Retrieved from <http://www.samhsa.gov/data/>

Center for Behavioral Health Statistics and Quality. (2015f). *Suicidal thoughts and behavior among adults: Results from the 2014 National Survey on Drug Use and Health*. Retrieved from <http://www.samhsa.gov/data/>

Center for Mental Health Services, Substance Abuse and Mental Health Services Administration. (1999, June 24). Estimation methodology for adults with serious mental illness (SMI): Final notice. *Federal Register*, 64(121), 33890-33897.

Centers for Disease Control and Prevention. (2012, June 8). Methodologic changes in the Behavioral Risk Factor Surveillance System in 2011 and potential effects on prevalence estimates. *Morbidity and Mortality Weekly Report*, 61, 410-413.

Chromy, J. R., Feder, M., Gfroerer, J., Hirsch, E., Kennet, J., Morton, K. B., Piper, L., Riggsbee, B. H., Snodgrass, J. A., Virag, T. G., & Yu, F. (2010). *Reliability of key measures in the National Survey on Drug Use and Health* (HHS Publication No. SMA 09-4425, Methodology Series M-8). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20, 37-46.

Colpe, L. J., Epstein, J. F., Barker, P. R., & Gfroerer, J. C. (2009). Screening for serious mental illness in the National Survey on Drug Use and Health (NSDUH). *Annals of Epidemiology*, 19, 210-211.

- Compton, W. M., Conway, K. P., Stinson, F. S., & Grant, B. F. (2006). Changes in the prevalence of major depression and comorbid substance use disorders in the United States between 1991-1992 and 2001-2002. *American Journal of Psychiatry*, *163*, 2141-2147.
- Dawson, D. A., Goldstein, R. B., Saha, T. D., & Grant, B. F. (2015). Changes in alcohol consumption: United States, 2001-2002 to 2012-2013. *Drug and Alcohol Dependence*, *148*, 56-61.
- Deville, J. C., & Särndal, C. E. (1992). Calibration estimators in survey sampling. *Journal of the American Statistical Association*, *87*, 376-382.
- Druss, B. G., Hwang, I., Petukhova, M., Sampson, N. A., Wang, P. S., & Kessler, R. C. (2009). Impairment in role functioning in mental and chronic medical disorders in the United States: Results from the National Comorbidity Survey Replication. *Molecular Psychiatry*, *14*, 728-737.
- 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.
- Fagerstrom, K. O. (1978). Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. *Addictive Behaviors*, *3-4*, 235-241.
- Fendrich, M., Johnson, T. P., Sudman, S., Wislar, J. S., & Spiehler, V. (1999). Validity of drug use reporting in a high-risk community sample: A comparison of cocaine and heroin survey reports with hair tests. *American Journal of Epidemiology*, *149*, 955-962.
- 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., & Singh, A. C. (2000). The generalized exponential model for sampling weight calibration for extreme values, nonresponse, and poststratification. In *Proceedings of the 2000 Joint Statistical Meetings, American Statistical Association, Survey Research Methods Section, Indianapolis, IN* (pp. 598-603). Alexandria, VA: American Statistical Association.
- Fryar, C. D., Merino, M. C., Hirsch, R., & Porter, K. S. (2009, May 20). Smoking, alcohol use, and illicit drug use reported by adolescents aged 12-17 years: United States, 1999-2004. *National Health Statistics Reports*, No. 15, 1-23.
- Gfroerer, J., Eyerman, J., & Chromy, J. (Eds.). (2002). *Redesigning an ongoing national household survey: Methodological issues* (HHS Publication No. SMA 03-3768). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- Gfroerer, J., Lessler, J., & Parsley, T. (1997a). Studies of nonresponse and measurement error in the National Household Survey on Drug Abuse. In L. Harrison & A. Hughes (Eds.), *The validity of self-reported drug use: Improving the accuracy of survey estimates* (NIH Publication No. 97-4147, NIDA Research Monograph 167, pp. 273-295). Rockville, MD: National Institute on Drug Abuse.

Gfroerer, J., Wright, D., & Kopstein, A. (1997b). Prevalence of youth substance use: The impact of methodological differences between two national surveys. *Drug and Alcohol Dependence*, *47*, 19-30.

Grant, B. F., Chu, A., Sigman, R., Amsbary, M., Kali, J., Sugawara, Y., Jiao, R., Ren, W., Goldstein, R. (2015, January). *National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC- III): Source and accuracy statement*. Retrieved from http://www.niaaa.nih.gov/sites/default/files/NESARC_Final_Report_FINAL_1_8_15.pdf

Grant, B. F., & Dawson, D. A. (2006). Introduction to the National Epidemiologic Survey on Alcohol and Related Conditions. *Alcohol Research & Health*, *29*, 74-78.

Grant, B. F., Stinson, F. S., Dawson, D. A., Chou, S. P., Dufour, M. C., Compton, W., Pickering, R. P., & Kaplan, K. (2004). Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry*, *61*, 807-816.

Grucza, R. A., Abbacchi, A. M., Przybeck, T. R., & Gfroerer, J. C. (2007). Discrepancies in estimates of prevalence and correlates of substance use and disorders between two national surveys. *Addiction*, *102*, 623-629.

Haberstick, B. C., Young, S. E., Zeiger, J. S., Lessem, J. M., Hewitt, J. K., & Hopfer, C. J. (2014). Prevalence and correlates of alcohol and cannabis use disorders in the United States: Results from the National Longitudinal Study of Adolescent Health. *Drug and Alcohol Dependence*, *136*, 158-161. doi:10.1016/j.drugalcdep.2013.11.022

Harrison, L., & Hughes, A. (Eds.). (1997). *The validity of self-reported drug use: Improving the accuracy of survey estimates* (NIH Publication No. 97-4147, NIDA Research Monograph 167). Rockville, MD: National Institute on Drug Abuse.

Harrison, L. D., Martin, S. S., Enev, T., & Harrington, D. (2007). *Comparing drug testing and self-report of drug use among youths and young adults in the general population* (HHS Publication No. SMA 07-4249, Methodology Series M-7). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Hasin, D. S., Greenstein, E., Aivadyan, C., Stohl, M., Aharonovich, E., Saha, T., Goldstein, R., Nunes, E. V., Jung, J., Zhang, H., & Grant, B. F. (2015). The Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5): Procedural validity of substance use disorders modules through clinical re-appraisal in a general population sample. *Drug and Alcohol Dependence*, *148*, 40-46.

Heatherton, T. F., Kozlowski, L. T., Frecker, R. C., & Fagerstrom, K. O. (1991). The Fagerstrom Test for Nicotine Dependence: A revision of the Fagerstrom Tolerance Questionnaire. *British Journal of Addiction*, *86*, 1119-1127.

Hedden, S., Gfroerer, J., Barker, P., Smith, S., Pemberton, M. R., Saavedra, L. M., Forman-Hoffman, V. L., Ringeisen, H., & Novak, S. P. (2012, March). *CBHSQ Data Review: Comparison of NSDUH mental health data and methods with other data sources*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality.

Humensky, J. L. (2010). Are adolescents with high socioeconomic status more likely to engage in alcohol and illicit drug use in early adulthood? *Substance Abuse Treatment, Prevention, and Policy*, 5, 19. doi:10.1186/1747-597X-5-19

James, D. J., & Glaze, L. E. (2006, September [revised December 14, 2006]). *Mental health problems of prison and jail inmates* (NCJ 213600, BJS Special Report). Washington, DC: U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

Johnston, L. D., O'Malley, P. M., Miech, R. A., Bachman, J. G., & Schulenberg, J. E. (2015). *Monitoring the Future national survey results on drug use: 1975-2014: Overview, key findings on adolescent drug use*. Ann Arbor, MI: University of Michigan, Institute for Social Research.

Kandel, D. B., Hu, M.-C., & Griesler, P. C. (2013). Epidemiology of substance use disorders. In D. S. Charney, J. D. Buxbaum, P. Sklar, & E. J. Nestler (Eds.), *Epidemiology of substance use disorders in neurobiology of mental illness* (4th ed., pp. 772-788). New York, NY: Oxford University Press.

Kessler, R. C., Avenevoli, S., Costello, E. J., Georgiades, K., Green, J. G., Gruber, M. J., He, J. P., Koretz, D., McLaughlin, K. A., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Merikangas, K. R. (2012). Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication Adolescent Supplement. *Archives of General Psychiatry*, 69, 372-380.

Kessler, R. C., Avenevoli, S., Costello, J., Green, J. G., Gruber, M. J., Heeringa, S., Merikangas, K. R., Pennell, B. E., Sampson, N. A., & Zaslavsky, A. M. (2009). Design and field procedures in the US National Comorbidity Survey Replication Adolescent Supplement (NCS-A). *International Journal of Methods in Psychiatric Research*, 18(2), 69-83.

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. (2003a). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60, 184-189.

Kessler, R. C., Berglund, P., Chiu, W. T., Demler, O., Heeringa, S., Hiripi, E., Jin, R., Pennell, B. E., Walters, E. E., Zaslavsky, A., & Zheng, H. (2004a). The US National Comorbidity Survey Replication (NCS-R): Design and field procedures. *International Journal of Methods in Psychiatric Research*, 13(2), 69-92.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., Rush, A. J., Walters, E. E., & Wang, P. S. (2003b). The epidemiology of major depressive disorder: Results from the National Comorbidity Survey Replication (NCS-R). *Journal of the American Medical Association*, 289, 3095-3105.

- Kessler, R. C., Berglund, P. A., Bruce, M. L., Koch, J. R., Laska, E. M., Leaf, P. J., Manderscheid, R. W., Rosenheck, R. A., Walters, E. E., & Wang, P. S. (2001). The prevalence and correlates of untreated serious mental illness. *Health Services Research, 36*, 987-1007.
- Kessler, R. C., Berglund, P. A., Glantz, M. D., Koretz, D. S., Merikangas, K. R., Walters, E. E., & Zaslavsky, A. M. (2004b). Estimating the prevalence and correlates of serious mental illness in community epidemiological surveys. In R. W. Manderscheid & M. J. Henderson (Eds.), *Mental health, United States, 2002* (HHS Publication No. SMA 04-3938, pp. 155-164). Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- Kessler, R. C., Berglund, P. A., Walters, E. E., Leaf, P. J., Kouzis, A. C., Bruce, M. L., Friedman, R. M., Grosser, R. C., Kennedy, C., Kuehnel, T. G., Laska, E. M., Manderscheid, R. W., Narrow, W. E., Rosenheck, R. A., & Schneier, M. (1998). A methodology for estimating the 12-month prevalence of serious mental illness. In R. W. Manderscheid & M. J. Henderson (Eds.), *Mental health, United States, 1998* (HHS Publication No. SMA 99-3285, pp. 99-109). Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- Kessler, R. C., Berglund, P. A., Zhao, S., Leaf, P. J., Kouzis, A. C., Bruce, M. L., Friedman, R. M., Grosser, R. C., Kennedy, C., Narrow, W. E., Kuehnel, T. G., Laska, E. M., Manderscheid, R. W., Rosenheck, R. A., Santoni, T. W., & Schneier, M. (1996). The 12-month prevalence and correlates of serious mental illness (SMI). In R. W. Manderscheid & M. A. Sonnenschein (Eds.), *Mental health, United States, 1996* (HHS Publication No. SMA 96-3098, pp. 59-70). Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Kessler, R. C., Chiu, W. T., Colpe, L., Demler, O., Merikangas, K. R., Walters, E. E., & Wang, P. S. (2006). The prevalence and correlates of serious mental illness (SMI) in the National Comorbidity Survey Replication (NCS-R). In R. W. Manderscheid & J. T. Berry (Eds.), *Mental health, United States, 2004* (pp. 134-148). Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Kessler, R. C., Chiu, W. T., Demler, O., Merikangas, K. R., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*, 617-627.
- Kessler, R. C., Colpe, L. J., Fullerton, C. S., Gebler, N., Naifeh, J. A., Nock, M. K., Sampson, N. A., Schoenbaum, M., Zaslavsky, A. M., Stein, M. B., Ursano, R. J., & Herringa, S. G. (2013). Design of the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). *International Journal of Methods in Psychiatric Research, 22*, 267-275.
- Kessler, R. C., Herringa, S. G., Stein, M. B., Colpe, L. J., Fullerton, C. S., Hwang, I., Naifeh, J. A., Nock, M. K., Petukhova, M., Sampson, N. A., Schoenbaum, M., Zaslavsky, A. M., & Ursano, R. J. (2014). Thirty-day prevalence of DSM-IV mental disorders among nondeployed soldiers in the US Army: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). *Journal of the American Medical Association Psychiatry, 71*(5), 504-513.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H. U., & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry*, *51*, 8-19.

Kessler, R. C., & Üstün, T. B. (2004). The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *International Journal of Methods in Psychiatric Research*, *13*, 93-121.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*, 159-174.

Lattimore, P. K., Steffey, D. M., Gfroerer, J., Bose, J., Pemberton, M. R., & Penne, M. A. (2014, August). *CBHSQ Data Review: Arrestee substance use: Comparison of estimates from the National Survey on Drug Use and Health and the Arrestee Drug Abuse Monitoring Program*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality.

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.

Lofquist, D., Lugaila, T., O'Connell, M., & Feliz, S. (2012, April). *Households and families: 2010* (C2010BR-14, 2010 Census Briefs). Suitland, MD: U.S. Census Bureau.

Manly, B. F. J. (1986). *Multivariate statistical methods: A primer*. London, England: Chapman and Hall.

Miller, J. W., Gfroerer, J. C., Brewer, R. D., Naimi, T. S., Mokdad, A., & Giles, W. H. (2004). Prevalence of adult binge drinking: A comparison of two national surveys. *American Journal of Preventive Medicine*, *27*, 197-204.

Narrow, W. E., Rae, D. S., Robins, L. N., & Regier, D. A. (2002). Revised prevalence estimates of mental disorders in the United States: Using a clinical significance criterion to reconcile 2 surveys' estimates. *Archives of General Psychiatry*, *59*, 115-123.

National Advisory Mental Health Council. (1993). Health care reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*, *150*, 1447-1465.

National Center for Health Statistics. (2013, April). *State and Local Area Integrated Telephone Survey. 2011-2012 National Survey of Children's Health frequently asked questions*. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

National Center for Health Statistics. (2014, June). *2013 National Health Interview Survey (NHIS) public use data release: Survey description*. Retrieved from ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2013/srvydesc.pdf

National Institute on Alcohol Abuse and Alcoholism. (2010, September). *Alcohol use and alcohol use disorders in the United States, a 3-year follow-up: Main findings from the 2004-2005 Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC)* (U.S. Alcohol Epidemiologic Data Reference Manual, Vol. 8, No. 2, NIH Publication No. 10-7677). Bethesda, MD: National Institutes of Health.

Nock, M. K., Stein, M. B., Herringa, S. G., Ursano, R. J., Colpe, L. J., Fullerton, C. S., Hwang, I., Naifeh, J. A., Sampson, N. A., Schoenbaum, M., Zaslavsky, A. M., & Kessler, R. C. (2014). Prevalence and correlates of suicidal behavior among soldiers: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). *Journal of the American Medical Association Psychiatry*, *71*, 514-522.

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.

Novak, S. P., Colpe, L. J., Barker, P. R., & Gfroerer, J. C. (2010). Development of a brief mental health impairment scale using a nationally representative sample in the USA. *International Journal of Methods in Psychiatric Research*, *19*(Suppl. 1), 49-60. doi:10.1002/mpr.313.

Office of Applied Studies. (2004). *Results from the 2003 National Survey on Drug Use and Health: Detailed tables*. 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.

Office of Applied Studies. (2006). *Results from the 2005 National Survey on Drug Use and Health: National findings* (HHS Publication No. SMA 07-4293, NSDUH Series H-32). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Office of Applied Studies. (2009a). *2008 National Survey on Drug Use and Health: Methodological resource book (Section 16, Measuring serious mental illness with the NSDUH: Results of 2008 12-month analysis)*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Office of Applied Studies. (2009b). *Results from the 2008 National Survey on Drug Use and Health: National findings* (HHS Publication No. SMA 09-4434, NSDUH Series H-36). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Office of Management and Budget. (1997). Revisions to the standards for the classification of federal data on race and ethnicity. *Federal Register*, *62*(210), 58781-58790.

Office of Management and Budget. (2003, June 6). *Revised definitions of metropolitan statistical areas, new definitions of micropolitan statistical areas and combined statistical areas, and guidance on uses of the statistical definitions of these areas* (OMB Bulletin No. 03-04). Washington, DC: The White House.

Pampel, F. C., Mollborn, S., & Lawrence, E. M. (2014). Life course transitions in early adulthood and SES disparities in tobacco use. *Social Science Research, 43*, 45-59. doi:10.1016/j.ssresearch.2013.08.005

Partnership for Drug-Free Kids & MetLife Foundation. (2014, July). The Partnership Attitude Tracking Study: Teens & parents 2013. Retrieved from <http://www.drugfree.org/wp-content/uploads/2014/07/PATS-2013-FULL-REPORT.pdf>

Pemberton, M. R., Bose, J., Kilmer, G., Kroutil, L. A., Forman-Hoffman, V. L., & Gfroerer, J. C. (2013, September). *CBHSQ Data Review: Comparison of NSDUH health and health care utilization estimates to other national data sources*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality.

Prison Rape Elimination Act (PREA), Pub. L. 108-79 (2003).

Rehm, J., Üstün, T. B., Saxena, S., Nelson, C. B., Chatterji, S., Ivis, F., & Adlaf, E. (1999). On the development and psychometric testing of the WHO screening instrument to assess disablement in the general population. *International Journal of Methods in Psychiatric Research, 8*, 110-123. doi:10.1002/mpr.61

Rosellini, A. J., Heeringa, S. G., Stein, M. B., Ursano, R. J., Chiu, W. T., Colpe, L. J., Fullerton, C. S., Gilman, S. E., Hwang, I., Naifeh, J. A., Nock, M. K., Petukhova, M., Sampson, N. A., Schoenbaum, M., Zaslavsky, A. M., & Kessler, R. C. (2015). Lifetime prevalence of DSM-IV mental disorders among new soldiers in the U.S. Army: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). *Depression and Anxiety, 32*(1), 13-24. doi:10.1002/da.22316

RTI International. (2012). *SUDAAN®*, Release 11.0 [computer software]. Research Triangle Park, NC: Author.

Rubin, D. B. (1986). Statistical matching using file concatenation with adjusted weights and multiple imputations. *Journal of Business and Economic Statistics, 4*(1), 87-94.

Shiffman, S., Hickcox, M., Gnys, M., Paty, J. A., & Kassel, J. D. (1995, March). *The Nicotine Dependence Syndrome Scale: Development of a new measure*. Poster presented at the annual meeting of the Society for Research on Nicotine and Tobacco, San Diego, CA.

Shiffman, S., Waters, A. J., & Hickcox, M. (2004). The Nicotine Dependence Syndrome Scale: A multidimensional measure of nicotine dependence. *Nicotine & Tobacco Research, 6*, 327-348. doi:10.1080/1462220042000202481

Singh, A., Grau, E., & Folsom, R., Jr. (2002). Predictive mean neighborhood imputation for NHSDA substance use data. In J. Gfroerer, J. Eyerman, & J. Chromy (Eds.), *Redesigning an ongoing national household survey: Methodological issues* (HHS Publication No. SMA 03-3768, pp. 111-133). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

SRNT Subcommittee on Biochemical Verification. (2002). Biochemical verification of tobacco use and cessation. *Nicotine & Tobacco Research, 4*, 149-159.

Substance Abuse and Mental Health Services Administration, Center for Mental Health Services. (1993, May 20). Final notice [Final definitions for: (1) Children with a serious emotional disturbance, and (2) adults with a serious mental illness]. *Federal Register*, 58(96), 29422-29425.

Tourangeau, R., & Smith, T. W. (1996). Asking sensitive questions: The impact of data collection mode, question format, and question context. *Public Opinion Quarterly*, 60, 275-304.

Turner, C. F., Lessler, J. T., & Gfroerer, J. C. (Eds.). (1992). *Survey measurement of drug use: Methodological studies* (HHS Publication No. ADM 92-1929). Rockville, MD: National Institute on Drug Abuse.

Ursano, R. J., Heeringa, S. G., Stein, M. B., Jain, S., Raman, R., Sun, X., Chiu, W. T., Colpe, L. J., Fullerton, C. S., Gilman, S. E., Hwang, I., Naifeh, J. A., Nock, M. K., Rosellini, A. J., Sampson, N. A., Schoenbaum, M., Zaslavsky, A. M., & Kessler, R. C. (2015). Prevalence and correlates of suicidal behavior among new soldiers in the U.S. Army: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). *Depression and Anxiety*, 32(1), 3-12. doi:10.1002/da.22317

Section F: List of Contributors

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